Final Initial Study & Mitigated Negative Declaration
State Clearinghouse No. 2023040250

Southern Los Cerritos Wetlands Restoration Project

June 2023

Los Cerritos Wetlands Authority

Lead Agency:
Los Cerritos Wetlands Authority

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Table of Contents

List of Tables

List of Figures

Appendices

List of Acronyms and Abreviations

AB 52	Assembly Bill 52
ArcGIS	Global Information System
BACT	Best Available Control Technology
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model®
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDP	Coastal Development Permit
CEQA	California Environmental Quality Act
CEQA Guidelines	Section 15070 of the State Guidelines for Implementation of the California Environmental Quality Act of 1970
CFP	California Fully Protected Species
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Data Base
CRP	Conceptual Restoration Plan
CRPR	California Rare Plant Rank
CSC	California Species of Special Concern
CUPA	Certified Unified Program Agency
DAMP	Orange County Drainage Area Management Plan
EIR	Environmental Impact Report
ERL	Effects Range Low
ERM	Effects Range Medium
FIRM	Flood Insurance Rate Map
FUDS	Formerly Used Defense Site
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Record
HALS	Historic American Landscapes Survey
I-405	Interstate 405
I-605	Interstate 605
IS	Initial Study
IS/MND	Initial Study and Mitigated Negative Declaration
LADWP	City of Los Angeles Department of Water and Power
LCWA	Los Cerritos Wetlands Authority
LST	Localized Significance Thresholds
MAMP	Monitoring and Adaptive Management Plan
MLD	Most Likely Descendant
MLLW	Mean Lower Low Water
MMRP	Mitigation Monitoring and Reporting Program
MND	Mitigated Negative Declaration
NAAQS	National Ambient Air Quality Standards

List of Acronyms and Abreviations (continued)

NAHC	Native American Heritage Commission
NAVD	North American Vertical Datum
NCCP	Natural Community Conservation Plan
ND	Negative Declaration
NGVD	National Geodetic Vertical Datum
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
PCH	Pacific Coast Highway
PEIR	Program Environmental Impact Report
Program Area	Los Cerritos Wetlands Restoration Plan Program Area
Project	Southern Los Cerritos Wetlands Restoration Project
RMC	San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SCC	State Coastal Conservancy
SLCWRP	Southern Los Cerritos Wetlands Restoration Project
SR-1	State Route 1; Pacific Coast Highway
SR-22	State Route 22
SRA	Source Receptor Areas
TCP	Traditional Cultural Property
TMDL	Total Maximum Daily Loads
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VMT	Vehicle Miles Traveled
WEAP	Worker Education Awareness Program

1 INTRODUCTION

1.1 Summary

The Los Cerritos Wetlands Authority has determined that the proposed Southern Los Cerritos Wetlands Restoration Project (SLCWRP), or "Project", and the required discretionary actions of Los Cerritos Wetlands Authority for the Project require compliance with the guidelines and regulations of the California Environmental Quality Act (CEQA). This Initial Study and Mitigated Negative Declaration (IS/MND) addresses the direct, indirect, and cumulative environmental effects associated with the proposed Project.

The Los Cerritos Wetlands Authority (LCWA), as the Lead Agency pursuant to CEQA, is proposing to implement an individual restoration project within the 503-acre Los Cerritos Wetlands Restoration Plan Program Area (Program Area). The Program Area contains large expanses of open space, including wetland habitat, as well as other uses, as described in more detail in the Los Cerritos Wetlands Restoration Plan Program Environmental Impact Report (PEIR). The PEIR serves as a first-tier environmental document that focuses on the overall effects of implementing the activities that make up the program. As a first-tier environmental document, the PEIR serves as the foundation for this subsequent project-level CEQA analysis. While the PEIR documents considered the potential for environmental impacts from all potential projects under the program, this Mitigated Negative Declaration (MND) seeks to eliminate and/or minimize impactful aspects of the proposed SLCWRP wherever feasible.

The LCWA, founded in 2006, is a joint powers authority consisting of the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC), State Coastal Conservancy (SCC), and cities of Seal Beach and Long Beach. The mission of the LCWA is to provide a comprehensive program of acquisition, protection, conservation, restoration, maintenance and operation, and environmental enhancement of the Los Cerritos Wetlands Complex, consistent with the goals of flood protection, habitat protection and restoration, and improved water supply, water quality, groundwater recharge, and water conservation. The LCWA currently owns 165 acres within the Program Area, of which 100 acres are found within the 103.5-acre SLCWRP site.

This IS/MND has been prepared in conformance with the California Environmental Quality Act of 1970, as amended (Public Resources Code Section 21000 *et seq.*); Section 15070 of the State Guidelines for Implementation of the California Environmental Quality Act of 1970 ("CEQA Guidelines"), as amended (California Code of Regulations [CCR], Title 14, Chapter 3, Section 15000 et seq.), and applicable requirements of the Lead Agency.

This IS/MND has determined that the proposed Project would not result in any additional potentially significant environmental impacts that were not identified in the PEIR. While no new mitigation measures are proposed in this document, those that are provided in the PEIR Mitigation Monitoring and Reporting Program (MMRP) will be adhered to and will reduce any potentially significant impact to less than significant levels. As such, an IS/MND is deemed as the appropriate document to provide the necessary environmental evaluations and clearance. The LCWA determined that a MND is sufficient under the process outlined by the PEIR and Sections 15070(a) and 15168(c) of the CEQA Guidelines. As noted in the Project Description: "Since the LCWA finds that no new significant effects or substantially more severe environmental effects would occur due to the implementation of the Project, pursuant to CEQA Guidelines Section 15162, the LCWA finds it appropriate to document this finding by preparing a MND. The LCWA Governing Board will need to consider this MND and the Final PEIR when making decisions about this individual Project. An Initial Study checklist is being prepared as part of the MND that addresses each impact statement provided in the PEIR, which directly relates to the thresholds provided in Appendix G of the CEQA Guidelines.

Minor revisions to the Draft IS/MND were made in this Final IS/MND for purposes of clarification in response to comments received during the public review period. A vertical line in the margin indicates changes to the text (either addition or deletion) from the Draft IS/MND (with the exception of the cover page and headers/footers). Appendix I has been added to address Responses to Comments on the Draft IS/MND. Comments received during public review did not identify any new or potentially significant environmental impacts beyond those already covered in the circulated Draft IS/MND. In response to comments received by the California State Lands Commission, additional text was added to mitigation measure CUL-14 regarding the process for the final disposition of any archaeological, historical, and paleontological resources recovered on State land under the California State Lands Commission; revised to needing a new or amended lease (no encroachment permit); in response to comments received by the Department of Toxic Substances Control, additional text was added to mitigation measure HAZ-2 in the event that any debris encountered during excavation could be associated with the formerly used defense site. Potential impacts remain less than significant. The comment letters are included as a new Appendix I.

1.2 Statutory Authority and Requirements

In accordance with CEQA (Public Resources Code Sections 21000-21177) and pursuant to Section 15063 of the CEQA Guidelines set forth at Title 14 of the CCR, the Lead Agency for the Project is undergoing environmental review in this document. Acting in the capacity of CEQA Lead Agency, LCWA is required to undertake the preparation of an Initial Study (IS) to provide information to use as the basis for determining whether an Environmental Impact Report (EIR), Negative Declaration (ND), or Mitigated Negative Declaration (MND) would be appropriate for providing the necessary environmental documentation for the proposed Project.

The purpose of an IS is to: (1) identify potential environmental impacts; (2) provide the Lead Agency with information to use as the basis for deciding whether to prepare an EIR or ND/MND; (3) enable the project sponsor/applicant or Lead Agency to modify a project, mitigating adverse impacts before an EIR is prepared; (4) facilitate environmental assessment early in the design of a project; (5) provide documentation of the factual basis for the finding in a MND that a project would not have a significant environmental effect; (6) eliminate needless EIRs; (7) determine whether a previously prepared EIR could be used for a project; and (8) assist in the preparation of an EIR, if required, by focusing the EIR on the effects determined to be significant, identifying the effects determined not to be significant, and explaining the reasons for determining that potentially significant effects would not be significant.

Section 15063 of the CEQA Guidelines identifies global disclosure requirements for inclusion in an IS. Pursuant to those requirements, an IS must include: (1) a description of the project, including the location of the project; (2) an identification of the environmental setting; (3) an identification of environmental effects by use of a checklist, matrix or other method, provided that entries on a checklist or other form are briefly explained to indicate that there is some evidence to support the entries; (4) a discussion of ways to mitigate significant effects identified, if any; (5) an examination of whether the project is compatible with existing zoning, plans, and other applicable land use controls; and (6) the name of the person or persons who prepared or participated in the preparation of the IS.

According to Section 15065(a) of the CEQA Guidelines, an EIR must be prepared for a project if any of the following conditions occur:

- The project has the potential to: substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory.

- The project has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
- The project has possible environmental effects that are individually limited but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.
- The environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly.

According to Section 15070(a) of the CEQA Guidelines, a MND is deemed appropriate if the IS shows that there is no substantial evidence, in light of the whole record before the Lead Agency, that the project may have a significant effect on the environment.

1.3 Intended Uses of this Initial Study and Mitigated Negative Declaration

This IS/MND is intended to be an informational document for the LCWA, the general public, and for responsible agencies to review and use when approving subsequent discretionary actions for the Project. The resulting documentation is not a policy document, and its approval and/or certification neither presupposes nor mandates any actions on the part of those agencies from whom permits and other discretionary approvals would be required.

The Notice of Intent (NOI) to Adopt a MND and supporting analysis is subject to a 30-day public and agency review period **(**April 10 to May 10**)**. During this review, comments on the document should be addressed to the LCWA (LCWA@tidalinfluence.com). A virtual public meeting will be held on April 27, 2023 from 6:00-7:30pm (details can be found on the project website – link at end of this paragraph). Following review of any comments received, LCWA will consider these comments as a part of this Project's environmental review and include them with the IS/MND documentation for consideration by LCWA. This document is available at the Mary Wilson Library (707 Electric Avenue, Seal Beach, CA, 90740) and Bayshore Library (195 Bay Shore Avenue, Long Beach, CA 90803) and/or at this website: Southern Los Cerritos Wetlands Restoration Project – Into Los Cerritos Wetlands (https://intoloscerritoswetlands.org/southern-los-cerritos-wetlands-restoration-project/).

1.4 Supportive Documentation

1.4.1 Incorporation by Reference

Incorporation by reference is a procedure for reducing the size of environmental documents and is most appropriate for including long, descriptive, or technical materials that provide general background information but do not contribute directly to the specific analysis of the project itself. This procedure is particularly useful when an EIR or MND relies on a broadly drafted EIR for its evaluation of cumulative impacts of related projects. (*Las Virgenes Homeowners Federation v. County of Los Angeles* (1986) 177 Cal.App.3d 300.) If an EIR or MND relies on information from a supporting study that is available to the public, the EIR or MND cannot be deemed unsupported by evidence or analysis (*San Francisco Ecology Center v. City and County of San Francisco* (1975) 48 Cal.App.3d 584, 595.). This document incorporates by reference the Los Cerritos Wetlands Restoration Plan PEIR.

When an EIR or MND incorporates a document by reference, the incorporation must comply with Section 15150 of the CEQA Guidelines as follows:

- The incorporated document must be available to the public or be a matter of public record (CEQA Guidelines Section 15150(a)).
- This document must summarize the portion of the document being incorporated by reference or

briefly describe information that cannot be summarized (CEQA Guidelines Section 15150(c)).

- The material to be incorporated in this document will include general background information (CEQA Guidelines Section 15150(f)).

1.4.2 Technical Studies

This IS/MND also uses information provided in the following document(s):

- Southern Los Cerritos Wetlands Restoration Project Basis of Design Components (M&N Design Team = Moffatt & Nichol, CRC, and Anchor QEA; 2023; Appendix B)
- Southern Los Cerritos Wetlands Restoration Project Air Quality/Greenhouse Gas Study (Moffatt & Nichol, 2023; Appendix C)
- Southern Los Cerritos Wetlands Restoration Project Biological Resources Report (Tidal Influence, 2021a; Appendix D)
- Southern Los Cerritos Wetlands Restoration Project Jurisdictional Delineation Report (Tidal Influence, 2021b; Appendix E)
- Cultural Resources Assessment for the Southern Los Cerritos Wetlands Restoration Project (Cogstone, 2023; Appendix F)
- Southern Los Cerritos Wetlands Restoration Project Sampling and Analysis Report (Anchor QEA, 2022; Appendix G)
- 65% Southern Los Cerritos Wetlands Restoration, Phases 1 and 2 Hydraulic and Hydrology Modeling (Moffatt & Nichol, 2022; Appendix H)

2 INITIAL STUDY / ENVIRONMENTAL CHECKLIST

2.1 Project Title

Southern Los Cerritos Wetlands Restoration Project

2.2 Lead Agency

Los Cerritos Wetlands Authority

2.3 Project Contact

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2.5 Project Location

The proposed project is located within the City of Seal Beach within the northwestern portion of Orange County, California. The City of Seal Beach is bounded by the City of Long Beach to the west, the City of Los Alamitos and the neighborhood of Rossmoor to the north, and the cities of Huntington Beach, Westminster, and Garden Grove to the east. The Pacific Ocean borders the City of Seal Beach to the south. The U.S. Naval Weapons Station Seal Beach and Seal Beach National Wildlife Refuge are located within Seal Beach City boundaries to the southeast of the Project (Figure 1).

Regional access to the Project site is provided by Interstate 405 (I-405) and Interstate 605 (I-605) as well as State Route 22 (SR-22) which terminates as 7th Street. Pacific Coast Highway (PCH, SR-1) traverses the area from the northwest corner to the southeast corner. Locally, 2nd Street/Westminster Boulevard, Loynes Drive, Seal Beach Boulevard, and 7th Street all provide east/west connections (Figure 2).

The Project site is located in west Seal Beach, adjacent to the border of Orange County and Los Angeles County in Southern California. Two major waterways are present in the vicinity: the San Gabriel River and the Haynes Cooling Channel. A smaller relic tidal channel, called the man Channel, is also present within the Project site and drains to the San Gabriel River.

The proposed project boundary totals approximately 103.5 acres of land and water and falls completely within the South Area of the Program Environmental Impact Report (PEIR) (see Section 2.8, Figure 2). This project includes portions of two individual sites (South LCWA and State Lands Parcel) and borders two additional individual sites (Haynes Cooling Channel and Hellman Retained) identified in the PEIR.

Figure 1: Regional Location

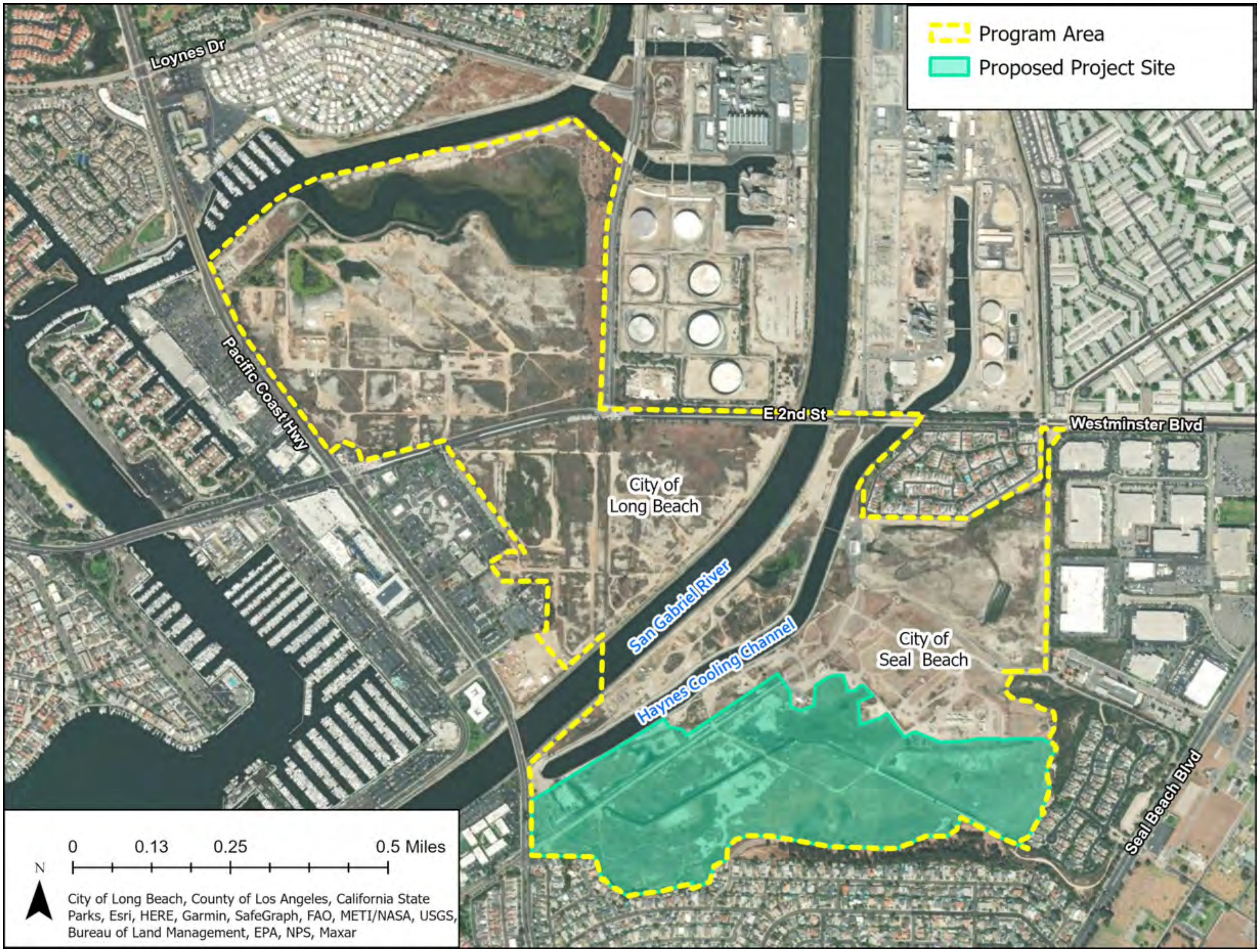


Figure 2: Project Vicinity

2.6 General Plan / Zoning Designations

The Project Site is located entirely within the California Coastal Zone, which means it is subject to the California Coastal Act.

The project is located entirely within the City of Seal Beach. The Seal Beach General Plan designates the land use as Community Facilities, Industrial – Oil Extraction, Open Space, and Commercial Service.

According to the Seal Beach zoning map (Marina Hill, Hellman Ranch & Boeing Facility), the project site falls within the Open Space Natural and Specific Plan Regulation (Hellman Ranch Specific Plan, City of Seal Beach, 2013).

2.7 Environmental Setting and Surrounding Land Uses

The proposed project area is located on approximately 103.5 acres of land on the border of Los Angeles and Orange Counties in the City of Seal Beach. It is bounded by the Haynes Cooling Channel to the northwest, PCH to the west, oil extraction fields to the north, residential and industrial to the east, and residential to the south.

2.8 Project Background

Until the late 1800s, the wetlands within and beyond the Program Area, collectively known as the Los Cerritos Wetlands Complex, spanned approximately 2,400 acres, and consisted of a network of tidal channels, vegetated wetlands, and upland areas. Historically, the Los Cerritos Wetlands Complex was almost entirely tidal wetland, with a few natural streams and intertidal flat channels.

Beginning in the late 1800s, the Los Cerritos Wetlands Complex began to undergo significant alterations due to cattle and beet farming, the demands of a growing population, and oil extraction. Oil was first discovered at the Seal Beach Oil Field in 1926. The development of oil production operations, paired with channelization of the San Gabriel River, resulted in substantial dredging, and fill of the Los Cerritos Wetlands Complex. Today, a large portion of the Program Area has been converted from its historic wetland habitat, though a few remnants and degraded historic habitats remain.

This Draft IS/MND has been prepared by the LCWA to assess restoration designs for the 103.5-acre South Los Cerritos Wetlands Restoration Project Area which is part of the larger 503-acre Los Cerritos Wetlands Restoration Plan developed by the LCWA. The LCWA owns 100 of the 103.5-acre project area, with the State of California State Lands Commission owning the other 3.5 acres.

2.8.1 Conceptual Restoration Plan, Program Environmental Impact Report and Habitat Restoration Plan

The first major step in the design process for the restoration of the Los Cerritos Wetlands Complex was the development of the Los Cerritos Wetlands Final Conceptual Restoration Plan (CRP; Moffatt & Nichol, 2014). The CRP is a restoration alternatives analyses report that provides the LCWA with a roadmap for habitat enhancement and improved public access for the Los Cerritos Wetlands Complex. Adopted by the LCWA Governing Board in August 2015, the CRP identifies goals and objectives and restoration design alternatives under a range of sea-level rise scenarios. The report was prepared with input by the LCWA Steering Committee (made up of staff representing agencies of the LCWA joint powers authority), a Technical Advisory Committee (comprised of representatives of twenty (20) resource and permitting agencies, and research groups covering federal, state, regional, and local jurisdictions), and the public (based on input during six (6) community workshops).

In 2017, LCWA received funding to further the design of the alternatives identified in the CRP with the development of a program-level restoration design, to prepare a PEIR, and to prepare a Los Cerritos Wetlands

Optimized Restoration Plan (approved as the Habitat Restoration Plan). The PEIR was certified by the LCWA Governing Board in January 2021, and the Los Cerritos Wetlands Habitat Restoration Plan was subsequently adopted in July 2021. The proposed program, along with alternatives to the proposed program described in Chapter 5 of the PEIR, were identified based on input from the LCWA Steering Committee (made up of staff representing agencies of the LCWA joint powers authority), a Technical Advisory Committee (representatives of 20 resource and permitting agencies, and research groups covering federal, state, regional, and local jurisdictions), and the public (based on input during 2 community workshops). The PEIR evaluated the environmental impacts associated with the proposed overall program.

The PEIR states that future phases of the restoration would involve identifying individual projects, performing required analyses and field surveys (e.g., wetland delineation reports, habitat surveys, archaeological and cultural surveys, soil samplings, etc.), engaging stakeholders, and developing more detailed, project-level designs (e.g., engineering designs, grading plans). As each individual restoration project is proposed, it will be evaluated for consistency with the PEIR Goals and Objectives and the Los Cerritos Wetlands Habitat Restoration Plan. Individual restoration projects will be developed with input from public agencies, tribal representatives, stakeholders, landowners, and the community, and adopted by the LCWA Governing Board.

The Los Cerritos Wetlands Habitat Restoration Plan was similarly vetted by the public and technical advisors. The Restoration Plan was developed to provide refined restoration plans specifically for near-term projects like the Southern Los Cerritos Wetlands Restoration Project (Project) that are expected to tier from the PEIR within 10 years of approval.

2.8.2 Southern Los Cerritos Wetlands Restoration Project

In 2021, the LCWA acquired funding to pursue project-level planning for a portion of the Program's South Area. As required by CEQA Guidelines Section 15168(c), subsequent activities in furtherance of a program (or plan) must be examined in the light of the PEIR to determine whether additional environmental documentation must be prepared. As Lead Agency, the LCWA has determined that the SLCWRP is within the scope of the PEIR. Due in part to the project tiering from the program within a relatively short period of the certification date, there have been no changes in circumstances on-site under which the project is undertaken. Likewise, no new information has been discovered that was not known and could not have been known with the exercise of reasonable diligence at the time the PEIR was certified. Finally, the effects of changes caused by the SLCWRP are consistent with the PEIR analysis (CEQA Guidelines Sections 15162[a][2], 15162[a][3], and 15168[c][2]).

Since the LCWA finds that no new significant effects or substantially more severe environmental effects would occur due to the implementation of the SLCWRP, pursuant to CEQA Guidelines Section 15162, the LCWA finds it appropriate to document this finding by preparing a Mitigated Negative Declaration (Appendix A). The LCWA Governing Board will need to consider this MND and the Final PEIR when making decisions about this individual project. An Initial Study checklist is being prepared as part of the MND that addresses each impact statement provided in the PEIR, which directly relates to the thresholds provided in Appendix G of the CEQA Guidelines.

2.8.3 Project Site Conditions and Ownership

The Project site is composed of two parcels (South LCWA site and State Lands Parcel) and totals approximately 103.5 acres of land. Information in this section addresses existing land uses, current land ownership for this and adjacent properties, land managers, habitat types, known presence of special-status plant and animal species, vehicular access, and existing public access opportunities (Appendix B). Determination of habitat types and presence of special-status plants and animal species (Appendices D and E), and focused field observations were completed by PEIR project team biologists. This section is also informed by the field observations during site visits conducted by architectural historian and cultural resource specialists (Appendix F) and PEIR project team engineers. Figure 3 shows the Project site and surrounding properties.

Figure 3: Project Site

The State Lands Parcel site is owned by the State Lands Commission. The site is approximately 3.5 acres in area and contains the remnant building foundation of what was once a music venue called the Airport Club and Marina Palace. Major habitat types include ruderal uplands and southern coastal salt marsh with a muted tidal connection in the channel that runs along the south of the parcel. Portions of the site that do not contain the remnant building foundation support one special-status plant. Access to the site is available via an existing gated driveway on 1st Street.

The South LCWA site is approximately 100 acres in area and contains multiple former sumps, landfills, and contaminated areas from prior oil operations, and is currently owned and maintained by the LCWA. Some areas of tidal southern coastal salt marsh still persist on the site, but other areas were converted by previous landowners. Conversion from coastal salt marsh habitat to primarily ruderal uplands with no tidal connections occurred due to extensive filling of the property from dredged material associated with the excavation of the San Gabriel River Channel and the Haynes Cooling Channel in the 1950s and 1960s. Former access roads still bisect the site and cause ecological and hydrological fragmentation. Remnant geomorphic features include historic southern coastal bluffs. The site is accessed via a gated private road on 1st Street.

The Hellman Channel, a small, muted tidal channel that connects to the San Gabriel River through a culvert that jogs around the southern end of the Haynes Cooling Channel and above the siphons connecting the cooling channel to the Alamitos Bay Marina. The Hellman Channel provides habitat for several special-status animal and plant species. The Hellman Channel historically served as the drainage ditch across the former Hellman property and, therefore, is a linear feature that extends upstream into the eastern portion of the site. It presently conveys seawater from the river into the South LCWA site and provides the hydrology for existing salt marsh habitat on-site.

The Haynes Cooling Channel is a waterway located northwest of the Project Area that is used by the Haynes Generating Station to supply water from the Pacific Ocean via seven culverts in the Alamitos Bay Marina to cool the power plant through a method called once-through cooling. Once the water is used, it is discharged into the San Gabriel River slightly upstream of where the river crosses under 2nd Street. The Haynes Generating Station, owned and operated by the City of Los Angeles Department of Water and Power (LADWP), is a natural gas and steam power plant that was built in the mid-1960s. The Haynes Generating Station is undergoing a modernization project that would eliminate the use of ocean water to cool the power plant by 2029. Once the modernization project is completed, the Haynes Cooling Channel will be decommissioned and no longer be in use for the Haynes Generating Station. That channel is proposed as the source of seawater to the project site for the second phase of the project.

The Hellman Retained site is an active oil field with substantial oil operation infrastructure (pipelines, pumps, tanks, and roadways) located north of the project site. There are 43 active oil wells and 11 idle oil wells on site. The Hellman Retained site is owned and operated by Hellman Properties, LLC. Historically, the site was primarily coastal salt marsh habitat; today the parcel is composed mostly of ruderal uplands with no tidal connection. Past surveys indicate that the Hellman Retained site may host several special status plant species. Access to the site is available via a gated private road on 1st Street.

The Project site has some existing public access located just outside the program boundary. A small public parking lot located off of Seal Beach Boulevard provides access to the Hellman Ranch Trail. The trail runs west and north between the Heron Pointe residential neighborhood and the South Area and includes interpretive signage, benches, and a gathering area. The north end of the trail ends at a locked gate at the boundary of the oil operations. The Hellman Ranch trail also connects west to the Gum Grove Trail in Gum Grove Park and is served by a second, small, public parking area accessed from Avalon Drive along the south program boundary. Gum Grove Trail and Hellman Ranch Trail combine to provide approximately a 1-mile-long trail just outside the Project site. A gated and locked access drive from 1st Street provides occasional guided access to restricted areas within the site. The City of Seal Beach owns Gum Grove Park, and a private residential community owns Heron Pointe.

2.9 Los Cerritos Wetlands Restoration Plan Goals and Objectives

The goals and objectives of the proposed project are presented below and are consistent with the goals and objectives identified in the Final PEIR (LCWA, 2021):

Goal #1. Restore tidal wetland processes and functions to the maximum extent possible.

Objectives:

a. Increase estuarine habitat with a mix of tidal channels, mudflat, salt marsh, and brackish/ freshwater marsh and ponds.

b. Provide adequate area for wetland-upland ecotone and upland habitat to support wetlands.

c. Restore and maintain habitat that supports important life history phases for species of special concern (e.g., federal and state listed species), essential fish habitat, and migratory birds as appropriate.

d. Solicit and address feedback on restoration design from members of the community, Native American tribes, and other interested parties.

Goal #2. Maximize contiguous habitat areas and maximize the buffer between habitat and sources of human disturbance.

Objectives:

a. Maximize wildlife corridors within the LCW Complex and between the LCW Complex and adjacent natural areas within the region.

b. Incorporate native upland vegetation buffers between habitat areas and human development to mitigate urban impacts (e.g., noise, light, unauthorized human encroachment, domestic animals, wastewater runoff) and reduce invasion by non-native organisms.

c. Design the edges of the LCW Complex to be respectful and compatible with current neighboring land uses.

Goal #3. Create a public access and interpretive program that is practical, protective of sensitive habitat and ongoing oil operations, economically feasible, and will ensure a memorable visitor experience.

Objectives:

a. Build upon existing beneficial uses.

b. Minimize public impacts on habitat/wildlife use of the LCW Complex.

c. Design interpretive concepts that promote environmental stewardship and the connection between the wetlands and the surrounding community.

d. Solicit and address feedback from members of the surrounding community, Native American tribes, and other interested parties.

e. Encourage equitable access of the LCW as a regional resource.

Goal #4. Incorporate phasing of implementation to accommodate existing and future potential changes in land ownership and usage, and as funding becomes available.

Objectives:

a. Include projects that can be implemented as industrial operations are phased out and other properties are acquired over the near, mid, and long terms (next 10 years, 10– 20 years, and 20+ years).

b. Investigate opportunities to restore levels of tidal influence that are compatible with current oil leases and neighboring private land holdings.

c. Remove/realign/consolidate existing infrastructure (roads, pipelines, etc.) and accommodate future potential changes in infrastructure, to the maximum extent feasible.

Goal #5. Strive for long-term restoration success.

Objectives:

a. Implement an adaptive management framework that is sustainable.

b. Restore habitats in appropriate areas to minimize the need for long-term maintenance activities that are extensive and disruptive to wildlife.

c. Design habitats that will accommodate climate changes (e.g., incorporate topographic and habitat diversity and natural buffers and transition zones to accommodate migration of wetlands with rising sea levels).

d. Provide economic benefit to the region.

Goal #6. Integrate experimental actions and research into the project, where appropriate, to inform restoration and management actions for this project.

Objectives:

a. Include opportunities for potential experiments and pilot projects to address gaps in information (e.g., effect of warm river water on salt marsh ecosystem) that are protective of sensitive habitat and wildlife and that can be used to adaptively manage the restoration project.

b. Include areas on the site, where appropriate, that prioritize research opportunities (such as those for adaptive management) over habitat sensitivities.

2.10 Project Description

The project would restore wetland, wetland-upland transition zone, and upland habitats throughout the project area. This would involve addressing any contaminated soil and groundwater, grading, revegetation, construction of new public access opportunities (including trails, a Stewardship Site, and viewpoints), construction of flood management facilities (including earthen berms), and modification of existing infrastructure and utilities (Figure 4).

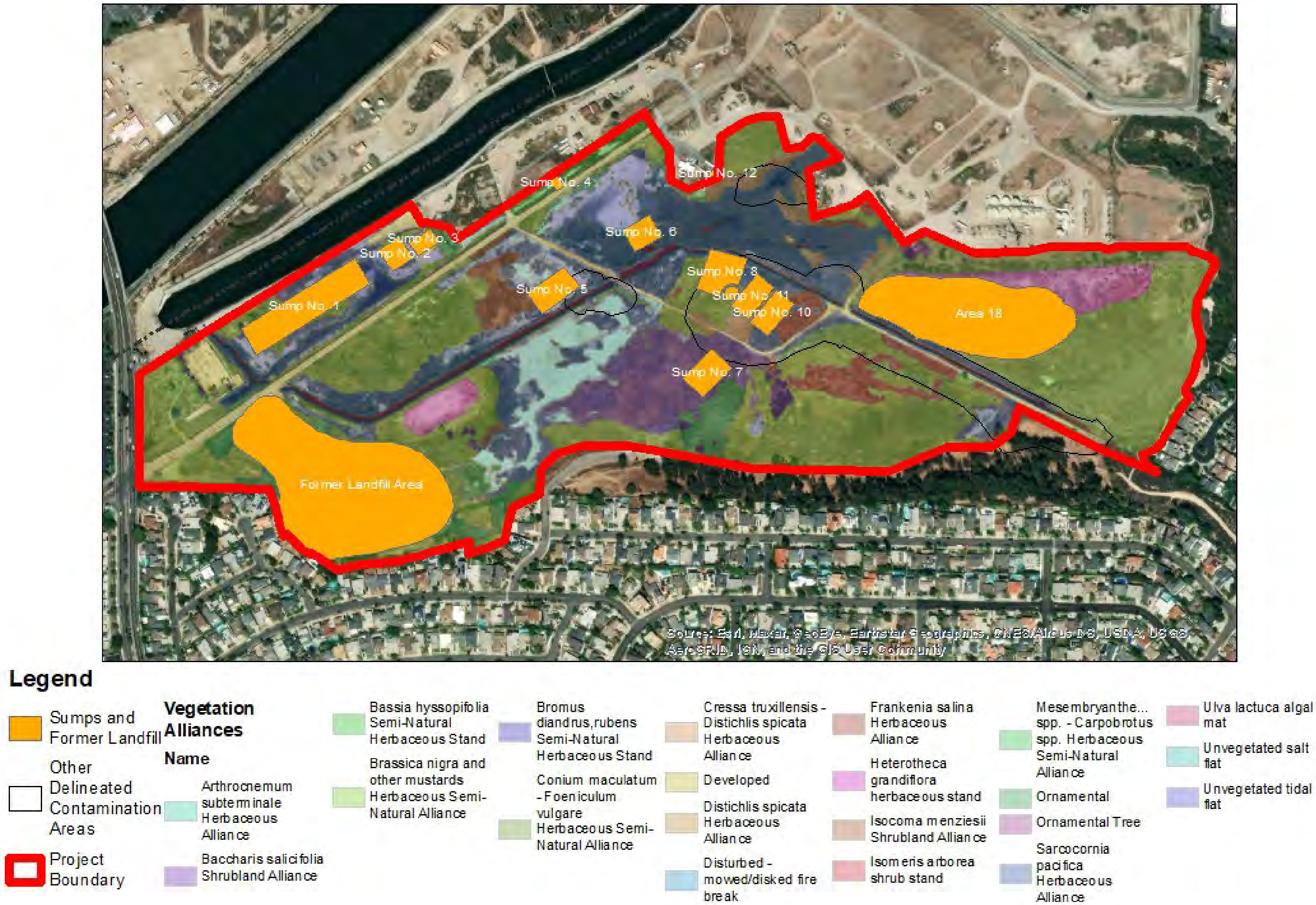


Figure 4: South Los Cerritos Wetlands Restoration Project Features

2.10.1 Phasing

Ecosystem restoration in the Project Area would occur in two phases based on access to the Haynes Cooling Channel as a source of tidal waters. The Phase 1 restoration activities would focus on enhancing existing habitat areas in closer proximity to the existing muted tidal channel connection via the culvert connected to the San Gabriel River. Phase 2 restoration activities would expand tidal wetlands throughout the Project Area by creating a full tidal connection with the Haynes Cooling Channel. Phase 1 will be designed to provide an initial functional lift to existing habitat areas that will be become further enhanced by the improved hydrological conditions provided by Phase 2.

Proposed activities could include the following (see Figure 5 and Figure 6, see Figure 7 legend):

<u>Both Phases</u>

- Grading the South LCWA site, including excavation to create channels and revegetation of native plants to support a diversity of marsh, transitional, and upland habitats;
- Managing and/or remediating soils (e.g., excavation and removal, or retain and do confirmatory sampling and testing, and/or cap in place) that have been impacted by oil operations;
- Creating improvements on the State Lands Parcel site that may include a connector trail, Stewardship Site, and interpretive opportunities;
- Maintaining the flap gate on the existing culvert connecting the South LCWA site to the San Gabriel River and possibly clean out the culvert for improved water flow; and
- Beneficially reusing fill material on site to support existing upland habitat areas in the northeast (known as Area 18) and southwest (known as the former landfill site) extents of the project area.

Table 1 summarizes the activities associated with Phase 1 and Phase 2 activities.

Table 1: Project Phasing

Location	Phase 1 (before 2030)	Phase 2 (after 2030)
South LCWA	• Excavating a channel up to the boundary of the Haynes Cooling Channel • Grading of site to support habitat restoration • Remediation of soils • Protecting existing mid-marsh in the northern portion of the site • Constructing an earthen berm to protect the sensitive habitat area of the project site from hydraulic connection to and influence from any site to the north • Raising 1st Street and reconfigure utilities • Retaining the gate on the Hellman Channel culvert to the San Gabriel River and cleaning the culvert • Replacing the existing culverts under 1st Street with a much larger culvert systems or potentially a short bridge • Filling Area 18 and the former landfill to uplands • Restoring bluff habitat • Adding Tribal Cultural resource and access features	• Connecting Haynes Cooling Channel to the project site • Expanding salt marsh south and east • Remediation of soils • Filling Area 18 • Installing connector trails • Adding experimental plots for research • Restoring salt panne habitat • Culvert under dirt access road to be removed at the end of Phase 2
State Lands Parcel	• Possible Stewardship Site, interpretive opportunity, and connector trail	• Continued Stewardship Site with connector trail
Haynes Cooling Channel	• N/a	• Channel is decommissioned for use in once-through-cooling

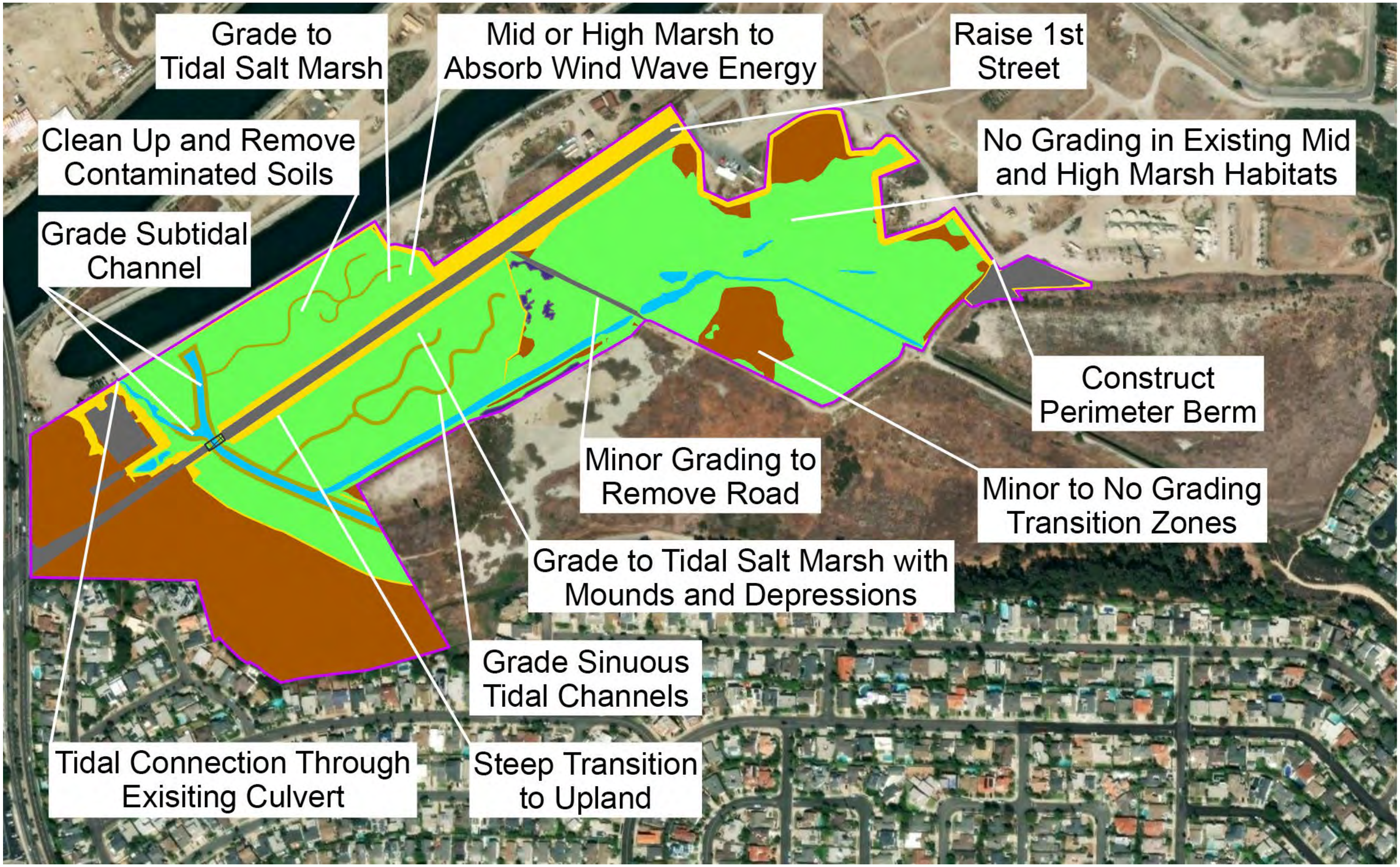


Figure 5: Phase 1 Restoration

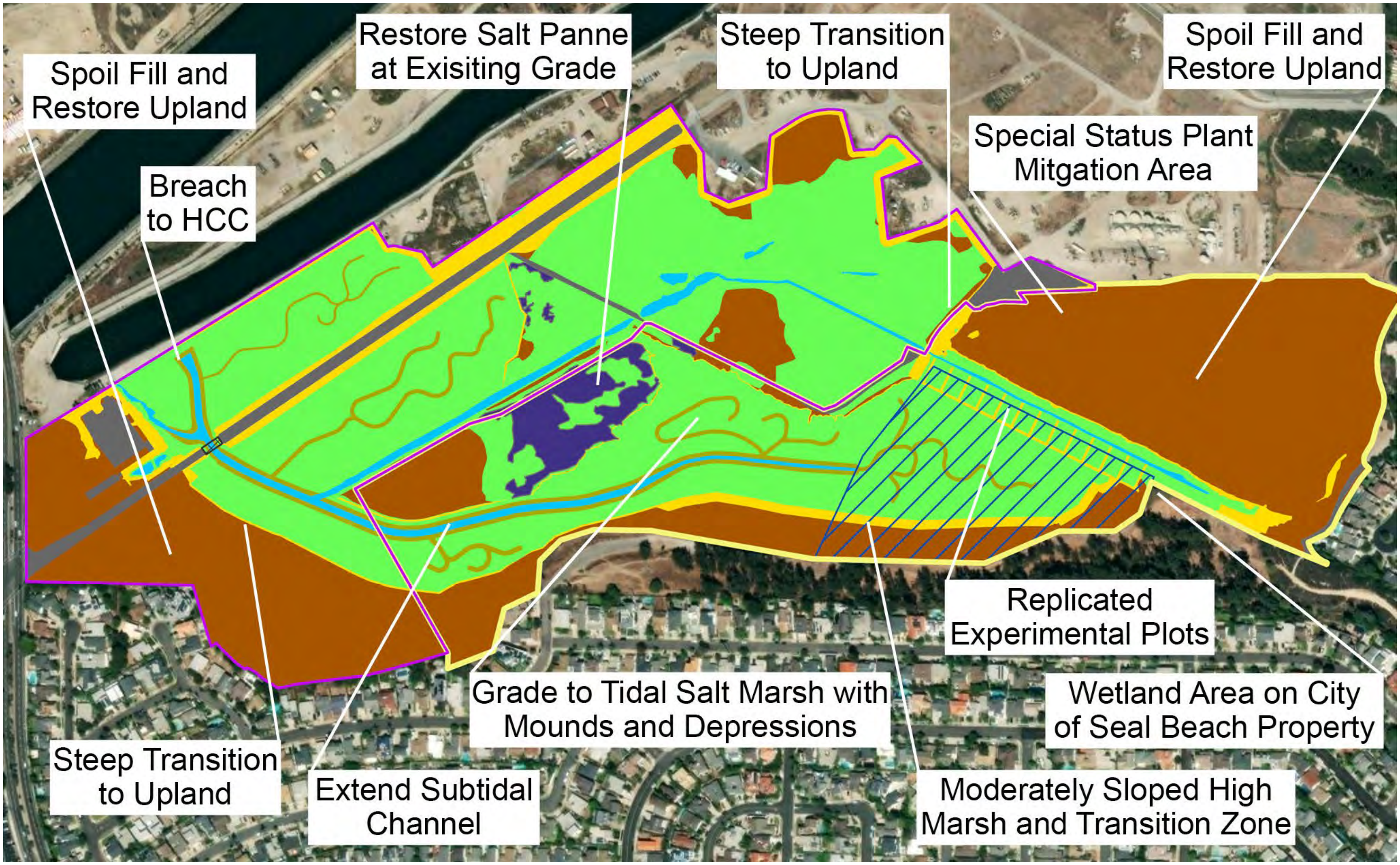


Figure 6: Proposed South Phase 2 Restoration

2.10.2 Ecosystem Restoration

Restored Habitats

The project proposes for approximately 27.71 acres of existing non-native upland and native shrubland to be graded down to intertidal salt marsh elevations with another 7.37 acres of transitional wetlands habitat sloping up to upland elevations along the southern and eastern borders of the project site. Consistent with the PEIR, grading of existing muted tidal salt marsh habitat would be avoided as much as possible and, instead, those areas will be enhanced by improvement to the site's tidal prism. Grading of existing salt marsh habitat would only be considered if it was required in order to remediate contaminated soils.

Figure 7 shows a map of existing habitat on-site and Figure 8 shows proposed habitats on-site.

Phase 1

Initially, tidal channels and creeks would be excavated in the Phase 1 area and the connection to the San Gabriel River would be improved through cleaning of the existing culvert. Based on hydraulic modeling, it is expected that the Phase 1 area will have a 2.8-foot tidal range, which is an 0.8-foot increase from existing conditions, and a 40% increase. A total of 45.91 acres of tidal salt marsh habitat will be enhanced, created and restored. Additionally, 1.66 acres of subtidal habitat will be created and restored. The new subtidal habitat will mostly be comprised of the initial portion of the new tidal channel that will connect to the Haynes Cooling Channel in Phase 2. Finally, Phase 1 will include the creation and restoration of approximately 4.86 acres of transitional habitat as well as 14.15 acres of restored upland habitat. Much of the existing upland habitat in the Phase 1 area is either bare ground or non-native vegetation that will be converted into tidal wetlands or enhanced so that native upland plant communities are established. The plant communities anticipated to be established within the Phase 1 area include southern coastal salt marsh, coastal sage scrub, southern coastal bluff scrub, and mulefat scrub.

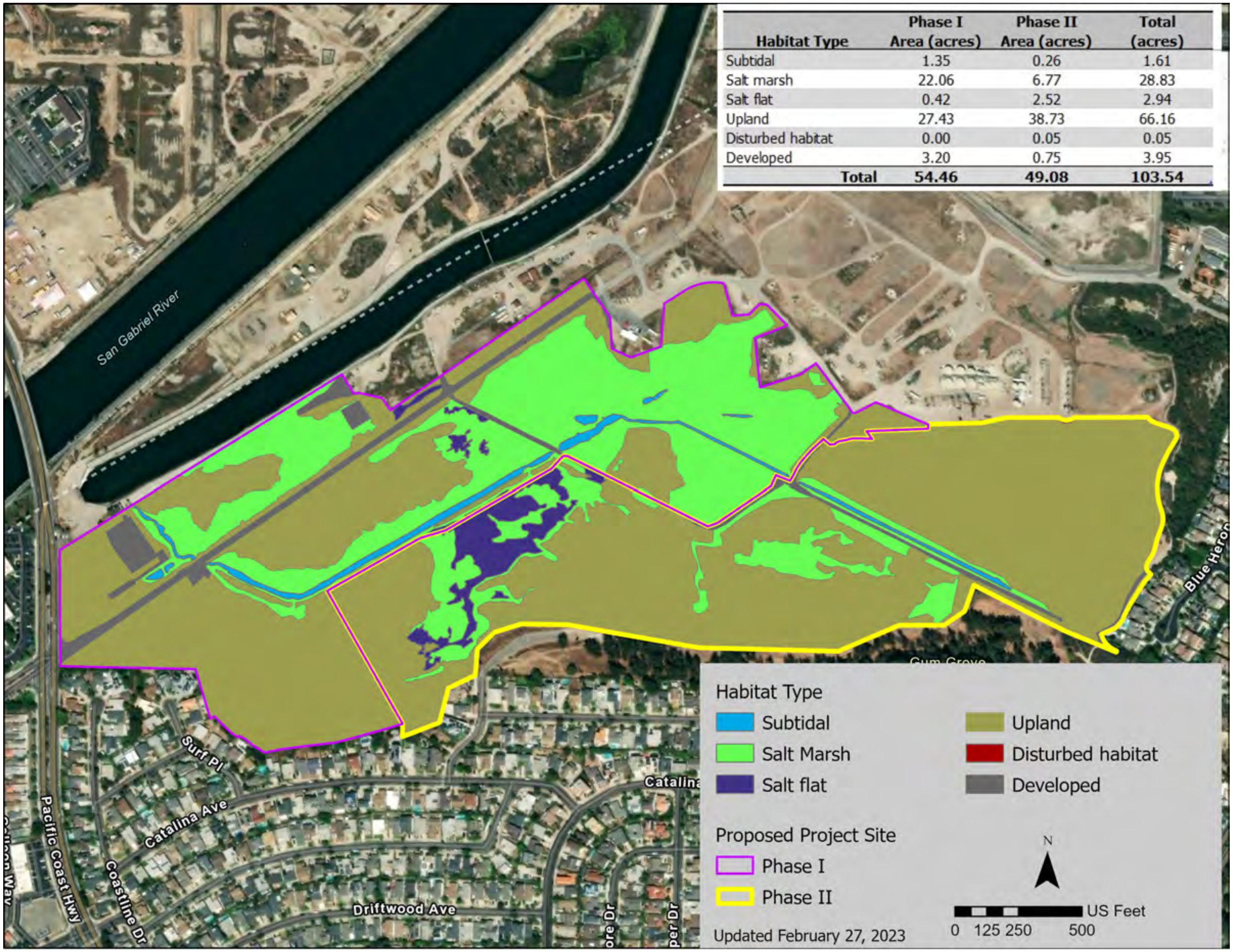
Phase 2

When access to the Haynes Cooling Channel is available after LADWP ceases once-through-cooling activities, a connection will be breached between the portion of the subtidal channel created in Phase 1 and the Haynes Cooling Channel. The Phase 1 subtidal channel will be extended into the Phase 2 area and create and restore an additional 0.85 acre of subtidal habitat. The culvert connection with the San Gabriel River will be maintained.

A total of 17.07 acres of new full tidal salt marsh habitat will be excavated in the Phase 2 area. The salt marsh habitat will be connected to the new subtidal channel that is connected to the Haynes Cooling Channel. This new full tidal habitat includes 2.04 acres of restored salt panne habitat. Additionally, the tidal salt marsh in the Phase 1 area will become full tidal, resulting in a significant functional lift. Based on hydraulic modeling, it is expected that the Phase 2 area will have a 7.97-foot tidal range, which is a 5.17-foot increase from Phase 1 conditions. Finally, Phase 2 will include approximately 2.51 acres of transitional zone habitat as well 24.30 acres of restored upland habitat. These acreages will be added to habitat established in Phase 1. Much of the existing upland habitat in the Phase 2 area is either bare ground or non-native vegetation that will be converted into tidal wetlands or enhanced so that native upland plant communities are established.

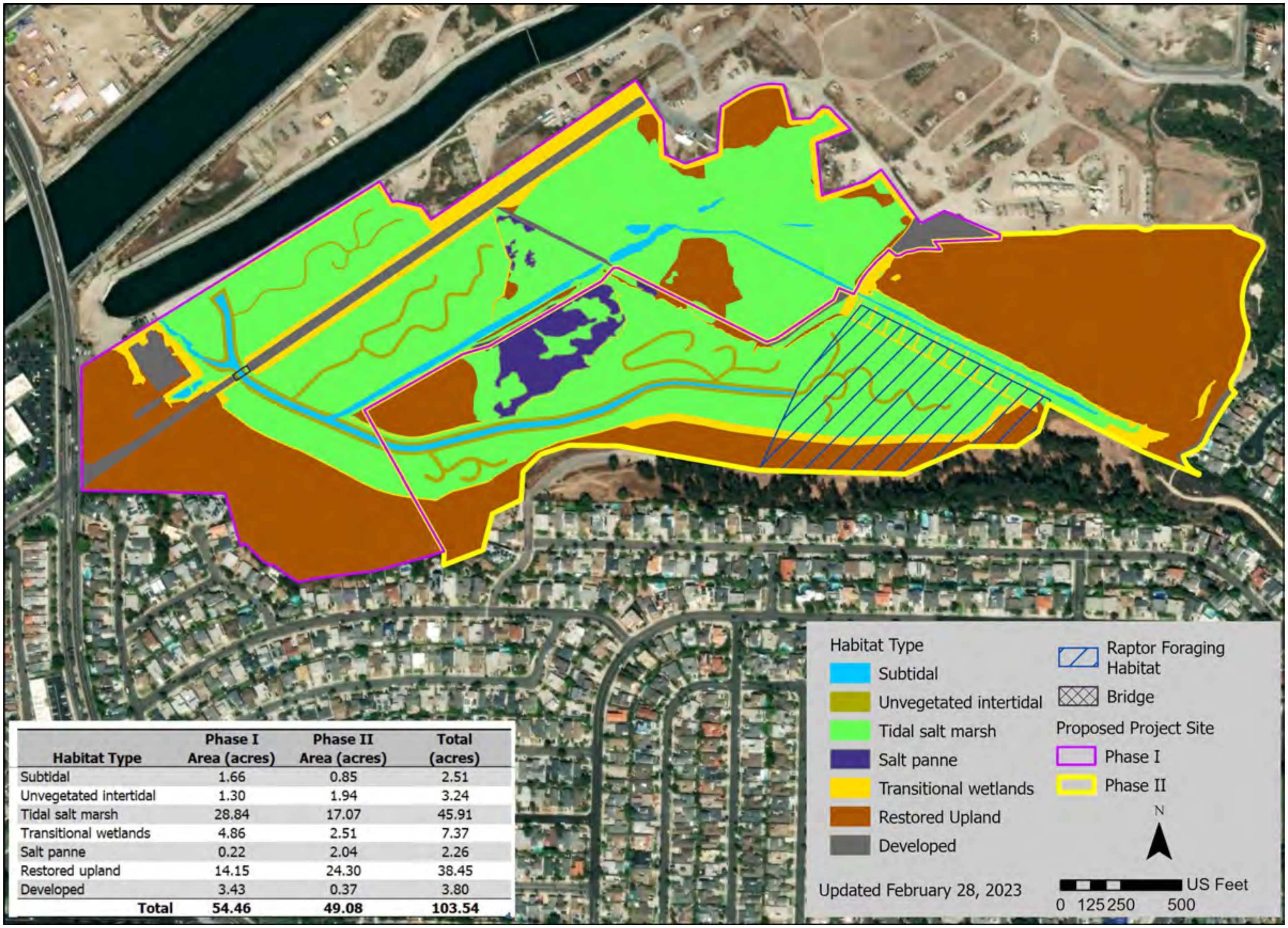
The plant communities anticipated to be established within the Phase 2 area include southern coastal salt marsh, coastal sage scrub, mulefat scrub, and southern dune scrub. These plant communities have the potential to support a wide variety of special status wildlife including Belding's savannah sparrow, California least tern, light-footed Ridgway's Rail, least Bell's vireo, and burrowing owl.

Furthermore, a condition for the development of Heron Pointe (a previously approved residential development located outside the program boundaries south and east of the project area) involved restoration of raptor foraging habitat per Coastal Development Permit (CDP) 5-97-367-A1. The CDP Amendment Staff Report



Habitat Type	Phase I Area (acres)	Phase II Area (acres)	Total (acres)
Subtidal	1.35	0.26	1.61
Salt marsh	22.06	6.77	28.83
Salt flat	0.42	2.52	2.94
Upland	27.43	38.73	66.16
Disturbed habitat	0.00	0.05	0.05
Developed	3.20	0.75	3.95
Total	54.46	49.08	103.54

Figure 7: Existing Habitat Communities



Habitat Type	Phase I Area (acres)	Phase II Area (acres)	Total (acres)
Subtidal	1.66	0.85	2.51
Unvegetated intertidal	1.30	1.94	3.24
Tidal salt marsh	28.84	17.07	45.91
Transitional wetlands	4.86	2.51	7.37
Salt panne	0.22	2.04	2.26
Restored upland	14.15	24.30	38.45
Developed	3.43	0.37	3.80
Total	**54.46**	**49.08**	**103.54**

Figure 8: Proposed Habitat Communities

(filed on September 12, 2000) requires the creation of 9.2 acres of suitable raptor foraging habitat to support various bird species that nest and/or forage in the South Area and within Gum Grove Park. Figure 8 shows the approximate location of the raptor foraging area, which overlaps multiple habitat types known to support foraging activities for a variety of raptor species including, but not limited to, harrier hawk, American kestrel, red-tailed hawk, red-shouldered hawk, cooper's hawk, and white-tailed kite.

A summary of the existing conditions, proposed restoration (both Phases I and II) and total proposed restoration is included in Table 2.

Table 2: Pre- and Post-Restoration Habitats and Acreages

Habitat Type	Existing Conditions	Phase 1 Proposed Restoration	Phase 2 Proposed Restoration	Total Proposed Restoration
Wetlands[a]	33.38	36.88	24.41	61.29
Subtidal	1.61	1.66	0.85	2.51
Unvegetated Intertidal	---	1.30	1.94	3.24
Transitional zone	---	4.86	2.51	7.37
Salt marsh	28.83	---	---	---
Tidal salt marsh	---	28.84	17.07	45.91
Salt flat/panne	2.94	0.22	2.04	2.26
Uplands	66.16	14.15	24.30	38.45
Non-native upland	66.16	---	---	---
Restored upland	---	14.15	24.30	38.45
Non-Natural	4.00	3.43	0.37	3.80
Disturbed habitat	0.05	---	---	---
Developed (e.g., berms, road, State Lands pads) impervious surfaces)	3.95	3.43	0.37	3.80
Total[b]	**103.54**	**54.46**	**49.08**	**103.54**

[a] These habitat acreages may or may not be jurisdictional wetlands, but they have plants and/or hydrology that is indicative of wetlands.
[b] Acreages do not include the Los Alamitos Pump Station site or the Los Alamitos Retarding Basin site. Acreages presented here assume the construction of an earthen berm. (Source: Moffatt & Nichol internal work product).

Hydrology and Grading

Marsh Plain Grading

Soil would be removed in focused areas to restore tidal wetlands near the Hellman Channel with transitional habitats between the wetlands and the new berm to be constructed along the Hellman Retained site boundary and the surrounding uplands along the southern and western boundaries. Areas of existing high-functioning wetland and transition habitat will be avoided. The soil removed would be used to construct the new berm, raise 1st Street, and be used as fill in the designated upland fill/stockpile areas. Fill material placed in the stockpile areas could eventually be used as material for thin layer sediment augmentation or for use in future projects that tier from this program. Existing road and high elevations ranging from 5.5 to 11.5 NGVD (or 8 to 14 feet mean lower low water, or MLLW) on the South LCWA site would be graded down to marsh plain elevation. The marsh plain will not be graded with a gradual slope and will include uneven terrain with high and low spots to replicate a more natural surface condition, such as that which exists at Steamshovel Slough and the wetlands at the Seal Beach Naval Weapons station.

In Phase 2, the existing high elevations along the south edge of the Haynes Cooling Channel on the South LCWA site would be lowered to allow sheet flow over the marsh plain and into the Project Area. This same approach was taken at Brookhurst Marsh in Huntington Beach Wetlands and it has functioned successfully.

Perimeter Berm

A perimeter earthen berm will be constructed in Phase 1 to maintain protection of the Hellman Retained site (Hellman site) from seasonally high tide levels and storm events (Figure 9). Soil excavated from the tidal channels or marsh plain grading would be used to construct the berm (approximately 6,100 cy would be required).

The berm elevation would be set to +7.5 feet NGVD (+10 feet NAVD), or roughly 4 feet above the marsh plain, to allow for higher water levels while maintaining the existing level of inundation protection for the Hellman Retained site. The earthen berm will be constructed with a top width of 6 feet to accommodate an informal and narrow access path for maintenance and a public access trail, and side slopes of 3:1 horizontal to vertical (H:V) down to the marsh and Hellman Retained site.

It will also be constructed to be resilient to damage during an earthquake. The berm will be constructed by over-excavating the soils under the berm footprint and backfilling the excavated area with finer-grained soils such as surplus marsh soils containing silts and clays, and then compacting the new fill in lifts as a foundation with more stability than the underlying soils. New lifts can be added over the foundation and be built upward to increase the elevation of the berm to the desired final target, with each lift being compacted to a high-density condition such as 95%. The final berm is a compacted and stable earthen feature that can withstand earthshaking, fault rupture, differential hydraulic head during high water, loads on the crest from small vehicles, and potentially other forces that may impinge upon it over time.

Raised Road

An additional berm would be constructed to raise the existing 1st Street. Raising 1st Street will keep flood waters contained within the marsh plain and adjacent habitat areas and will maintain the existing access easement for the Hellman Retained site. The road berm would be constructed with a top width of 30 feet and side slopes of 3:1 H:V down to the marsh on either side. Road construction will follow all engineering conventions required to prevent or minimize damage that could be incurred during an earthquake such as an improved foundation from the existing condition and compaction of fill to remain structurally stable during a seismic event.

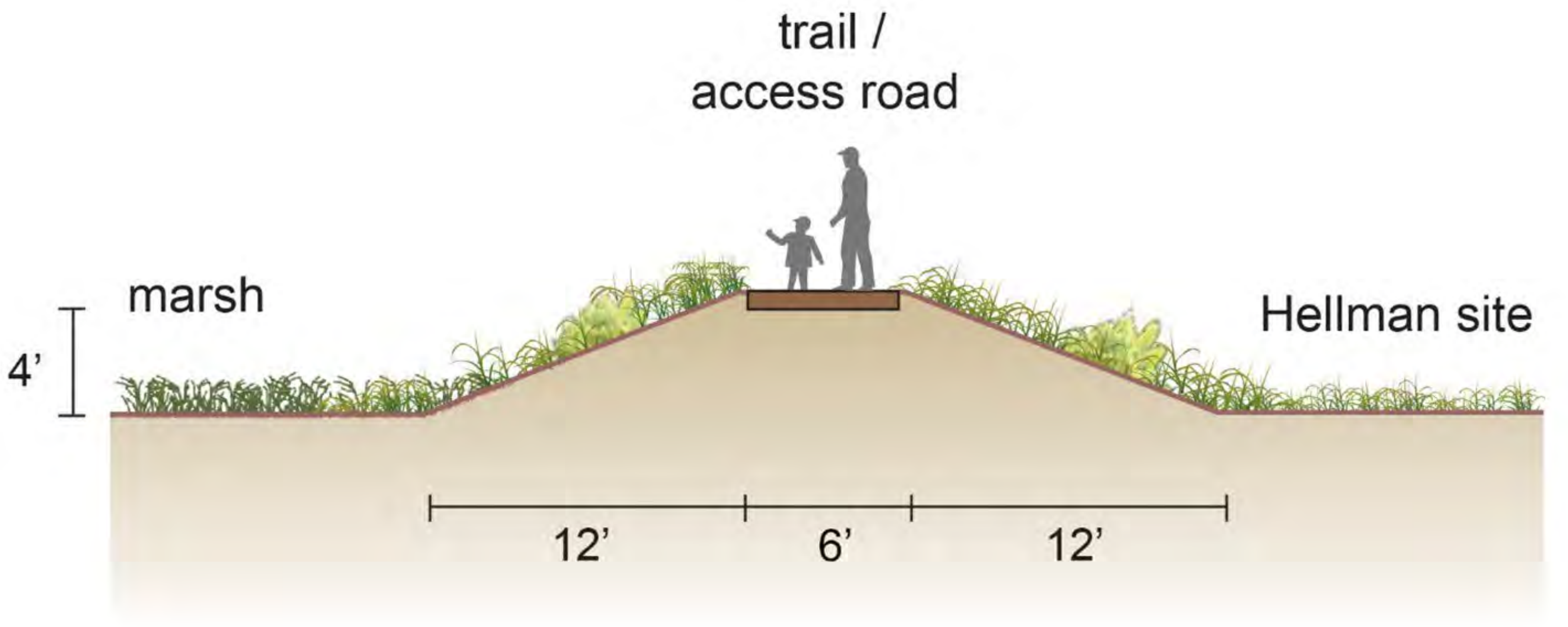
Tidal Channels

In Phase 1, new tidal channels would be excavated off the Hellman Channel on the South LCWA site to create a sinuous and branching network of tidal channels through the wetlands. The existing channel would connect to the existing San Gabriel River culvert and would continue to be subtidal. The smaller channels throughout the rest of the marsh would be intertidal and would drain at low tide. The larger channels would branch into smaller distributary channels.

In Phase 2, a big channel with shorter, narrower feeder channels would be excavated to connect the existing main channel to the Haynes Cooling Channel. The existing culvert and channel connection would remain.

Water-Control Structures

In Phase 1, two of the existing culverts along the Hellman Channel would be improved to enhance tidal connection to the southern and eastern portions of the South LCWA site. The existing culvert under 1st Street would be improved or replaced with a much larger culvert or a short bridge once the road is raised. The existing culvert connecting the main channel to the San Gabriel River would be cleaned out and the flap gate on the culvert retained in its existing condition. The foundations of the bridge-type structure will be constructed to seismic engineering standards (extended to a sufficient depth to be embedded within competent material or other approaches such as spread footings on pre-compacted foundation soils) to prevent damage or instability during a seismic event.



SOURCE: LCWA 2020

Figure 9: Artistic Rendering Berm

Additionally, two culverts currently running under the existing dirt access road will be removed and the connections will be completely cleared and converted to open channels during Phases 1 and 2. The culvert near 1st Street is removed in Phase 1, and the culvert farthest east is removed in Phase 2 because it is needed for construction access purposes.

Flood Risk and Stormwater Management

Perimeter Berm

To increase tidal flows to the site, the existing culvert connecting the South LCWA site to the San Gabriel River would be cleaned. The existing flap gate on the culvert will remain as it does not retard flows due to its high porosity from corrosion. To prevent flooding of the Hellman Retained site, a perimeter berm would be constructed along the Hellman Retained site and South LCWA site boundary and tied into areas of high ground to maintain the existing level of flood risk protection. Once the berm is established during Phase 1, flooding will not be anticipated (and no improvements during Phase 2 will be needed).

Stormwater Management

In Phase 2 a new stormwater basin or bioswale would be constructed to function as a water quality treatment measure for the stormwater runoff from the high ground east of the site.

Public Access and Visitor Facilities

Phases 1 and 2 both will develop and improve public access, recreation, and interpretative opportunities within the Project site.

Stewardship Site and Parking

A Stewardship Site (not a physical structure, rather a site that offers stewardship opportunities, including interpretive signage, shade, equipment storage, and seating where volunteers can gather before and after stewardship program events) may be placed on the existing raised building pad on the State Lands Commission Parcel. Parking would be provided along 1st Street adjacent to the Stewardship Site. Phase 1 will create a trail connection from the San Gabriel River in the west through the State Lands Parcel and South LCWA site ending just short of Avalon Drive near Gum Grove Park, and Phase 2 will extend and finalize the trail connection to Gum Grove Park, through Gum Grove Park and connect with the Hellman Ranch Trailhead on the east.

Trails and Overlooks

The southern portion of the site will preserve an existing trail during Phase 1. A new trail will be constructed through the restored upland habitat on the former landfill site on the South LCWA site in Phase 2. The trail would connect Gum Grove Park to the existing San Gabriel River Trail, fishing area, and trails on the Isthmus area. Initially, this trail would be restricted to docent-led tours until habitat areas are established and a management plan is approved. A viewpoint would be constructed overlooking the marsh.

A new restricted trail will be constructed along the top of the new perimeter berm, connecting 1st Street in the west and Heron Point Cultural Trail in the east. A viewpoint would be constructed along the new berm. This trail will be restricted to docent-led tours and maintenance access.

The existing fishing area at the Haynes Cooling Channel will be unaffected by this project.

Infrastructure and Utility Modification

In Phase 1, the existing road (1st Street) through the marsh will be raised on a berm to move it out of the restored marsh floodplain. The City of Seal Beach is planning to sleeve the water line within the road, which could be done at the same time as the road upgrade but may proceed in advance of that. If the water line project moves forward before road improvement, the waterline will be protected in place and the roadway work done alongside and away from the water line. The utility poles supporting the power lines along the road may need to be improved (e.g., relocated, heightened) as part of the raising of the road. Preferably, the power lines could be replaced underground pending agreement with Southern California Edison.

2.10.3 Implementation and Restoration Process

Implementation would include clearing and grubbing, grading and soil transport across and off- site, soil remediation, berm and breaching, revegetation, irrigation, construction of flood risk and stormwater management facilities, access roads/trails, the Stewardship Site, and utility modifications.

Schedule

Phase 1 will require approximately 18 months to construct, and Phase 2 may take approximately 9 to 12 months. Phases 1 and 2 construction will both require work to be performed during a portion of a Belding's savannah sparrow breeding season. Multiple years are anticipated between each phase. Phase 1 could start as early as 2024 pending permitting and secured funding, while Phase 2 would not start until after 2029 when the Haynes Cooling Channel is no longer needed.

Earthwork Quantity Estimates

Table 3 summarizes the earthwork quantity estimates for the Project in the near term and for the entire project (including Phases 1 and 2). The total cut and fill is estimated to be 82,000 cy for Phase 1; the total cut and fill is estimated to be 400 cy fill and 176,000 cy of excess material for Phase 2. Berm dimensions may be refined during final design as needed. The final volume of fill placement for berm construction would depend on the final design and the actual conditions during restoration (e.g., the compatibility of excavated soils), and will be reflected in the regulatory permits.

Table 3: Approximate Earthwork Soil Volume for Phases 1 and 2

Feature/Action	Cut Quantity (cy)	Fill Quantity (cy)	Fill at Upland Areas (cy)
Perimeter Berm	0	6,100	0
Marsh Grading (avoiding high-functioning marsh habitat)	Ph 1 = 97,000 Ph 2 = 177,000	Ph 1 = 15,000 Ph 2 = 400	Ph1 = 82,000 to Area 18 Ph 2 = 118,000 to Area 18 And 58,600 to Former City Landfill Area

Excavation in the South LCWA site to lower the area to marsh plain is expected to generate approximately 258,600 cy of surplus soil, depending on final marsh plain grading. The extra material generated from the South LCWA site could be stockpiled for the long term when the site may need material to elevate habitat for sea level rise or for use in other future projects that tier from the PEIR. The existing assumptions limit the fill quantity that can be placed on the site to be 283,000 cy, so is sufficient capacity to keep surplus material on-site. The design will seek to balance cut and fill as much as possible on-site.

Stockpiling and Excess Fill Placement

Soil excavated from the South LCWA site will be stockpiled on the eastern portion of that site, with some additional material being placed on the southern portion of the site (landfill site). The PEIR identified that other portions of the Los Cerritos Wetlands Complex may be short on fill material and emphasized the benefits of stockpiling material for future use.

Implementation Methods

Earthwork and Soil Transport

Much of the proposed Project's earthwork would be accomplished by traditional land-based equipment (e.g., scrapers and excavators); however, marine construction equipment may also be used. Wetland restoration earthwork would also require some special equipment and implementation methods, as high groundwater and weak soils can preclude use of traditional land equipment. Specialized equipment and construction methods that may be needed, along with more typical techniques, are described in Table 4.

Soil transport would be accomplished using scrapers and loaders, haul and dump trucks, track excavators and dozers, trucks, or other low ground pressure equipment, or by hydraulic dredge (much less likely for this project).

Berm, Berm Lowering and Breaching

No levees will be altered as part of this project. Berm lowering would only take place along the Haynes Cooling Channel where the project site borders the Haynes Cooling Channel's southern maintenance road. This work will involve a phased removal of earth to maximize the quantity that is moved prior to breaching and to limit the risk of uncontrolled breaching. The restoration contractor would be required to sequence work to prevent site inundation and, typically, would do this by leaving a small, raised area (e.g., a "check berm") until final earthwork. Final earthwork often consists of dozer or excavator operation to quickly remove the check berm and side cast earth into the site. This last work may be timed for a neap tide (i.e., least difference between low and high tides) and staged to maintain access and egress along portions of the berm. Alternatively, the contractor could use steel sheet pile coffer dams along the channel to allow for berm lowering during all tide levels.

Table 4: Equipment and Earthwork Methods for Wetland Restoration

Equipment	Earthwork Methods
Special Equipment and Methods for Wetland Restoration	
Low ground pressure equipment	Smaller, lighter equipment with large surface area tires, treads, or tracks that reduce bearing pressure.
Mats	Timber planks (thick) lashed together or rubber mats and moved by bucket-type equipment.
Long-reach excavator	Track or wheel mounted excavator with a long arm and small bucket to allow extended reach to over 40 feet.
Clamshell and dragline crane	Usually track mounted, can reach 60 feet or more. Not likely needed.
Amphibious excavator	Can float and can excavate in shallow standing water. Scarce availability.
Rotary ditcher	Excavates with rotating wheels that spray sediment across adjacent areas, resulting in narrow ditch. Typically pulled behind other equipment but can be self-propelled. Not likely needed.
Floating equipment	Cranes and excavators can be floated on barges for both transport and operation. Equipment can be trucked in and assembled to work in land-locked water bodies. Not likely needed.
Hydraulic dredge	A water and sediment mixture can be excavated and pumped. Not likely needed.
More Common Construction Equipment	
Grader	Sets elevations of topography
Truck	Transports material over the site and on or off site as needed
Loader	Carries material from one portion of the site to another within earthwork areas
Backhoe	Excavates material and can also carry it over the site within earthwork areas
Excavator	Excavates material and places into a stockpile for dozers and loaders to process.
Bulldozer	Scrapes the surface and pushes material to form a desired configuration.
Generator Set	Powers stationary objects such as lights, etc.
Drill Rig	Drills into the site to either create holes or retrieve sediment samples
Forklift	Carries materials over the site typically out of earthwork areas
Pile Driver	Drives piles into the ground for foundations of bridges, etc.
Delivery Trucks	Deliver materials to the site and potentially haul materials off-site

Breaching would also be phased, similar to berm lowering. Breaching usually is accomplished by two long-reach excavators working on the lowered berm on either side of the breach to be excavated. At first, earth would be loaded onto trucks and taken elsewhere. Once the berm section is reduced to the point of incipient breaching at the next high tide, the operation usually shifts into a high production rate mode with excavated material sidecast. Often, other excavators and low-ground pressure dozers rehandle the sidecast earth and displace it farther away from the breach, thereby limiting the height of the sidecast and maximizing the excavation rate. The work continues until the breach is excavated or the tides approach the berm surface.

Construction Period Berm Stability

Berm stability would be addressed by staged construction with geotechnical recommendations. Berm construction often requires a phased construction to compensate for settlement and to avoid overloading the subgrade and causing shear failure (e.g., sliding failure) and mass movements. The increased weight of an earthen berm typically would result in consolidation of underlying soils and settlement. The increased weight also would increase the shear stresses in the foundation soils and can cause shear failure and deformation and compromise the berm construction. This can be solved by over-excavating the soils under the berm footprint and backfilling the excavated area with finer-grained soils such as surplus marsh soils, and then compacting the new fill in lifts as a foundation with more stability than the underlying soils. New lifts are added, compacted, and built upward to the target elevation.

Off-Site Soil Export

In the proposed project, some excavated soil could be exported from the site. There are four options for off-site soil export and disposal:

1. Export via trucks with disposal at local landfills, the most likely of which could include Scholl Canyon Landfill in the City of Glendale, Frank R Bowerman Landfill in Irvine, and/or Olinda Alpha Landfill in Brea. This is the primary offsite material disposal option for this project.
2. Export via trucks with disposal at a more distant landfill for material that is considered contaminated and therefore needs to be disposed at a Class I landfill, such as Kettleman Landfill in Kettleman City within the Central Valley. This approach is not anticipated to be necessary per the geotechnical engineer for the project (Anchor QEA, personal communication with Chris Webb on March 3, 2023).
3. Export via barge to the Port of Long Beach or Port of Los Angeles, transfer to trucks for upland disposal at local landfills (this is not proposed as part of this project); and/or
4. Export via barge to an off-shore disposal location, potentially including the Los Angeles ocean disposal site off the coast from San Pedro (LA-2) or the Newport Bay ocean disposal site off the coast from Newport Beach (LA-3), each of which is managed by the United States Environmental Protection Agency (USEPA). This is also not proposed as part of this project.

Clearing and Grubbing

Vegetation would be biologically monitored, cleared, and grubbed prior to grading. Native plants and seeds/cuttings may be salvaged and reused for revegetation of restored areas. Invasive non-native plants would be stockpiled on site and treated (e.g., composted). If possible, the preferred approach would be to bury non-native plant material in upland fill areas at a depth below which the non-native vegetation or seedbank could reestablish. Non-native plant material may also be exported and disposed of off-site as described above (e.g., Option 1).

Non-native Plant Material Treatment

After grading, non-native plants would be removed prior to and concurrent with revegetation to ensure native habitat enhancement. The goal is to remove all invasive non-native plant species. Specifically, invasive non-native species populations designated as “High” by California Invasive Plant Council would be initially targeted for removal. If other invasive non-native plant species listed as having a “Moderate” or “Limited’ impact by the California Invasive Plant Council are present, they would be removed if, based on the California Department of Fish and Wildlife (CDFW) review, they are negatively affecting habitat and/or restoration efforts at the site.

Recommendations contained in the California Invasive Plant Council Weed Workers Handbook and website (2014) and at the U.S. Department of Agriculture (http://plants.usda.gov/java/noxiousDriver) would be followed. Mechanical removal is the preferred method of removing invasive species; accordingly, invasive plant species removal would occur using mechanical methods to the maximum extent possible. This method of removal would be used in areas where the associated ground disturbance would not adversely affect sensitive wildlife species. Plant materials that are removed would be removed entirely and disposed of carefully, including stems and all root fragments, to prevent regeneration or spread. In general, removal would be performed during the late winter or early spring when soils are moist enough to remove entire plants without breaking the roots. Invasive species would be removed before the species set seed. When this is not feasible, seed heads would be removed from plants prior to removing the stems and roots. Seed heads of invasive species would be placed in plastic trash bags and removed from the site for proper disposal.

If mechanical or hand removal methods are tried and found to be ineffective after two years of repeated treatment, or the problem is too widespread for hand removal to be practical, then chemical controls would be implemented as described below. For some species, particularly woody species, or large-biomass species (e.g., pampas grass), mowers, chainsaws, or other handheld equipment may be used if the eradication method would not adversely affect sensitive wildlife species.

Invasive plant materials that are removed would be disposed of carefully to prevent regeneration or spread. For plants that are not in seed, the material could be left on site to decompose. For any plants with seed, they would be removed from the site in a manner that does not disperse seed (in plastic bags for example) and disposed of at an off-site disposal area.

Herbicides would be used in accordance with manufacturers’ application guidelines by a licensed applicator for specific species when manual and mechanical removal methods are not effective and may be used in conjunction with physical removal methods for species that are known to be difficult to control. The program’s restoration contractor would prepare an herbicide treatment plan for each treated invasive species, including such information as the type of herbicide to be used, application rates, and timing of treatment. Herbicides would be applied using a localized spot-treatment method and applied in a manner that would eliminate or reduce drift onto native plants. Herbicides would be applied to cut stumps for larger plants or large clumps of herbaceous non-native species that cannot effectively be removed. In all such cases, they would be used only to the extent necessary to support native plant establishment and limit adverse impacts to sensitive species and habitats. For sites within 100 feet of a wetland or stream, herbicides approved by USEPA for use near wetlands and streams, such as the glyphosate-based Rodeo® or the imazapyr-based Habitat® would be used. Herbicides would not be used when rain is predicted within 24 hours after application or if wind conditions are not appropriate for application, and herbicide application would not resume until 72 hours after rain. Herbicide rates would vary depending on the size of the plants treated. Any use of herbicides would also be in full accordance with any applicable rules and restrictions.

Revegetation of Graded and Disturbed Areas

Restoration of target habitats will require active revegetation, including irrigation, soil conditioning and amendments, and weed control. Topsoil management during grading will be important to monitor for the suitability of target vegetation. For instance, upland habitats (e.g., coastal sage scrub, berm plantings) will require well-draining soils with a low salt content. Soils could be amended by adding gypsum or leached of salts through irrigation. High-clay soils that are not compacted will be used for salt marsh and other wetland habitats.

Soils would be prepared before plant establishment. Soil preparation would include proper drainage, nutrient and mycorrhizae content, and erosion control. Topsoils in all areas to be planted will be tested prior to being placed to assess whether they would support the target plant community. Soils that are not appropriate for vegetation establishment could then be placed elsewhere, buried, or amended as feasible. Typical soil amendments may include compost, mycorrhizae, and fertilizer. Excess fertilizer application can favor the establishment of generalist non-native plant species over locally adapted native plant species; however, a minimal amount of fertilizer may be necessary to establish native plants if soil quality is found to be particularly poor and low in nutrients. If found to be necessary, amendments would be tilled into the upper 8 to 12 inches of soil.

All seed and plant material will be collected from local sources, preferably from Los Cerritos Wetlands when possible. Seeds will not be collected from other restoration sites, only natural populations. Potential sites for seed collection could include, but are not limited to: Palos Verdes Peninsula, Bolsa Chica Ecological Reserve, Upper Newport Bay Ecological Reserve, Huntington Beach Wetlands, and Seal Beach National Wildlife Refuge. Seeds would be collected by hand during the appropriate season for each species and would be propagated at a local native plant nursery and/or the on-site nursery adjacent to Zedler Marsh.

A temporary drip or spray irrigation system would be installed to provide water to the plantings during the establishment period following plant or seed installation.

<u>Revegetation of Wetland and Transitional Areas</u>

The restored salt marsh would be re-vegetated through a combination of seeding and installation of nursery stock. Restoration would include soil amendments (to alter soil texture and nutrients), irrigation, and weed control under an adaptive management approach.

Revegetation activities in non-tidal wetlands and transitional areas would include removing or controlling invasive plant species and seeding/planting native plant species. Invasive non-native plant species would be removed or treated according to the protocols described in *Non-native Plant Material Treatment*.

In tidal wetlands, irrigation would be used to lower soil salinity and aid establishment. Regular irrigation would be required during the first spring and first summer after planting. After the plants are established, irrigation would no longer be required. Irrigation water sources are described below.

<u>Upland Areas</u>

Upland and transition zone plants would be irrigated in the wet season as needed to supplement natural rainfall. Irrigation in uplands is anticipated to be needed for the first one or two years with the precise duration, frequency, and amount of water used dependent upon annual precipitation, temperatures, and vegetation type.

<u>Water Sources for Restoration and Irrigation</u>

A water connection and meter will be installed along the City of Seal Beach's main waterline that traverses the project area.

Investigate and Remediate Contamination Associated with Oil Sumps

Contaminated soils generated by drilling were historically left on-site in pits, or sumps, next to oil wells to collect and circulate drilling muds. There are a total of twelve sumps currently on-site. The project investigated potential oil contamination in near-surface soils (down to 6 feet below ground surface) at each sump site and made determinations about their handling. Figure 10 shows the sumps on-site and indicates which are to be removed and those to remain. Five sumps that exist on-site will require removal. They are numbers 1, 2, 3, 7 and 11. It is assumed they are entirely removed to 6 feet below grade with 2:1 side slopes within their entire outlines. The contractor will stockpile the material on-site, test it for contamination levels, and then haul it off

Figure 10: Sump Locations

to an appropriate landfill (anticipated municipal landfill) that will accept the soils with relatively low levels of contamination. The existing constituents and their respective concentrations indicate the material can be placed within a standard municipal landfill as determined by the soils engineer (Anchor QEA, Personal Communication, 2023). The final surface will also be sampled and tested to confirm no remaining contamination after sump removal. Surplus sediment from grading will be used to backfill the excavation footprints of these sumps.

Seven other sumps on-site do not require removal due to the relatively low level of contamination in each (as compared to federal government standards as defined below). The sumps to remain are numbers 4, 5, 6, 8, 9, 10 and 12. These sumps were assumed acceptable to remain on-site because any constituents were either below the Effects Range Medium (ERM) and Effects Range Low (ERL) criterion established by the Federal Government (Long, et.al. 1995), or were similar to levels as natural background concentrations and could be buried by one foot of clean soils as determined by the team's contamination expert Anchor QEA (Personal Communication 2023). Table 5 shows the sumps, their constituents, and their fate.

Table 5: Proposed Sediment Management Actions

Sump	Proposed Sediment Management Action	Summary of Results	Rationale for Fate Decision
1	Remove for landfill disposal (at least top 6" and confirmatory testing)	4,4'-DDT, chlordane, and dieldrin exceeds the ERM at the surface	Contaminated and surface is proposed to be lowered
2	Remove for landfill disposal (at least top 6" and confirmatory testing)	As, Cu, Pb, and Ni exceed the ERL at the surface and at depth	Contaminated and surface is proposed to be lowered
3	Remove for landfill disposal (at least top 6" and confirmatory testing)	As, Cu, Ni, PAHs exceed the ERL at the surface	Contaminated and surface is proposed to be lowered
4	Remains on Site	All levels are below the ERL	Site is to be buried by proposed slopes and berms
5	Remains on Site	Cu, Ni, PAHs exceed the ERL but are consistent with natural background levels; Pb exceeds the ERM below any surface proposed modification	Site is within a sensitive habitat area to be retained
6	Remains on Site	Ni exceeds the ERL but the not the ERM	Clean material at the surface
7	Remove for landfill disposal (at least top 6" and confirmatory testing)	As, Cu, Ni exceeds the ERL	Contaminated and surface is proposed to be lowered
8	Remains on Site with 12" cover of clean soil placed over it	As, Cu, Pb, Ni, 4,4'-DDE exceeds the ERL but not the ERM; 4,4'-DDT exceeds the ERM at the surface and should be covered	Site is within a sensitive habitat area to be retained
9	Remains on Site with 12" cover of clean soil placed over it	As, Pb, Ni, 4,4'-DDT exceeds the ERL at the surface and should be covered	Site is within a sensitive habitat area to be retained
10	Remains on Site	As, Cu, Pb, Ni, PAHs exceed the ERL but not the ERM	Site is within a sensitive habitat area to be retained
11	Remove for landfill disposal (at least top 6" and confirmatory testing)	As, Cu, Pb, Hg, Ni, Zn exceeds the ERL (both, except Cu only at the surface); Hg exceeds the ERM at the surface	Contaminated sufficiently to cause a concern
12	Remains on Site	Cu and Ni exceeds the ERL at the subsurface well below any proposed modifications	Site is to be buried by a berm

2.10.4 Monitoring and Adaptive Management

Adaptive management is an iterative process of decision making in the face of uncertainty, with the aim of reducing uncertainty over time through monitoring. Since ecological restoration involves many variables, especially in systems as large and complex as the Los Cerritos Wetlands, there is uncertainty in how the project would perform. Designing and implementing this project using an adaptive management approach will lead to better outcomes and help the project meet its goals.

The adaptive management approach relies on monitoring data to regularly assess progress of the site towards achieving the project goals. If the data shows the project is off-track, certain actions are taken (e.g., tweaking, adjusting techniques and/or later designs) to achieve the project goals.

Small-scale experiments and pilot projects will be implemented that seek to address gaps in scientific knowledge regarding habitat, wildlife, and restoration and enhancement activities. Experimental test plots are incorporated into Phase 2 of this project for this purpose. Results of these experiments will be used to inform adaptive management for the proposed program and potentially for other restoration sites in the region and beyond.

Monitoring Program

The goal of monitoring is to inform the adaptive management process and assess progress toward meeting performance criteria. Careful restoration planning, including identification of important data gaps and collection of pre-project data, would help in setting appropriate performance criteria. Performance criteria for the project may be set in a variety of ways, but typically include input from regulatory and permitting agencies. Suitable reference sites, such as Steamshovel Slough or the Seal Beach National Wildlife Refuge, may also be appropriate for informing performance criteria.

Restoration sites evolve and mature over timelines that are longer than typical monitoring periods. Monitoring of the site into the future would inform adaptive management, provide important data for informing future phases of restoration at the site, and contribute to a better understanding of restoration trajectories for practitioners throughout Southern California.

Furthermore, opportunities to partner with local universities and other research institutions will be identified to implement research activities in suitable areas of the program. California State University Long Beach (CSULB) is located within 5 miles of the project site. CSULB conducts monitoring at local wetlands and may be a viable partner for this project.

Monitoring would focus on the major biotic and abiotic factors that drive habitat development and ecosystem function—in particular, those factors that can be manipulated and managed or those parameters that can be used to gauge habitat development and ecosystem function. Furthermore, the monitoring program would include the requirements presented in the PEIR Mitigation Monitoring and Reporting Program (MMRP) and any potential permit conditions. Protocols for collection and analyses of monitoring data would be developed for the level of accuracy necessary to assess achievement of performance criteria and inform adaptive management.

Adaptive Management

Successful adaptive management would first require baseline monitoring in order to fill data gaps and refine the restoration design. Consistent with the U.S. Department of Interior Technical Guide for Adaptive Management (2009), an adaptive management plan would be prepared prior to project implementation to track restoration success relative to performance criteria and determine when criteria have been met, and then restoration would proceed to its next phase.

Performance criteria would be set for both biotic (e.g., native and non-native plant cover, wildlife use, etc.) and abiotic (e.g., hydrology, soil conditions, water quality, etc.) factors, and monitoring data related to these factors would inform adaptive management.

Triggers for any remedial adaptive management actions would be based on significant deviation from, or a lack of progress toward, achieving the performance criteria outlined for each monitoring parameter, coupled with an evaluation of the trajectories of habitat development or directions of change. For many aspects of biotic community development, it may take several years for trends to become apparent, and changes in management actions should allow for sufficient time for trends to become apparent. If it is determined that progress toward performance criteria is not measurable, or that the habitat appears to be progressing toward an alternative state, the project team would evaluate the cause of the problem and the trajectory of habitat development and determine whether intervention would be desirable.

In some cases, habitat development would be on track to meet long-term performance criteria and no remedial actions would be warranted. In other cases, it may be determined that additional monitoring parameters are necessary to determine the cause of poor performance. Once the causes of poor performance are identified, appropriate changes in management would be investigated and implemented. Any modifications implemented as a result of this process would be subject to quantitative monitoring and analysis specifically designed to evaluate the effectiveness of such modifications or changes in management.

2.10.5 Operation and Maintenance Activities

Habitats and Vegetation

The restored areas would be planted or seeded after earthmoving finishes. Vegetation maintenance, irrigation, and weeding would be required for all habitats after restoration. Removal of invasive species would occur on site in perpetuity through the combination of a volunteer program and long-term management of the site using methods similar to those used during implementation.

Trash Removal Efforts

Trash removal would occur as needed within the restored wetlands and uplands by hand. Trash removal would be attempted on a regular quarterly basis, and episodically after storms or high wind events that can deliver trash to the site.

Berm Maintenance

The two perimeter berms would require limited maintenance, such as inspections annually and after significant storm events (i.e., 10-year event or greater) and earthquakes. The berms would also require periodic re-surfacing of the access road and trail with decomposed granite, replacement or repair of installed fencing, replacement or repair of any overlook or educational equipment placed along the walking trail, trash collection and graffiti removal, and any other vandalism repair. Minor erosion prevention measures may be needed for the berms periodically.

Water-Control Structures

The existing siphon from Alamitos Bay to the Haynes Cooling Channel is owned and operated by LADWP. Once the Haynes Cooling Channel is decommissioned, it could be transferred to the LCWA, in which case, the LCWA would be responsible for operation and maintenance. This would likely include regular inspections and general maintenance. Long-term management of sediment and fouling organisms may also be required to maintain tidal flow.

For any new water-control structures, annual inspection and potential maintenance may be needed to ensure proper operation, similar to current operation and maintenance of the existing structures. Obstructions would be removed when necessary. If sedimentation in the channel limits water conveyance, a low ground pressure excavator would be used to remove the sediment. A temporary access route, 35-feet-wide, would be created to access any areas of sediment build up within the channels using mats to provide equipment access. Since the channels will be sized based on their proposed tidal conveyance, sediment build up in the channels is not expected.

Stormwater Management Features

Maintenance of bioswales is expected to be limited to non-native vegetation removal and pruning as needed. Non-native plant removal would include work with hand tools such as shovels, rakes, hatchets, wheelbarrows, and small trucks for hauling of equipment and spoils. It is expected that these efforts would occur at least once a year for the lifespan of the project.

Hours of Operation

Hours of operation for public use of the new parking, trails, and the Stewardship Site would be from sunrise to sunset and may be limited in duration. Parking areas would be closed after hours.

2.11 Other Permits and Approvals

This IS/MND is intended to be an informational document for the Los Cerritos Wetlands Authority, to review and use when approving subsequent discretionary actions for this Project. LCWA intends to use this document to consider implementation of the proposed Southern Los Cerritos Wetlands Restoration Project. As the Lead Agency, LCWA may use this document to adopt the proposed Project and make findings regarding identified impacts. As this is an individual restoration project, the LCWA is conducting a CEQA analysis per the process outlined in the PEIR.

Restoration activities associated with this more detailed design requires discretionary approval from multiple agencies. These agencies and their permits/approvals are described in Table 6. It provides a potential, but not exhaustive, list of other responsible agencies, trustee agencies, and/or entities that may rely upon this IS/MND to grant subsequent discretionary approvals and/or permits, where applicable, related to Project implementation. The specific permits/approvals necessary depend on the nature and location of the activity.

LCWA will work closely with all the approving agencies to maintain communication and coordination throughout the implementation of program activities and receipt of the various permits/approvals.

Table 6: Other Permits and Approvals

Agency/Entity	Permit/Approval	Description	Timing
US Army Corps of Engineers	Clean Water Act Section 404 Permit, Rivers and Harbors Act Sections 9 and 10 Permits, Clean Water Act	Impacts to wetlands/Waters of the US	Prior to construction
US Fish and Wildlife Service and National Marine Fisheries Service	Endangered Species Act Section 7 Consultation	Federal threatened and endangered species	Prior to construction
California Department of Fish and Wildlife	Section 1602 Streambed Alteration Agreement, California Endangered Species Act	- Streambed alteration agreement - State threatened and endangered species	Prior to construction
California State Lands Commission	New or amended lease agreement	Encroachment onto State Lands	Prior to construction
California Coastal Commission	Coastal Development Permit	Development within	Prior to construction

Agency/Entity	Permit/Approval	Description	Timing
	(CDP) in City of Seal Beach	Coastal Zone	
South Coast Air Quality Management District	Permits to Construct and Operate	Air quality	Prior to construction
Santa Ana/Los Angeles Regional Water Quality Control Board	Section 401 Permit, National Pollution Discharge Elimination System, Stormwater Pollution Prevention Plan, permits to construct and operate	Impacts to Waters of the State	Prior to construction
Los Angeles County Department of Public Works and Flood Control District	Encroachment Permits (if needed)	Encroachment to flood control facilities (Haynes Cooling Channel)	Prior to construction
Orange County Public Works	Encroachment Permits (if needed)	Encroachment	Prior to construction
City of Seal Beach	Site plan review, grading permits, building permits, encroachment permits	Development within City jurisdiction	Prior to construction
City of Los Angeles Department of Water and Power	Encroachment Permits	Encroachment into DWP jurisdiction	Prior to construction
Los Cerritos Wetlands Authority	Certification of the Mitigated Negative Declaration, adoption of the Mitigation Monitoring and Reporting Plan	Documents and agreements	Prior to construction

2.12 Consultation with California Native American Tribe(s)

Tribal engagement is a significant focus for this project. This engagement has included tribal consultations, formation of a tribal advisory group specifically for this project, and development of a tribal cultural landscape study documenting the landscape and determining what features contribute to its significance and how those features can be protected, enhanced, and restored; this study will help guide the restoration design and the work of the Tribal Advisory Group.

The Los Cerritos Wetlands Authority initiated formal AB52 consultation requests on October 18, 2022 and a second round on November 23, 2022 – November 28, 2022 based on an updated Native American Heritage Commission (NAHC) list. The 30-day consultation response period ended on December 28, 2022 for both rounds. LCWA contacted a total of 17 tribes, and four tribal entities requested formal consultation (Table 7).

Table 7: List of California Native American Tribes Contacted per AB52

Tribe	Contact Name	Contact Date	Response
Juaneño Band of Mission Indians Acjachemen Nation – Belardes	Joyce Perry	10/18/2022	Requested meeting on 12/21/2022
Santa Rosa Band of Cahuilla Indians	Lovina Redner	10/18/2022	
Gabrielino-Tongva Tribe	Linda Candelaria	10/18/2022	Requested meeting on 11/8/2022
Gabrielino Tongva Indians of California Tribal Council	Robert Dorame	10/18/2022	Requested meeting on 11/15/2022
Gabrielino/Tongva Nation	Sandonne Goad	10/18/2022	Requested meeting on 10/29/2022
Gabrieleno Band of Mission Indians – Kizh Nation	Andrew Salas	10/18/2022	
Gabrieleno/Tongva San Gabriel Band of Mission Indians	Anthony Morales	10/18/2022	
Pala Band of Mission Indians	Shasta Gaughen	10/18/2022	
Soboba Band of Luiseno Indians	Isaiah Vivanco	10/18/2022	No (10/19/2022)

Tribe	Contact Name	Contact Date	Response
Ti'at Society/Traditional Council of Pimu	Cindi Alvitre	10/18/2022	
Gabrielino Shoshone Nation	Nick Rocha	10/18/2022	
Juaneño Band of Mission Indians Acjachemen Nation 84A	Heidi Lucero	10/18/2022	
Ewiiaapaayp Band of Kumeyaay Indians	Robert Pinto	11/23/2022	
La Posta Band of Diegueno Mission Indians	Gwendolyn Parada	11/23/2022	
Mesa Grande Band of Diegueno Mission Indians	Michael Linton	11/28/2022	
Campo Band of Diegueno Mission Indians	Ralph Goff	11/28/2022	
Manzanita Band of Kumeyaay Nation	Angela Elliott Santos	11/28/2022	

A summary of AB52 Consultation is provided below:

- Gabrielino-Tongva Tribe
  - Consultation Meeting attendees:
    - Mr. Sam Dunlap (Cultural Resource Director, Gabrielino Tongva Nation)
    - Ms. Melissa Bahmanpour (Conservancy Project Development Manager, San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy)
    - Ms. Sally Gee (Conservancy Project Development Analyst II, San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy)
    - Ms. Lia Protopapadakis (Program Manager, USACE)
    - Ms. Desireé Martinez (President, Cogstone)
    - Mr. Eric Zahn (Principal Restoration Ecologist, Tidal Influence)
    - Ms. Stephanie Oslick (West Coast Director for Environmental Services, Moffatt & Nichol)
  - Video teleconference was held on 12/15/2022 from 1:00 – 1:36pm
  - Agenda included the following topics: Introductions, Tribal Remarks, CEQA Approach, Cultural Resources, Discussion of Mitigation Measures, and Next Steps and Closing
  - PowerPoint presentation was shown and sent after the meeting
  - Summary: Tribe is in favor of the project and everyone is anxious to see it be successful, fortunate to be participating in the project, everything is working smoothly to this point and the Tribe is willing to participate, would like to see photos/copy of Extended Phase 1 slides (as they go a long way when meeting with the Tribal Council) to share with Tribal Council
- Gabrielino-Tongva Indians of California
  - Consultation Meeting attendees:
    - Ms. Christina Conley (Cultural Resource Administrator, Gabrielino Tongva Indians of California)
    - Ms. Melissa Bahmanpour (Conservancy Project Development Manager, San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy)
    - Ms. Sally Gee (Conservancy Project Development Analyst II, San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy)
    - Ms. Desireé Martinez (President, Cogstone)
    - Mr. Eric Zahn (Principal Restoration Ecologist, Tidal Influence)

    - Ms. Stephanie Oslick (West Coast Director for Environmental Services, Moffatt & Nichol)
  - Video teleconference was held on 12/15/2022 from 2:00 – 2:34pm
  - Agenda included the following topics: Introductions, Tribal Remarks, CEQA Approach, Cultural Resources, Discussion of Mitigation Measures, and Next Steps and Closing
  - PowerPoint presentation was shown and sent after the meeting
  - Summary: Level of respect is appreciated, pleased to be part of the process, good team of tribal leaders to where we want to go efficiently, been clear with process, everything has been done with a lot of thought, hold on additional comments until talk discussion with Tribal leadership regarding curation of tribal cultural resources, and interested in tribal access plan
- Gabrielino-Tongva Nation
  - Consultation Meeting attendees:
    - Chairwoman Sandonne Goad (Tribal Council Chairwoman, Gabrielino/Tongva Nation)
    - Ms. Melissa Bahmanpour (Conservancy Project Development Manager, San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy)
    - Ms. Sally Gee (Conservancy Project Development Analyst II, San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy)
    - Ms. Lia Protopapadakis (Program Manager, USACE)
    - Ms. Desireé Martinez (President, Cogstone)
    - Mr. Eric Zahn (Principal Restoration Ecologist, Tidal Influence)
    - Ms. Stephanie Oslick (West Coast Director for Environmental Services, Moffatt & Nichol)
  - Video teleconference was held on 12/16/2022 from 11:15am – 12:03pm
  - Agenda included the following topics: Introductions, Tribal Remarks, CEQA Approach, Cultural Resources, Discussion of Mitigation Measures, and Next Steps and Closing
  - PowerPoint presentation was shown and sent after the meeting
  - Summary: Discussed AB-52 process and how this meeting is organized; suggested adding signs for plants with following information: symbol of use(s) (medicine, food, textile, poisonous), name (scientific, common, Tongva name of plant); curation of tribal resources; contaminants; and appreciate LCWA meeting with her.
- Juaneño Band of Mission Indians, Acjachemen Nation
  - Consultation Meeting attendees:
    - Ms. Joyce Perry (Cultural Resource Director, Juaneño Band of Mission Indians, Acjachemen Nation)
    - Ms. Melissa Bahmanpour (Conservancy Project Development Manager, San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy)
    - Ms. Sally Gee (Conservancy Project Development Analyst II, San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy)
    - Ms. Desireé Martinez (President, Cogstone)
    - Mr. Eric Zahn (Principal Restoration Ecologist, Tidal Influence)
    - Ms. Stephanie Oslick (West Coast Director for Environmental Services, Moffatt & Nichol)
  - Video teleconference was held on 1/19/2023 from 11:30am – 12:43pm
  - Agenda included the following topics: Introductions, Tribal Remarks, CEQA Approach,

Cultural Resources, Discussion of Mitigation Measures, and Next Steps and Closing

- PowerPoint presentation was shown and sent after the meeting
- Summary: Tribe is proud to be part for this project; main concern is avoidance of impacts to cultural sites/resources and Native American monitors should be present during ground disturbance; requested cultural sensitivity training for future contractors and monitors; discussed the status and importance of the Tribal Cultural Landscape Study and future curation of tribal cultural resources.

Environmental Factors Potentially Affected

All potential environmental impacts listed below are addressed in this IS. Those that are checked below have been identified as involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages for which mitigation measures have been identified to reduce the impact to less than significant.

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

2.13 Determination (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet (Appendix A) have been added to the Project. 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" 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, if the effect is a "potentially significant impact" or "potentially significant unless mitigated." 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, there WILL NOT be a significant effect in this case because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

Signature: [signature] Date: 04/05/2023

Printed Name: Mark Stanley Title: Executive Officer

3 ENVIRONMENTAL ANALYSIS

The environmental analysis provided below in Section 3.0 is patterned after the IS Checklist recommended by the CEQA Guidelines, as amended, and used by the lead agency in its environmental review process. For the environmental review undertaken as part of this IS preparation, a determination that there is a potential for significant effects indicates the need to more fully analyze the Project's impacts and to identify mitigation.

For the evaluation of potential impacts, the questions in the IS Checklist are stated and an answer is provided according to the analysis undertaken as part of this IS. The analysis considers the short-term, long-term, direct, indirect, and cumulative impacts of the Project. There are four possible responses to each question:

- *No impact.* The Project would not have any measurable environmental impact on the environment.
- *Less than significant impact.* The Project would have the potential to impact the environment, although this impact would be negligible, it would be below established thresholds that are considered to be significant and/or would be reduced to less than significant with the implementation of established plans, policies, procedures and/or regulations.
- *Less than significant with mitigation.* The Project would have the potential to generate impacts, which may be considered as a significant effect on the environment, although mitigation measures or changes to the Project's physical or operational characteristics would reduce these impacts to levels that are less than significant.
- *Potentially significant impact.* The Project could have impacts that may be considered significant and, therefore, additional analysis is required to identify mitigation measures that could reduce potentially significant impacts to less than significant levels.

The following is a discussion of potential Project impacts as identified in the Initial Study/Environmental Checklist. Explanations are provided for each item.

3.1 Aesthetics

Except as provided in Public Resources Code Section 21099, would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a 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?	☐	☐	☒	☐

a) Would the Project have a substantial adverse effect on a scenic vista?

Less Than Significant Impact. Any construction impacts to restore the wetlands and the scenic vista for the project site would be temporary, including from construction equipment that would operate in the area during this phase of the project. The project may change the view of existing scenic vistas, but the change would be positive, as the natural landscape would be restored as a result of project implementation.

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

No Impact. According to the California Department of Transportation (Caltrans) California Scenic Highway Mapping System, the closest Scenic Highway to the project site is State Route (SR) 1, or the Pacific Coast Highway (PCH). A small section of SR1 is located directly west of the project site and is currently Eligible State Scenic Highway – Not Officially Designated. Although eligible, this section of SR-1 is not a state scenic highway. There are no other Scenic Highways in Long Beach or Seal Beach. A Stewardship Site is proposed for the parcel that abuts SR-1, and that parcel is already designated Commercial Land Use by the City of Seal Beach. In addition, the views of the project site from PCH would be expected to improve as the project proposes to restore existing natural wetlands.

c) Would the Project 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 a 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?

No Impact. The project site is in an urbanized area and would not conflict with applicable zoning and plan regulations. Programs that are applicable are the City of Seal Beach General Plan and Hellman Ranch Specific Plan. The project is consistent with these regulations since they emphasize preserving the natural habitat, public access, and open space.

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

Less Than Significant Impact. The project is not expected to create any new surfaces that would increase the reflective surfaces or potential for light/glare. There may be increased lighting and windshield glare temporarily during construction and restoration activities, but public use for the project would be limited to the hours of sunrise to sunset. This would limit the need for exterior lighting and lighting along any public access points and all construction activity would be temporary in nature.

Avoidance, Minimization, and/or Mitigation Measures

Less than significant impacts to Aesthetics were identified and no additional mitigation measures are required beyond those presented in the PEIR as follows:

Mitigation Measure AES-1: Lighting Plan. Prior to issuance of a grading permit for each individual site that requires construction, a Lighting Plan for the individual site shall be developed and implemented that requires all exterior lighting to be directed downward and focused away from adjacent sensitive uses and habitats to encourage wayfinding and provide security and safety for individuals walking to and from parking areas.

Sources:

Caltrans, California Scenic Highway ArcGIS Map, https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa, accessed 10/7/2022.

Caltrans, California Scenic Highway Mapping System, https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways, accessed 10/7/2022

Los Cerritos Wetlands Authority (LCWA), 2020, Los Cerritos Wetlands Restoration Plan Draft Program EIR, Section 3.1 Aesthetics, 2/2020

Los Cerritos Wetlands Authority (LCWA), 2021, Los Cerritos Wetlands Restoration Plan, Final Program Environmental Impact Report. Prepared by ESA. Accessed 10/17/2022. Available at https://intoloscerritoswetlands.org/the-lcws-eir/

3.2 Agricultural and Forest Resources

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. – Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 agricultural zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

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

No Impact. There is no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance within the project site. The project is in an urbanized area and has no farmland as a surrounding use.

b) Would the Project conflict with existing agriculture zoning for agricultural use, or a Williamson Act contract?

No Impact. The project site is not zoned for agricultural use or subject to the Williamson Act. As such, the project would not conflict with any zoning or agricultural uses or a Williamson Act contract.

c) Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section

4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No Impact. The project site is not zoned for forest land, timberland, or timberland zoned Timberland Production. As such, the project would not conflict with any zoning or timberland uses, or any Timberland Production.

d) Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. Please refer to Response (c) above, as there will be no loss of forest land or conversion from forest to non-forest.

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

No Impact. The project would not convert Farmland to non-agricultural use or forest land to non-forest use. The project site is not adjacent to any farmland or forest lands and does not have the possibility of affecting these types of lands.

Avoidance, Minimization and/or Mitigation Measures

No significant impacts to Agricultural and Forest Resources were identified, and no mitigation measures are required.

Sources

California Department of Conservation, Division of Land Resource Protection, Farmland Mapping & Monitoring Program, http://www.conservation.ca.gov/dlrp/fmmp, accessed 10/7/22

3.3 Air Quality

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. – Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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)?	☐	☐	☒	☐

a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. The project would not conflict with any applicable air quality plans. The Final PEIR found that the only non-attained threshold for construction emissions for the larger Los Cerritos Wetlands Restoration Plan is NOx, and this project should contribute less than significant impacts for regional air quality standards, as multiple mitigation measures are already in place from the PEIR that would bring these effects down to a less than significant level. In addition, the Air Quality Study completed for the full program area analyzed 503 acres. The project site analyzed in this document has a footprint of 103.5 acres, meaning emissions for the proposed project are approximately 20.5% of the totals found in the PEIR. The anticipated number of pieces of construction equipment, the standard types of equipment, the amount of grading, the amount of remediation, and duration of construction for this project is therefore lower than what was anticipated and analyzed in the PEIR (LCWA, 2021).

As stated above, the only criteria pollutant for which the overall program area was found to exceed relevant thresholds was NOx for construction emissions only, and that it could be mitigated below the regional threshold for NOx. Specifically, Table 6 of the PEIR Air Quality Study (and incorporated into this document by reference) found that the maximum NOx emissions for construction would be 268 lbs./day, exceeding the South Coast Air Quality Management District (SCAQMD) threshold of 100 lbs./day. As the proposed project analyzes only 20.5% of the total acreage calculated for the exceedance, it is expected that the proposed project analyzed herein would emit a maximum of 54.94 lbs./day of NOx, substantially below the SCAQMD threshold and without need for mitigation. (See Appendix C).

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

Less Than Significant Impact. The South Coast Air Basin is in non-attainment of the National Ambient Air Quality Standards (NAAQS) for O3 and PM2.5 and also in non-attainment of the California Ambient Air

Quality Standards (CAAQS) for O3, PM10, and PM2.5. As discussed above, there would not be exceedances to the SCAQMD daily regional threshold for NOx or any other criteria pollutant during either construction or operational phases of the proposed project.

c) Would the Project expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. The PEIR Air Quality Study found potentially significant impacts to sensitive receptors at the program level based on SCAQMD Localized Significance Thresholds (LSTs) in Source Receptor Areas (SRAs) 4 and 18. Construction screening LSTs were used for a 5-acre area at a distance of 50 meters for SRA 4 and 25 meters for SRA 18. The analysis found that LSTs were exceeded due to residences found near the southern border of the program area. This analysis, however, was done for the full program area of over 500 acres which is approximately five times larger than the footprint of the proposed project analyzed herein. As a result, it is not expected that construction operations would affect the residences adjacent to the southern boundary of the project site, in addition to the fact that construction would be temporary in nature. Operations impacts do not have the potential to affect sensitive receptors since the project proposes to restore natural wetlands.

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

Less Than Significant Impact. The only odor-causing emissions for this project would be temporary originating from construction equipment, as the temporary impact would cease once construction is complete. This is not the type of use that would typically be considered to emit significant odors, such as those found in certain types of industrial processes. Also, no physical structural buildings will be built as part of this project. Per the Final PEIR for the Los Cerritos Wetlands Restoration Plan, there will be mandatory compliance with SCAQMD Rules regarding odors and emissions from construction equipment and should result in less than significant impacts. (LCWA, 2021)

Avoidance, Minimization and/or Mitigation Measures

Less than significant impacts to Air Quality were identified and no additional mitigation measures are required beyond those presented in the PEIR as follows:

Mitigation Measure AQ-1: Construction NO_X Reduction Measures. The Applicant for the proposed program shall be responsible for the implementation of the following construction-related NOx reduction measures:

- Require all off-road diesel-powered construction equipment greater than 50 horsepower (e.g., excavators, graders, dozers, scrappers, tractors, loaders, etc.) to comply with EPA-Certified Tier IV emission controls where commercially available. Documentation of all off-road diesel equipment used for this proposed program including Tier IV certification, or lack of commercial availability if applicable, shall be maintained and made available by the contractor to the local permitting agency (City of Seal Beach and City of Long Beach) for inspection upon request. In addition, all construction equipment shall be outfitted with Best Available Control Technology (BACT) devices certified by the California Air Resources Board (CARB) such as certified Level 3 Diesel Particulate Filter or equivalent. A copy of each unit's certified tier specification, BACT documentation, and CARB or South Coast Air Quality Management District operating permit shall be provided at the time of mobilization of each applicable unit of equipment. If Tier IV construction equipment is not available, LCWA shall require the contractor to implement other feasible alternative measures, such as reducing the number and/or horsepower rating of construction equipment, and/or limiting the number of individual construction subphases occurring simultaneously. The determination of commercial availability of Tier IV construction equipment shall be made by the City prior to issuance of grading or building permits based on applicant-provided evidence of the availability or unavailability of Tier IV equipment and/or evidence obtained by the City from expert sources such as construction contractors in the region.

• Require all main engines for tugboats to comply with EPA-Certified Tier IV emission controls.

• Eliminate the use of all portable generators. Require the use of electricity from power poles rather than temporary diesel or gasoline power generators.

• Provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow, including during the transportation of oversized equipment and vehicles.

• Provide dedicated turn lanes for movement of construction trucks and equipment on and off-site. The location of these dedicated lanes shall be addressed in the Construction Trip Management Plan.

• Reroute construction trucks away from congested streets or sensitive receptor areas.

• Prohibit the idling of on-road trucks and off-road equipment in excess of 5 continuous minutes, except for trucks and equipment where idling is a necessary function of the activity, such as concrete pour trucks. The Applicant or construction contractor(s) shall post signs at the entry/exit gate(s), storage/lay down areas, and at highly visible areas throughout the active portions of the construction site of the idling limit.

• On-road heavy-duty diesel haul trucks with a gross vehicle weight rating of 19,500 pounds or greater used to transport construction materials and soil to and from the program area shall be engine model year 2010 or later or shall comply with the USEPA 2007 on-road emissions standards.

Sources

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR, Section 3.2 Air Quality. Accessed 11/11/2022.

Moffatt & Nichol, 2023, Southern Los Cerritos Wetlands Restoration Project – Air Quality/Greenhouse Gas Study. (Appendix C).

3.4 Biological Resources

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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, and 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?	☐	☐	☐	☒

A biological resources report was prepared to analyze biological resources within the project site, including project-level focused biological surveys as required by the PEIR (Tidal Influence, 2021a; Appendix D). Surveys were performed for special status flora and fauna, nesting birds and raptors, Belding's savannah sparrow, burrowing owl, bats, and sensitive plant communities. Furthermore, a jurisdictional wetlands delineation was performed to identify areas under the jurisdiction of several regulatory agencies (Tidal Influence, 2021b; Appendix E). The surveys found a total of three special status plant species [California boxthorn (*Lycium californicum*), Lewis' evening primrose (*Camissoniopsis lewisii)*, and southern tarplant (*Centromadia parryi* ssp. *Australis*)]. Two individual California boxthorns were found on site by focused surveys and will be replaced at a 7:1 ratio. Two main occurrences of Lewis' evening primrose totaling 3.76 acres were also found on site. The project has been designed to entirely avoid one of these occurrences and to minimize impacts on the second occurrence. However, any impacted individual Lewis' evening primrose plants will be replaced at a 3:1 ratio. Likewise numerous occurrences of southern tarplant totaling 1.06 acres were found on site and any impacted southern tarplant individuals will be replaced at a 3:1 ratio. Seven special status animal (all avian) species [American peregrine falcon (*Falco peregrinus anatum*), Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*), California brown pelican (*Pelecanus occidentalis californicus*), loggerhead shrike (*Lanius ludovicianus*), California least tern (*Sternula antillarum browni*), osprey (*Pandion haliaetus*), and yellow-breasted chat (*Icteria virens*)] were present at the project site. Of note, 25 breeding pairs of Belding's savannah sparrow (BSS) were documented. Five years of survey data was used to identify core Belding's savannah sparrow breeding habitat and overall habitat extent. This project will not permanently impact this species' habitat and instead will increase it from 21.10 acres to approximately 55.54 acres. Table 8 and Table 9 identify the plant and faunal species, respectively, identified in the PEIR as having a moderate-high potential for occurrence or present within the Project Area.

Table 8: Special Status Floral Species

Species Name	Status	Habitat Requirements	Potential to Occur In Project Area
California boxthorn *Lycium californicum*	CRPR: 4.2 Fed: None State: None	Perennial succulent shrub. Occurs along coastal salt marsh margins, coastal sage scrub, and coastal bluffs up to 500 feet in elevation.	Present: This species was documented within the project boundary by the project-level surveys and all previous surveys.
Coulter's goldfields *Lasthenia glabrata* ssp. *Coulteri*	CRPR: 1B.1 Fed: None State: None	Annual herb. Occurs in playas, vernal pools, marshes and swamps (coastal salt).	High: Several occurrences of this species were identified in spring 2011 by Tidal Influence botanists within the project boundary. Occurrences were not documented in 2018 during the PEIR surveys. Additionally, no individuals were found during the project-level focused surveys.
Estuary seablite *Suaeda esteroa*	CRPR: 1B.2 Fed: None State: None	Perennial herb. Occurs in coastal salt marshes and swamps up to 15 feet in elevation.	High: This species has a high potential to occur on site due the proximity of other populations to the site including Steamshovel Slough, Zedler Marsh. Additionally suitable habitat exists within the Project Area. However, this species has not been historically documented within the project boundary and was not identified during project-level surveys.
Lewis' evening primrose *Camissoniopsis lewisii*	CRPR: 3 Fed: None State: None	Annual herb. Occurs in coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland in sandy or clay soil up to 985 feet in elevation.	Present: This species was documented within the project boundary.
Red sand-verbena *Abronia maritima*	Fed: None State: None CRPR: 4.2	Perennial herb. Occurs in marshes, swamps, and coastal dunes. Limited to the higher zones of salt marsh habitat.	Moderate: Not documented on site, suitable habitat is not present within the project boundary.
Salt marsh bird's beak *Chloropyron maritimum* ssp. *Maritimum*	CRPR: 1B.2 Fed: FE State: SE	Annual herb. Occurs in coastal salt marshes and coastal dunes up to 33 feet in elevation.	Moderate: No regional source populations exist but low quality suitable habitat is present within the project boundary.

Species Name	Status	Habitat Requirements	Potential to Occur In Project Area
Southern tarplant *Centromadia parryi* ssp. *Australis*	CRPR: 1B.1 Fed: None State: None	Annual herb. Occurs in disturbed areas near coastal salt marshes, grasslands, vernal pools and coastal sage scrub up to 1400 feet in elevation.	Present: This species was documented within the project boundary.
Southwestern spiny rush *Juncus acutus* ssp. *Leopoldii*	CRPR: 4.2 Fed: None State: None	Perennial herb. Occurs in coastal salt marshes, alkali seeps, and coastal strand habitats up to 1000 feet in elevation.	Moderate: This species has a moderate potential to occur as it is found naturally in the Isthmus Area, but this Project Area lacks the freshwater input that this species requires.
Ventura marsh milk-vetch *Astrasgalus pycnostachyus* var. *lanosissimus*	CRPR: 1B.1 Fed: FE State: SE	Perennial herb. Occurs in open, sand to gravel, disturbed areas below 100 meters in elevation.	Moderate: Suitable habitat present on site; however, not documented within the project boundary.
Woolly seablite *Suaeda taxifolia*	CRPR: 4.2 Fed: None State: None	Perennial succulent shrub. Occurs along coastal salt marsh margins and coastal bluffs up to 45 feet in elevation.	Moderate: Documented in North and Isthmus Areas but not documented within the project boundary despite the existence of suitable habitat.

Table 9: Special Status Faunal Species

Species Name	Status	Habitat Requirements	Potential for Occurrence in Project Area
Invertebrates			
mimic tryonia (California brackish water snail) *Tryonia imitator*	Fed: None State: None CDFW: None CNDDB: S2	Coastal areas with brackish waters. Moderate. Suitable habitat	Low: Suitable habitat present on site; however, this species was not documented in the Project Area.
Monarch—California overwintering population *Danaus plexippus pop. 1*	Fed: None State: None CDFW: None CNDDB: S2S3	Roosts in winter in wind-protected tree groves along the California coast from northern Mendocino to Baja California, Mexico.	Moderate: This species has a moderate potential to occur due to presence of non-native Eucalyptus trees within and adjacent to the Project Area.
Mudflat tiger beetle *Cicindela trifasciata sigmoidea*	Fed: None State: None CDFW: None CNDDB: N/A	This predatory beetle inhabits salt marshes, mudflats and salt pannes where they make burrows in the intertidal zone.	High: This species has been documented on tidal mudflats in Steamshovel Slough. Potential suitable habitat occurs within the Project Area.
Salt marsh tiger beetle *Cicindela hemorrhagica*	Fed: None State: None CDFW: N/A CNDDB: N/A	Salt marshes, mudflats and salt pannes where they make burrows in the intertidal zone	High: This species has been documented on tidal mudflats in the North Area (Steamshovel Slough) and Isthmus Area (Zedler Marsh). Potential suitable habitat exists within the Project Area.
Salt marsh wandering skipper *Panoquina errans*	Fed: None State: None CDFW: None CNDDB: S2	Coastal salt marsh and coastal strand areas dominated by salt grass.	High: This species has been documented in salt marsh vegetation in the North Area (Steamshovel Slough) and Isthmus Area (Zedler Marsh). Potential suitable habitat exists within the Project Area.

Species Name	Status	Habitat Requirements	Potential for Occurrence in Project Area
Sandy beach tiger beetle *Cicindela hirticollis gravida*	Fed: None State: None CDFW: None CNDDB: S2	Forages in open unvegetated areas such as marsh pannes and levees. Larvae burrow in moist unvegetated substrates.	Moderate: This species has not been documented within the program area, but suitable habitat does exist within the Project Area.
Senile tiger beetle *Cicindela senilis frosti*	Fed: None State: None CDFW: None CNDDB: S1	Known to inhabit tidal salt marshes and salt flats. Now very rare to find. Previously found in Bolsa Chica, Ventura, and Riverside County.	Moderate. This species has not been documented in the program area, but suitable habitat does exist within tidal areas of the Project Area.
Western beach tiger beetle *Cicindela latesignata latesignata*	Fed: None State: None CDFW: None CNDDB: S1	Forages in open unvegetated areas such as marsh pannes and levees. Larvae burrow in moist unvegetated substrates.	Moderate: This species has a moderate potential to occur on the unvegetated flats found throughout the Project Area.
Western tidal-flat tiger beetle *Cicindela gabbii*	Fed: None State: None CDFW: None CNDDB: S1	Open, unvegetated areas in or near salt marshes.	Moderate: This species has not been documented in the program area, but suitable habitat does exist within tidal areas of the Project Area.
Fish			
tidewater goby *Eucyclobobius newberryi*	Fed: FE State: None CDFW: CSC CNDDB: S3	Inhabits benthic zone of shallow coastal lagoons and estuaries where brackish conditions occur.	Low: This species has not been documented in the program area. The Project Area's habitat is suboptimal due to a lack of brackish conditions.
Reptiles			
Pacific green sea turtle *Chelonia mydas*	Fed: FT State: None CDFW: None CNDDB: S1	Green turtles are generally found in fairly shallow waters (except when migrating) inside reefs, bays, and inlets. The turtles are attracted to lagoons and shoals with an abundance of marine grass and algae.	Low: This migratory reptile is a resident in the Central Area (San Gabriel River) and has also been documented throughout Alamitos Bay. The current tidal connection to the Project Area does not allow for this species to gain access.
Red diamond rattlesnake *Crotalus ruber*	Fed: None State: None CDFW: CSC CNDDB: S3	Chaparral, woodland, grassland, & desert areas from coastal San Diego County to the eastern slopes of the mountains. Occurs in rocky areas & dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	Low: Observed historically in the Isthmus Area, which was suspected to have been an individual released to the area. Suitable habitat is not present within the Project Area.
Western pond turtle *Emys marmorata*	Fed: None State: None CDFW: CSC CNDDB: S3	Slow-moving permanent or intermittent streams, small ponds and lakes, reservoirs, abandoned gravel pits, permanent and ephemeral shallow wetlands, stock ponds, and treatment lagoons. Abundant basking sites and cover necessary, including logs, rocks, submerged vegetation, and undercut banks.	Low: Not documented in the program area; Suitable freshwater habitat is not present within the Project Area.

Species Name	Status	Habitat Requirements	Potential for Occurrence in Project Area
Birds			
American peregrine falcon *Falco peregrinus anatum*	Fed: Delisted State: Delisted CDFW: CFP CNDDB: S3S4	Near wetlands, lakes, rivers or other water, on cliffs, banks, dunes, mounds, also human-made structures.	Present: Observed on site. Suitable foraging habitat in Project Area; Suitable breeding sites are not present within the Project Area.
Bank swallow *Riparia riparia*	Fed: None State: ST CDFW: None CNDDB: S2	Colonial nester; nests primarily in riparian and other lowland habitats west or the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	High: This species has a been previously unofficially observed in the Southern Los Cerritos Wetlands area and could occur within the Project Area.
Belding's savannah sparrow *Passerculus sandwichensis beldingi*	Fed: None State: SE CDFW: None SNDDB: S3	Found in Coastal salt marshes. Nests in *Salicornia* sp. And about margins of tidal flats.	Present: This species has been documented using the site as breeding and foraging habitat.
Black skimmer *Rhynchops niger*	Fed: None State: None CDFW: CSC CNDDB: S2	Nests on gravel bars, low islets and sandy beaches, in unvegetated sites.	High: Observed in other areas of the LCW Complex but not in the Project Area. Suitable foraging habitat exists within the Project Area. Suitable breeding habitat is not present within the Project Area.
Burrowing owl *Athene cunicularia*	Fed: None State: None CDFW: CSC CNDDB: S3	Open, dry annual or perennial grasslands, deserts & scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Low: Individuals were historically observed in Isthmus Area. Occurs as a migratory winter visitor but is not expected as a breeding species.
California brown pelican *Pelecanus occidentalis californicus*	Fed: Delisted State: Delisted CDFW: CFP CNDDB: S3	Coastal, salt bays, ocean, beaches. Nests on coastal islands of small to moderate size that afford immunity from attack by ground-dwelling predators.	Present: Observed on site. Suitable foraging habitat present in tidal areas within the Project Area. Breeding habitat absent.
California least tern *Sternula antillarum browni*	Fed: FE State: SE CDFW: CFP CNDDB: S2	Flat, vegetated substrates near the coast. Occurs near estuaries, bays, or harbors where fish is abundant.	Present: Has been historically observed foraging in tidal channel within the Project Area.
Least Bell's vireo *Vireo belii pusilus*	Fed: FE State: SE CDFW: None CNDDB: S2	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	Moderate: Was observed within the Isthmus Area in 2018. Suitable habitat is limited within the Project Area, but very active breeding habitat exists in the adjacent Heron Pointe bioswale east of the Project Area.
Merlin *Falco columbarius*	Fed: None State: None CDFW: WL CNDDB: S3S4	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches. Clumps of trees or windbreaks are required for roosting in open country.	High: Not observed in the Project Area. The PEIR stated the species was documented within the LCW Complex, but specific locations were not given; Suitable foraging habitat present in Project Area. Suitable breeding habitat absent from site.

Species Name	Status	Habitat Requirements	Potential for Occurrence in Project Area
Loggerhead shrike *Lanius ludovicianus*	Fed: None State: None CDFW: CSC CNDDB: S4	Broken woodlands, savannah, pinyon-juniper, Joshua tree & riparian woodlands, desert oases, scrub & washes. Prefers open country for hunting with perches for scanning and fairly dense shrubs and brush for nesting.	Present: Observed within the Project Area.
Northern harrier (nesting) *Circus cyaneus*	Fed: None State: None CDFW: CSC CNDDB: S3	A variety of habitats, including open wetlands, grasslands, wet pasture, old fields, dry uplands, and croplands.	High: Northern harrier (non-nesting) have been observed foraging within the Project Area. There are no records of northern harrier nesting in the vicinity of the Project Area. Suitable foraging habitat is present throughout the Project Area. Limited potential for breeding in the Project Area.
Osprey *Pandion haliaetus*	Fed: None State: None CDFW: WL CNDDB: S4	Found near rivers, lakes, coastal areas. Most common around major coastal estuaries and salt marshes, but can be found around large lakes, reservoirs, and rivers.	Present: Observed within the Project Area.
Ridgway's rail *Rallus obsoletus*	Fed: FE State: SE CDFW: CFP CNDDB: S1	Found in salt marshes where cordgrass and pickleweed are the dominant vegetation. Requires dense growth of either pickleweed or cordgrass for nesting or escape cover, feeds on mollusks and crustaceans.	Moderate: Limited foraging habitat exists within the Project Area and breeding habitat is not present within the Project Area.
Short-eared owl *Asio flammeus*	Fed: None State: None CDFW: CSC CNDDB: S3	Found in swamplands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	High: Not observed within the Project Area but observed in the PEIR investigation with no specific areas indicated. Suitable foraging habitat occurs during winter in tidal marsh areas in Project Area. Suitable breeding habitat absent.
Tricolored blackbird *Agelaius tricolor*	Fed: None State: ST CDFW: CSC CNDDB: S1S2	Requires open water, protected nesting and foraging area with insect prey within a few km of the colony.	Low: This species was recorded on eBird in 2015 for an occurrence within the Central Area at the Marketplace Marsh. However, suitable foraging habitat is not present within Project Area.
Western snowy plover *Charadrius lexandrines nivosus*	Fed: FT State: None CDFW: CSC CNDDB: S2S3	Sandy or gravelly beaches along the coast, estuarine salt ponds, alkali lakes, and the Salton Sea. Foraging in wet sand within the intertidal zone in dry, sandy areas above the high tide, along edges of salt marshes, salt ponds, and lagoons. Nesting in open, flat, and sparsely vegetated beaches and sand spits.	Moderate: Not previously documented on site; however, suitable foraging and loafing habitat present within tidal marsh areas of Project Area. No potential nesting habitat exists within the Project Area.

Species Name	Status	Habitat Requirements	Potential for Occurrence in Project Area
Yellow-breasted chat *Icteria virens*	Fed: None State: None CDFW: CSC CNDDB: S3	Summer resident; inhabits riparian thickets of willow & other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 feet of ground.	Present: Observed foraging within Project Area. Suitable breeding habitat is not present within the Project Area.
Mammals			
Pacific pocket mouse *Perognathus longimembris pacificus*	Fed: FE State: None CDFW: CSC CNDDB: S1	Requires sparse vegetation coverage for maneuverability and sandy soils for burrowing.	Low: Not historically documented in the Project Area by focused surveys conducted in the 1990s; While suitable habitat is present in tidal marsh areas of the Project, this habitat is in poor condition. Furthermore, no local populations are known to occur.
south coast marsh vole *Microtus californicus stephensi*	Fed: None State: None CDFW: CSC CNDDB: S1S2	Tidal marshes in Los Angeles, Orange and southern Ventura Counties.	Low: Not historically documented in the Project Area; While suitable habitat is present in tidal marsh areas of the Project, this habitat is in poor condition. Furthermore, no local populations are known to occur.
Southern California salt marsh shrew *Sorex ornatus salicornicus*	Fed: None State: None CDFW: CSC CNDDB: S1	Coastal marshes in Los Angeles, Orange and southern Ventura Counties. Requires dense vegetation and woody debris for cover.	Moderate: Not historically documented in the Project Area; however, suitable habitat present in tidal marsh areas of the site and a local population exists nearby in Anaheim Bay.

STATUS CODES:

Federal
FE = Federally Endangered
FT = Federally Threatened
FSC = Federal Species of Special Concern

State
SE = State Endangered
ST = State Threatened

CDFW
CSC = California Species of Special Concern
CFP = California Fully Protected Species
WL = Watch List

CNDDB Element Ranking
S1 = Critically Imperiled—Critically imperiled in the state because of extreme rarity (often 5 or few populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.
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.
S3 = Vulnerable—Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer).
S4 = Apparently Secure—Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.
A question mark (?) denotes an inexact numeric rank due to insufficient samples over the full expected range of the type, but existing information points to this rank

a) Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?

Less than Significant Impact with Mitigation. Three special status plant species and seven special status fauna species were found to be present on the project site. The Belding's Savannah Sparrow is the only species that uses the project area for breeding, the other species use the site for foraging only. The PEIR documents multiple mitigation measures from the PEIR that would be incorporated into the project, which bring these effects down to a level that is less than significant for both construction and operational impacts. Seven different mitigation measures including a Worker Education Awareness Program (WEAP) (**Mitigation Measure BIO-2**), biological monitoring, and a habitat replacement ratio (**Mitigation Measure BIO-9**) are included. (LCWA, 2021)

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

Less Than Significant Impact with Mitigation. While it is possible that there will be a substantial but temporary adverse impact on a sensitive natural community during construction, multiple mitigation measures are already in place from the PEIR that would bring these effects down to a less than significant level (LCWA, 2021). These mitigation measures apply to the project analyzed herein. There are also no impacts to CDFW Sensitive Natural Communities or riparian habitats that are expected to occur during restoration work or long-term operations.

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

Less Than Significant Impact with Mitigation. The project will not have a substantial adverse effect on state or federal wetlands, as the purpose of this project is to restore the wetland habitat. Temporary impacts during construction will be off-set by the implementation of the proposed project, as the goal of the project is to restore the wetlands and will result in a net-gain of state and federally protected wetlands.

d) Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less Than Significant Impact. The project would improve species movement by restoring the habitats adjacent to the current wildlife corridors and will not impede the use of native wildlife nursery sites. There may be temporary effects due to the noise and dust that is usually seen with construction activities, but these effects are not significant due to the already existing surrounding uses that have these same effects (bike paths, main thoroughfares, oil operations, etc.).

e) Would the Project conflict with any local policies or ordinance protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. The project will not conflict with any local policies or ordinances protecting biological resources, and specifically there are no impacts to any city-protected trees on the project site. Any trees needing to be trimmed or removed, will require permits from the City of Seal Beach Public Works Department. Approximately 78 non-native trees will be removed: sixty-five (65) Mexican Fan Palm (10-15 inch diameter breast height (dbh)), three (3) Shamal Ash (3, 8 and 16 in. dbh), three (3) Blue Gum (4, 30 and 40 in. dbh), three (3) Brazilian Pepper (4,4, and 14 in. dbh), one (1) Italian Stone Pine (34 in. dbh), one (1) Chinese Elm (14 in.
dbh), one (1) 1 Red River Gum (15 in. dbh), and one (1) Italian Cypress (16 in. dbh).

f) Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. There is one Natural Community Conservation Plan (NCCP) from the Orange County Transportation Authority for Coastal California Gnatcatchers in Orange County. This project will not conflict with any provisions of this NCCP (OCTA, 2016).

Avoidance, Minimization and/or Mitigation Measures

Less than significant impacts to Biological Resources were identified and no additional mitigation measures are required beyond those presented in the PEIR as follows (these measures may be modified via consultation with regulatory agencies:

Mitigation Measure BIO-1: Avoidance of Special-Status Plants. Prior to LCWA's approval of project plans or publication of subsequent CEQA documents, a qualified botanist/biologist shall conduct a habitat assessment to determine the presence or absence of suitable habitat for special-status plant species. If suitable habitat is determined to be present, focused plant surveys should be conducted in accordance with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW, March 20, 2018). Consistent with the CDFW protocol, such focused special status plant surveys will be conducted during the appropriate blooming period for these species, with May and June likely having the highest number of species in flower. The results of focused special-status plant species will be incorporated into restoration design plans. The locations of any special-status plants within 25 feet of proposed disturbance areas shall be identified and mapped. Individual plants shall be flagged for avoidance and an avoidance buffer of at least 10 feet shall be established around the plant(s). If special-status plants cannot be avoided, they shall be incorporated into the proposed program's restoration design at a minimum ratio of 1:1 (one plant planted for every one plant removed, or 1 square foot of absolute cover planted for every 1 square foot of absolute cover removed). For special-status plant species with small population numbers (less than 50 individuals), higher mitigation ratios up to 7:1 will be incorporated, where on-site seed sources are available. Higher mitigation ratios of up to 3:1 will be incorporated where suitable habitat area can support populations of large individual numbers. Special-status plants that cannot be avoided shall be salvaged prior to impacts using species-specific propagation methods, such as transplanting, seed and cuttings. Seed collection shall occur during the appropriate time of year for each species. Seeds shall be propagated by a qualified horticulturalist or in a local nursery, and shall be incorporated into habitat-specific seed mixes that will be used for revegetation of the restoration areas. Plant transplantation of perennial species is a potential mitigation technique but must be used sparingly and only when receiving site parameters are a suitable match from the donor location. Performance standard for the success of propagated or transplanted species will be achieved with the survival of the appropriate number of individuals meeting the mitigation ratio (1:1 for most species) after five years of growth and the establishment of a self-propagating population for annual species for a minimum of three years after revegetation completion for a specific area.

Mitigation Measure BIO-2: Environmental Awareness Training and Biological Monitoring. Prior to commencement of activities within the program area, a qualified biologist shall prepare a Worker Environmental Awareness Program (WEAP) that provides a description of potentially occurring special-status species and methods for avoiding inadvertent impacts. The WEAP training shall be provided to all construction personnel. Attendees shall be documented on a WEAP training sign-in sheet. Initial grading and vegetation removal activities shall be supervised by a qualified monitoring biologist, who will be present during all construction activities. The biologist shall ensure that impacts to special-status plants and wildlife, including wetland vegetation, are minimized to the greatest extent feasible during implementation of program activities on the South, Isthmus, Central and North Areas. If any special-status wildlife species are encountered during construction and cannot be avoided, the monitoring biologist shall have the authority to temporarily halt construction activities until a plan for avoidance has been prepared and approved by CDFW, and implemented by the monitoring biologist. Relocation of a federal- or state-listed species shall not be allowed without first obtaining take authorization from USFWS and/or CDFW.

Mitigation Measure BIO-3: Belding's Savannah Sparrow Breeding Habitat. Prior to LCWA's approval of project plans or publication of subsequent CEQA documents, a qualified biologist shall map suitable Belding's savannah sparrow habitat as the location and amount of suitable habitat is anticipated to change over time. The results of habitat mapping will be incorporated into restoration design plans. Project activities shall be limited to July 16 through February 14 within suitable costal marsh habitat to avoid impacts to breeding

Belding's savannah sparrow. Suitable Belding's savannah sparrow breeding habitat that will be impacted by the proposed program shall be created within the program area at a minimum ratio of 1:1 (area created:area impacted). Restored breeding habitat shall consist of a minimum 60 percent absolute cover of salt marsh vegetation, and shall consist of a hydrologic regime similar to that currently present in the North Area or South Area, respectively. Other unique conditions within coastal salt marsh communities shall exist as well, such as, similar slope, aspect, elevation, soil, and salinity. A Mitigation, Maintenance and Monitoring Program shall be prepared and approved by CDFW prior to implementation. The proposed program shall be implemented by a qualified restoration ecologist, and at a minimum, shall include success criteria and performance standards for measuring the establishment of Belding's savannah sparrow breeding habitat, responsible parties, maintenance techniques and schedule, 5-year monitoring and reporting schedule, adaptive management strategies, and contingencies. Moreover, in accordance the CESA, an Incidental Take Permit (or other mitigation options identified in accordance with Fish & Game Code, §§ 2080.1, 2081, subds. (b) and (c)) shall be obtained from CDFW if any Belding's savannah sparrow may be impacted during construction or operations of the program. The amount of potential take shall be determined prior to design approval of each restoration area based on consultation with CDFW. Lastly, take authorization shall be obtained prior to commencement of any ground disturbing activities.

Mitigation Measure BIO-4: Nesting Bird and Raptor Avoidance. A qualified biologist shall identify areas where nesting habitat for birds and raptors is present prior to LCWA's approval of project plans or publication of subsequent CEQA documents. To ensure the avoidance of impacts to nesting avian species, the following measures shall be implemented:

- Construction and maintenance activities shall be limited to the non-breeding season (September 1 through December 31) to the extent feasible. If construction or maintenance activities will occur during the avian nesting season (January 1 through August 31), a qualified biologist shall conduct pre-construction nesting avian surveys within no more than 5 days prior to the initiation of construction activities to identify any active nests. If a lapse in work of 5 days or longer occurs, another survey shall be conducted to verify if any new nests have been constructed prior to work being reinitiated.
- If active nests are observed, an avoidance buffer shall be demarcated by a qualified biologist with exclusion fencing and shall be maintained until the biologist determines that the young have fledged and the nest is no longer active.

Mitigation Measure BIO-5: Habitat Assessment and Pre-Construction Surveys for Burrowing Owl. A qualified biologist shall conduct a pre-construction burrowing owl survey of each restoration area (including required survey buffer areas) prior to LCWA's approval of project plans or publication of subsequent CEQA documents. If burrowing owls are detected, the habitat will be avoided and/or enhanced by the restoration design. In addition, a Burrowing Owl Management Plan shall be prepared and approved by CDFW, and implemented, prior to commencement of construction. The Burrowing Owl Management Plan shall be prepared in accordance with the CDFW 2012 Staff Report on Burrowing Owl Mitigation and shall address specific minimization and avoidance measures for burrowing owls, such as avoidance of occupied habitat, translocation of individuals, and on site revegetation.

Mitigation Measure BIO-6: Minimization of Light Spillage. A Program Lighting Plan shall be designed to minimize light trespass and glare into adjacent habitat areas prior to the commencement of activities within the program area. Nighttime lighting associated with the visitor center, parking lot, and trails shall be shielded downward and/or directed away from habitat areas to minimize impacts to nocturnal species, including breeding birds.

Mitigation Measure BIO-7: Pre-Construction Bat Surveys. A qualified biologist shall conduct a pre-construction bat survey of each restoration area prior to final approval of the area's restoration plan. If suitable bat roosting habitat is determined to be present, a presence/absence survey shall be conducted prior to commencement of construction activities. A qualified biologist shall conduct the preconstruction clearance survey of suitable bat roosting habitat, such as mature palm trees. If bats are determined to be roosting, the biologist will determine whether it is a day roost (non-breeding) or maternity roost (lactating females and dependent young). If a day roost is determined, the biologist shall ensure that direct mortality to roosting individuals will not occur by requiring that trees with roosts are not directly impacted (e.g., removed) until after the roosting period.

If a maternity roost is determined to be present, the biologist shall determine a suitable buffer distance between construction activities and the roosting site. If direct disturbance to the maternity roost could occur, a Bat Exclusion Plan shall be prepared and approved by CDFW, and implemented, prior to impacting the roost. At a minimum, the Plan shall include avoidance and minimization measures to reduce potential impacts to breeding bats during construction activities and prescribed methods to safely and humanely evict bats from the roost to avoid mortality.

Mitigation Measure BIO-8: Focused Surveys for Special-Status Wildlife Species. Should suitable habitat occur for terrestrial or aquatic special-status species, a qualified biologist shall conduct focused habitat assessments and focused surveys to determine presence, absence and/or abundance for special-status wildlife species listed in Table 3.3-5. Both habitat assessments and focused surveys shall occur prior to LCWA's approval of the project plans or the publication of subsequent CEQA documents for any project site that potentially contains special-status species. Agency-approved protocols shall be used for specific species where appropriate during the required or recommended time of year. For all other target (special-status) species, prior to initiating surveys, survey methods shall be verified and approved in writing by CDFW and USFWS or NMFS for all state- and/or federally-protected species, respectively. If special-status species are detected, the project-specific restoration plan should be designed to minimize impacts to special-status wildlife to the greatest extent feasible and a Wildlife Avoidance Plan shall be prepared and approved by CDFW and USFWS or NMFS prior to commencement of construction. The Wildlife Avoidance Plan shall include specific species minimization and avoidance measures, measures to minimize impacts to occupied habitat, such as avoidance and revegetation, as well as relocation/translocation protocols. The plan shall require that a qualified biological monitor approved by CDFW be onsite prior to and during ground and habitat disturbing activities to move special status species or other wildlife of low mobility out of harm's way that could be injured or killed by ground disturbing activities.

If special-status species cannot be avoided, Incidental Take Permits from the National Marine Fisheries Service or United States Fish and Wildlife Service and California Department of Fish and Wildlife will be required. The amount of potential take shall be determined prior to design approval of each restoration area based on consultation with NMFS or USFWS and CDFW and take authorization shall be obtained prior to commencement of any ground disturbing activities. If an incidental take permit is being obtained, compensatory mitigation for the loss of occupied habitat shall be provided through purchase of credit from an existing mitigation bank, private purchase of mitigation lands, or on-site preservation, as approved by the resource agencies. Compensatory mitigation shall be provided at a minimum 1:1 ratio to reduce potential effects to less-than-significant levels.

Mitigation Measure BIO-9: Revegetation of Sensitive Natural Communities. Sensitive natural communities located on the program area include: *Anemopsis californica – Helianthus nuttallii – Solidago spectabilis* Herbaceous Alliance, *Arthrocnemum subterminale* Herbaceous Alliance, *Baccharis salicina* Provisional Shrubland Alliance, *Cressa truxillensis – Distichlis spicata* Herbaceous Alliance, *Frankenia salina* Herbaceous Alliance, *Isocoma menziesii* Shrubland Alliance, *Leymus cinereus – Leymus triticoides* Herbaceous Alliance, *Salicornia pacifica* Herbaceous Alliance, *Salix gooddingii* Woodland Alliance, *Schoenoplectus californicus – Typha* (*angustifolia, domingensis, latifolia*) Herbaceous Alliance and *Spartina foliosa* Herbaceous Alliance.

Prior to LCWA's approval of project plans or publication of subsequent CEQA documents, the area(s) that will be impacted shall be delineated and quantified using current Global Information System (ArcGIS) mapping software. Sensitive Natural Communities that will be impacted by the proposed program shall be created within the program area at a minimum ratio of 1:1 (area created:area impacted). A mitigation ratio of a minimum 2:1 for natural communities with a rarity ranking of S3 or higher will be incorporated into the restoration designs. Restored Sensitive Natural Communities shall consist of a minimum 60 percent absolute vegetation cover and shall include community-specific growing conditions, such as, similar slope, aspect, elevation, soil, and salinity. Moreover, soils within mudflat areas shall be salvaged (where feasible) for areas that are proposed for activities such as grading, and reintroduced in new mudflat and/or wetland areas that will be created. A Mitigation, Maintenance and Monitoring Program shall be prepared and approved by CDFW prior to implementation. The Program shall be implemented by a qualified restoration ecologist, and at a minimum, shall include success criteria and performance standards for measuring the establishment of Sensitive Natural Communities, responsible parties, maintenance techniques and schedule, 5-year monitoring and reporting schedule, adaptive management strategies, and contingencies.

Mitigation Measure BIO-10: Jurisdictional Resources Permitting. Prior to LCWA's approval of project plans or publication of subsequent CEQA documents, a jurisdictional delineation report shall be prepared that describes these jurisdictional resources and the extent of jurisdiction under the USACE, RWQCB, CDFW, and CCC. If it is determined during final siting that jurisdictional resources cannot be avoided, the project applicant shall be subject to provisions as identified below:

1. If avoidance is not feasible, prior to ground disturbance activities that could impact these aquatic features, the project applicant shall file the required documentation and receive the following.

    a. Nationwide Permit or equivalent permit issued from USACE;

    b. Water Quality Certification issued from the Los Angeles RWQCB;

    c. Streambed Alteration Agreement issued from CDFW; and

    d. Coastal Development Permit issued from CCC.

2. Compensatory mitigation for impacts to jurisdictional resources is not anticipated as the proposed program's goal is the restoration and expansion of coastal salt marsh within the proposed program.

3. The project proponent shall comply with the mitigation measures detailed in permits issued from the USACE, RWQCB, CDFW, and CCC.

Mitigation Measure BIO-11: Monitoring and Adaptive Management Plan. In conjunction with Section 3.8, Hydrology and Water Quality, a Monitoring and Adaptive Management Plan (MAMP) shall be prepared and implemented prior to commencement of construction or restoration activities. The MAMP shall provide a framework for monitoring site conditions in response to the proposed program implementation. The MAMP shall include provisions for conducting a pre-construction survey to collect baseline data for existing wetland function. The MAMP shall require that monitoring focus on the functional wetland values as well as sediment quality in areas subject to the greatest deposition from storm events and that are also not subject to regular tidal flushing, (e.g., the southwestern corner of the Long Beach Property site). The MAMP shall identify habitat functions, such as biotic structure and hydrology, that shall be monitored as part of the proposed program's monitoring and reporting requirements. The MAMP shall identify sediment quality monitoring requirements that shall be performed at a frequency that would capture the potential build-up of contaminants in the deposited sediment before concentrations are reached that would impact benthic macro-invertebrates and other sensitive species. The MAMP shall require that the findings of the monitoring efforts be used to identify any source of functional loss of wetlands and water quality impairment, and if discovered, provide measures to improve wetland function and for remediation of the sediment source area(s). Upon completion of restoration activities, the proposed project shall demonstrate a no net loss of aquatic resource functions and demonstrate an increase in wetland functions and values throughout the entire Project site. The MAMP shall be submitted for review and approval to responsible permitting agencies prior to commencement of construction or restoration activities.

Sources

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR, Section 3.3 Biological Resources. Accessed 10/10/2022.

Tidal Influence, 2021a, Southern Los Cerritos Wetlands Restoration Project Biological Resources Report, 160 pages. (Appendix D).

Tidal Influence, 2021b, Southern Los Cerritos Wetlands Restoration Project Jurisdictional Delineation Report, 92 pages. (Appendix E).

Orange County Transportation Authority, M2 Natural Community Conservation Plan/Habitat Conservation Plan, 11/2016. Accessed at https://www.octa.net/pdf/NCCP%20HCP%20FINAL.pdf, https://www.octa.net/About-OC-Go/OC-Go-Environmental-Programs/Preserve-Management/, Accessed 10/14/2022.

3.5 Cultural Resources

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 formal cemeteries?	☐	☒	☐	☐

Gabrielino (Gabrieleno, Tongva and Kizh) oral tradition states that they have always lived in their traditional territory, with their emergence into this world occurring at *Puvungna*, located in Long Beach (Martinez and Teeter, 2015). Similar oral traditions point to *Puvungna* as the origin point for the Juaneño (Acjachemen) into this world as well. The Gabrielino (Gabrieleno, Tongva and Kizh) and Juaneño (Acjachemen) lived in Los Angeles County and Northern Orange County practicing their traditional lifeways until European Contact. These groups suffered many abuses of European colonialism, including falling under the purview of the Roman Catholic missions of San Gabriel Arcángel and San Juan Capistrano from which the names Gabrielino, Gabrieleño, and Juaneño originate. Some present descendant groups may also identify themselves as Tongva, Kizh and Acjachemen. Approximately 50 major villages were located on the Channel Islands, along the coast, as well as in more inland areas. These groups have, in past and current times, used the local wetlands and its natural resources, including biological, water, and mineral resources, for food, shelter, and trade (McCawley, 1996). Native American archaeological sites are known to be located at California State University Long Beach, Rancho Los Alamitos Historic Ranch, and Heron Pointe (California Coastal Commission, 2018). Despite continuing misconception that the Gabrielino (Gabrieleno, Tongva and Kizh) are extinct, they and the Juaneño (Acjachemen) remain important voices in today's California.

The Los Cerritos Wetlands Complex was identified by California Native American tribal members as a Tribal Cultural Landscape during Tribal Cultural Landscape Study and government-to-government consultation with the LCWA regarding the proposed program and as part of consultations related to the Los Cerritos Wetland Oil Consolidation and Restoration Project and this SLCWRP. The Los Cerritos Wetlands Complex is located in between the archaeological manifestations of the *Puvungna* and *Motuucheyngna* village sites and serves as an important resource to native peoples both historically and in current time. The California Coastal Commission acknowledged the significance of this area as part of the Los Cerritos Wetlands Oil Consolidation and Restoration Project (State Clearinghouse No. 2016041083) (California Coastal Commission, 2018). In the PEIR, the LCWA, in its discretion and as supported by substantial evidence provided by tribal groups, determined that the landscape is a Historical Resource (CEQA Guidelines Section 15064.5(a)(4)) and a Tribal Cultural Resource (Public Resource Code Section 21074(a)(2)). The LCWA then commissioned a Tribal Cultural Landscape Study that was completed as part of this Project's cultural resources assessment. Based on consultation with Tribal members, the Tribal Cultural Landscape, named the *Puvungna* Traditional Cultural Landscape, is recommended eligible for listing in the National Register of Historic Places as a Traditional Cultural Property (or TCP). The significance of a TCP is often related to religious or ceremonial values that connect tribal communities to unique landscape features such as a mountain or bluff top, places with significant or special natural views, rivers and estuaries, vegetation and wildlife, or areas with burials or religious artifacts/monuments.

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

Less than Significant Impact with Mitigation. An extended Phase 1 Cultural Investigation (**PEIR Mitigation Measure CUL-5**) did not reveal any new information, and the mitigation measures from the PEIR are more than adequate should any historical resource be revealed during construction or operation (Cogstone, 2023; Appendix F). A Tribal Cultural Landscape Study was prepared for this project, which informed the grading design to include a 50-foot buffer near sensitive cultural locations. Native American and archaeological monitors have monitored all earthwork and such monitoring will continue during future Project-related ground disturbance. Continued tribal consultation will ensure no significant effects occur to the *Puvungna* Traditional Cultural Landscape.

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

Less than Significant Impact with Mitigation. The project will not cause a substantial adverse change in the significance of an archeological resource with incorporation of the mitigation measures from the PEIR, as they are more than adequate should any archaeological resource be revealed during construction or operation. (LCWA, 2021). Tribal engagement has been extensive in an on-going fashion. All earthwork will have Native American Monitoring as well as archaeological monitoring.

c) Would the Project disturb any human remains, including those interred outside of formal cemeteries?

Less than Significant Impact with Mitigation. The project is unlikely to disturb human remains, as most of the soil that will be moved for the restoration has already been disturbed by previous land use activities. Should any be discovered, compliance with **PEIR Mitigation Measure CUL-18** will occur (LCWA, 2021). Any Native American remains uncovered would be repatriated to non-sensitive areas.

Avoidance, Minimization and/or Mitigation Measures

Less than significant impacts to Cultural Resources were identified and no additional mitigation measures are required beyond those presented in the PEIR as follows:

Mitigation Measure CUL-1: Cultural Resources Personnel Professional Qualifications Standards. Cultural resources consulting staff shall meet, or be under the direct supervision of an individual meeting, the minimum professional qualifications standards (PQS) set forth by the Secretary of the Interior (SOI) (codified in 36 Code of Federal Regulations [CFR] Part 61; 48 FR 44738-44739).

Mitigation Measure CUL-2: Historic Resources Assessment. For each near-term, mid-term, and long-term project, LCWA shall retain an SOI-qualified architectural historian (Qualified Architectural Historian) to conduct a historic resources assessment including: a records search at the South Central Coastal Information Center; a review of pertinent archives and sources; a pedestrian field survey; recordation of all identified historic resources on California Department of Parks and Recreation 523 forms; and preparation of a technical report documenting the methods and results of the assessment. The report(s) shall be submitted to LCWA for review and approval prior to LCWA's approval of project plans or publication of subsequent CEQA documents. The Qualified Architectural Historian shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its completion. A Historic Resources Assessment shall not be required for any project site that has already undergone the same or similar assessment as part of the program as long as the assessment is deemed adequate by the Qualified Architectural Historian for the purposes of the project currently under consideration.

Mitigation Measure CUL-3: Historic Resources Evaluation. Prior to LCWA's approval of project plans or the publication of subsequent CEQA documents for any project site containing unevaluated historic resources, a Qualified Architectural Historian shall determine if the project has the potential to result in adverse impacts to identified historic resources. For any historic resource that may be adversely impacted, the Qualified Architectural Historian shall evaluate the resource for listing in the California Register under Criteria 1-4 in order to determine if the resource qualifies as a historical resource. If a historic resource is found eligible, the Qualified Architectural Historian shall determine if the project would cause a substantial adverse change in the significance of the resource. If a substantial adverse change would occur (i.e., the project would demolish the resource or materially alter it in an adverse manner), the Qualified Architectural Historian shall develop appropriate mitigation measures to be incorporated into subsequent CEQA documents. These measures may include, but would not be limited to, relocation, HABS/HAER/HALS documentation, development and implementation of an interpretative and commemorative program, or development and implementation of a salvage plan. All evaluations and resulting technical reports shall be completed and approved by LWCA prior to LCWA's approval of project plans or publication of subsequent CEQA documents. The Qualified Architectural Historian shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its acceptance by LCWA.

Mitigation Measure CUL-4: Archaeological Resources Assessment. For each near-term, mid-term, and long-term project that involves ground disturbance, LCWA shall retain an SOI-qualified archaeologist (Qualified Archaeologist) to conduct an archaeological resources assessment including: a records search at the South Central Coastal Information Center; a Sacred Lands File search at the Native American Heritage Commission; updated geoarchaeological review incorporating previously unavailable data (such as geotechnical studies); a pedestrian field survey; recordation of all identified archaeological resources on California Department of Parks and Recreation 523 forms; and preparation of a technical report. The technical report shall: document the methods and results of the study; provide an assessment of the project's potential to encounter subsurface archaeological resources and human remains based on a review of the project plans, depth of proposed ground disturbance, and available project-specific geotechnical reports; and provide recommendations as to whether additional studies are warranted (i.e, Extended Phase I presence/absence testing or resource boundary delineation, Phase II testing and evaluation). The report(s) shall be submitted to LCWA for review and approval prior to approval of project plans or publication of subsequent CEQA documents. The Qualified Archaeologist shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its completion. An Archaeological Resources Assessment shall not be required for any project site that has already undergone the same or similar assessment as part of the program as long as the assessment is deemed adequate by the Qualified Archaeologist for the purposes of the project currently under consideration.

Mitigation Measure CUL-5: Extended Phase I Archaeological Investigation. Prior to LCWA's approval of project plans or the publication of subsequent CEQA documents for any project with a high potential to encounter subsurface archaeological resources as determined by the project-specific archaeological resources assessment conducted under **Mitigation Measure CUL-4: Archaeological Resources Assessment**, a Qualified Archaeologist shall conduct an Extended Phase I investigation to identify the presence/absence of subsurface archaeological resources. Prior to the initiation of field work for any Extended Phase I investigation, the Qualified Archaeologist shall prepare a work plan outlining the investigation's objectives, goals, and methodology (e.g., field and lab procedures, collection protocols, curation and reporting requirements, Native American input/monitoring, schedule, security measures). For investigations related to Native American archaeological resources, monitoring shall be required in accordance with **Mitigation Measures CUL-13: Native American Monitoring**. All work plans shall outline the protocols and procedures to be followed in the event that human remains and associated funerary objects or grave goods (i.e., artifacts associated with human remains) are encountered in accordance with **Mitigation Measure CUL-18: Human Remains Discoveries**. Disposition of archaeological materials recovered during Extended Phase I investigations shall be in accordance with **Mitigation Measure CUL-15: Curation and Disposition of Cultural Materials**.

Disposition of human remains and any associated funerary objects or grave goods shall be in accordance with **Mitigation Measure CUL-18: Human Remains Discoveries**. Projects occurring within the same timeframe may be covered by one overarching work plan. All investigations and resulting technical reports shall be completed and approved by LCWA prior to LCWA's approval of project plans or publication of subsequent CEQA documents. The Qualified Archaeologist shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its acceptance by LCWA. An Extended Phase I investigation shall not be required for any project site or resource that has already undergone the same or similar investigation as part of the program as long as the investigation is deemed adequate by the Qualified Archaeologist for the purposes of the project currently under consideration.

Mitigation Measure CUL-6: Phase II Archaeological Investigation. Prior to LCWA's approval of project plans or the publication of subsequent CEQA documents for any project site containing known unevaluated archaeological resources as identified by the project-specific archaeological resources assessment conducted under **Mitigation Measure CUL-4: Archaeological Resources Assessment**, a Qualified Archaeologist shall determine if the project has the potential to result in adverse impacts to identified archaeological resources (this may include initial Extended Phase I testing to identify the boundaries of resources, if necessary to properly assess potential impacts, following the procedures outlined under **Mitigation Measure CUL-5: Extended Phase I Archaeological Investigation**). For any archaeological resource that may be adversely impacted, the Qualified Archaeologist shall conduct Phase II testing and shall evaluate the resource for listing in the California Register under Criteria 1-4 in order to determine if the resource qualifies as a historical resource. LCWA shall consider the significance of the resource to Native American groups prior to requiring any Phase II subsurface testing. If the resource does not qualify as a historical resource, it shall then be considered for qualification as a unique archaeological resource. Native American or prehistoric archaeological resources shall also be considered as contributors to the tribal landscape to determine if they contribute to the significance of the landscape. Prior to the initiation of field work for any Phase II investigation, the Qualified Archaeologist shall prepare a work plan outlining the investigation's objectives, goals, and methodology (e.g., research design, field and lab procedures, collection protocols, data requirements/thresholds, evaluation criteria, curation and reporting requirements, Native American input/monitoring, schedule, security measures). The Qualified Archaeologist and LCWA shall coordinate with participating Native American Tribes during preparation of Phase II work plans related to Native American archaeological resources to ensure cultural values ascribed to the resources, beyond those that are scientifically important, are considered in the evaluation, including those related to the tribal cultural landscape. For investigations related to Native American archaeological resources, Native American Tribal coordination and monitoring shall be required in accordance with **Mitigation Measures CUL-12: Native American Coordination** and **CUL-13: Native American Monitoring**. All work plans shall outline the protocols and procedures to be followed in the event that human remains and associated funerary objects or grave goods (i.e., artifacts associated with human remains) are encountered in accordance with **Mitigation Measure CUL-18: Human Remains Discoveries**. Disposition of archaeological materials recovered during Extended Phase I or Phase II investigations shall be in accordance with **Mitigation Measure CUL-15: Curation and Disposition of Cultural Materials**. Disposition of human remains and any associated funerary objects or grave goods shall be in accordance with **Mitigation Measure CUL-18: Human Remains Discoveries**. Projects occurring within the same timeframe may be covered by one overarching work plan. All investigations and resulting technical reports shall be completed and approved by LWCA prior to LCWA's approval of project plans or publication of subsequent CEQA documents. The Qualified Archaeologist shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its acceptance by LCWA.

Mitigation Measure CUL-7: Avoidance and Preservation in Place of Archaeological Resources. In the event historical resources or unique archaeological resources or resources that contribute to the significance of the tribal cultural landscape are identified, avoidance and preservation in place shall be the preferred manner of mitigating impacts to such resources. Preservation in place maintains the important relationship between artifacts and their archaeological context and also serves to avoid conflict with traditional and religious values of groups who may ascribe meaning to the resource. Preservation in place may be accomplished by, but is not limited to, avoidance, incorporating the resource into open space, capping, or deeding the site into a permanent conservation easement. If avoidance is determined by the LCWA to be infeasible in light of factors such as the nature of the find, proposed project design, costs, and other considerations, then that resource shall be subject to **Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan**. If avoidance and preservation in place of a resource is determined by LCWA to be feasible, then that resource shall be subject to **Mitigation Measure CUL-9: Archaeological Resources Monitoring and Mitigation Plan**.

Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan. A Qualified Archaeologist shall prepare a Phase III Archaeological Resources Data Recovery and Treatment Plan for significant archaeological resources (i.e., resources that qualify as historical resources or unique archaeological resources or that contribute to the significance of the tribal cultural landscape) that will be adversely impacted by a project. Consistent with CEQA Guidelines Section 15126.4, data recovery shall not be required for a historical resource if LCWA determines that testing or studies already completed have adequately recovered the scientifically consequential information for resources eligible under California Register Criterion 4. The Qualified Archaeologist and LCWA shall consult with interested Native American Tribes for recovery/treatment of Native American archaeological resources during preparation of the plan(s) to ensure cultural values ascribed to the resources, beyond those that are scientifically important, are considered in assessing treatment, including those related to the tribal cultural landscape. Projects occurring within the same timeframe may be covered by one overarching plan. The plan(s) shall be submitted to LCWA for review and approval prior to the start of field work for data recovery efforts for resources that are eligible under California Register Criterion 4 (data potential). Data recovery field work shall be completed prior to the start of any project-related ground disturbance. Treatment for archaeological resources that are eligible under California Register Criterion 1 (events), Criterion 2 (persons), or Criterion 3 (design/workmanship) shall be completed within 3 years of completion of the project. Each plan shall include:

a. *Research Design*. The plan shall outline the applicable cultural context(s) for the region, identify research goals and questions that are applicable to each resource or class of resources, and list the data needs (types, quantities, quality) required to answer each research question. The research design shall address all four California Register Criteria (1–4) and identify the methods that will be required to inform treatment, such as subsurface investigation, documentary/archival research, and/or oral history, depending on the nature of the resource. The research design shall also include consideration of Native American or prehistoric archaeological resources as contributors to the tribal cultural landscape.

b. *Data Recovery for Resources Eligible under Criterion 4*. The plan shall outline the field and laboratory methods to be employed, and any specialized studies that will be conducted, as part of the data recovery effort for resources that are eligible under California Register Criterion 4 (data potential). If a resource is eligible under additional criteria, treatment beyond data recovery shall be implemented (see **CUL-6c**).

c. *Treatment for Resources Eligible under Criteria 1, 2, or 3*. In the event a resource is eligible under California Register Criterion 1 (events), Criterion 2 (persons), or Criterion 3 (design/workmanship), then resource-specific treatment shall be developed to mitigate project-related impacts to the degree feasible. This could include forms of documentation, interpretation, public outreach, ethnographic and language studies, publications, and educational programs, depending on the nature of the resource, and may require the retention of additional technical specialists. Treatment measures shall be generally outlined in the plan based on existing information on the resource. Once data recovery is completed and the results are available to better inform resource-specific treatment, the treatment measures shall be formalized and implemented. Treatment shall be developed by the Qualified Archaeologist in consultation with LCWA and Native American Tribal representatives for resources that are Native American in origin, including those related to the tribal cultural landscape.

D. *Security Measures*. The plan shall include recommended security measures to protect archaeological resources from vandalism, looting, and non-intentionally damaging activities during field work.

e. *Procedures for Discovery of Human Remains and Associated Funerary Objects or Grave Goods*. The plan shall outline the protocols and procedures to be followed in the event that human remains and associated funerary objects or grave goods are uncovered. Protocols and procedures shall be in accordance with **Mitigation Measure CUL-18: Human Remains Discoveries**.

f. *Reporting Requirements*. Upon completion of data recovery for resources eligible under Criterion 4, the Qualified Archaeologist shall document the findings in an Archaeological Data Recovery Report. The draft Archaeological Data Recovery Report shall be submitted to the LCWA within 360 days after completion of data recovery, and the final Archaeological Data Recovery Report shall be submitted to LCWA within 60 days after the receipt of LCWA comments. The Qualified Archaeologist shall submit the final Archaeological Data Recovery Report to the South Central Coastal Information Center within 30 days of its acceptance by LCWA.

Upon completion of all other treatment for resources eligible under Criteria 1, 2, or 3, the Qualified Archaeologist shall document the resource-specific treatment that was implemented for each resource and verification that treatment has been completed in a technical document (report or memorandum). The document shall be provided to LCWA within 30 days after completion of treatment.

g. *Curation or Disposition of Cultural Materials*. The plan shall outline the requirements for final disposition of all cultural materials collected during data recovery. Disposition of all archaeological materials shall be in accordance with **Mitigation Measure CUL-15: Curation and Disposition of Cultural Materials**. Disposition of human remains and any associated funerary objects or grave goods shall be in accordance with **Mitigation Measure CUL-18: Human Remains Discoveries**.

h. *Protocols for Native American Coordination and Monitoring*. The plan shall outline the role and responsibilities of Native American Tribal representatives in accordance with **Mitigation Measure CUL-12: Native American Coordination**. It shall outline communication protocols, timelines for review of archaeological resources documents, and provisions for Native American monitoring. The plan shall include provisions for full-time Native American monitoring of all data recovery field work for resources that are Native American in origin, including those related to the tribal cultural landscape, in accordance with **Mitigation Measure CUL-13: Native American Monitoring**.

Mitigation Measure CUL-9: Archaeological Resources Monitoring and Mitigation Plan. For each near-term, mid-term, and long-term project that involves ground disturbance, a Qualified Archaeologist shall prepare an Archaeological Resources Mitigation and Monitoring Plan taking into account the final LCWA-approved project design plans, depths/locations of ground disturbance, proximity to known archaeological resources, and potential to encounter subsurface archaeological resources. Projects occurring within the same timeframe may be covered by one overarching plan. The Qualified Archaeologist and LCWA shall coordinate with participating Native American Tribes during preparation of the plan(s). Each plan shall include:

a. *Establishment of Environmentally Sensitive Areas*. The plan shall outline areas that will be designated Environmentally Sensitive Areas (including maps), if needed. Significant or unevaluated archaeological resources that are being avoided and are within 50 feet of the construction zone shall be designated as Environmentally Sensitive Areas. The resources shall be *delineated* with exclusion markers to ensure avoidance. These areas shall not be marked as archaeological resources, but shall be designated as "exclusion zones" on project plans and protective fencing in order to discourage unauthorized disturbance or collection of artifacts.

b. *Provisions for Archaeological Monitoring*. The plan shall outline requirements for archaeological monitoring and the archaeological monitor(s) role and responsibilities in accordance with **Mitigation Measure**

CUL-11: Archaeological Resources Monitoring. Ground *disturbance* in locations/depths that have been previously monitored as part of the program shall not be subject to additional monitoring.

c. *Procedures for Discovery of Archaeological Resources*. Procedures to be implemented in the event of an archaeological discovery shall be fully defined in the plan and shall be in accordance with **Mitigation Measure CUL-14: Archaeological Resources Discoveries**. Procedures outlined shall include stop-work and protective measures, notification protocols, procedures for significance assessments, and appropriate treatment measures. The plan shall state avoidance or preservation in place is the preferred manner of mitigating impacts to historical resources, unique archaeological resources, and contributors to the significance of the tribal cultural landscape, but shall provide procedures to follow should avoidance be infeasible in light of factors such as the nature of the find, project design, costs, and other considerations.

If, based on the recommendation of a Qualified Archaeologist, it is determined that a discovered archaeological resource constitutes a historical resource or unique archaeological resource or is a contributor to the significance of the tribal cultural landscape, then avoidance and preservation in place shall be the preferred manner of mitigating impacts to such a resource in accordance with **Mitigation Measure CUL-7: Avoidance and Preservation in Place of Archaeological Resources**. In the event that preservation in place is determined to be infeasible and data recovery through excavation is the only feasible mitigation available, an Archaeological Resources Data Recovery and Treatment Plan shall be prepared and implemented following the procedures outlined in **Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan**. LCWA shall consult with appropriate Native American representatives in determining treatment of resources that are Native American in origin to ensure cultural values ascribed to the resources, beyond those that are scientifically important, are considered, including those related to the tribal cultural landscape.

D. *Procedures for Discovery of Human Remains and Associated Funerary Objects or Grave Goods*. The plan shall outline the protocols and procedures to be followed in the event that human remains and associated funerary objects or grave goods are uncovered. Protocols and procedures shall be in accordance with **Mitigation Measure CUL-18: Human Remains Discoveries**.

e. *Reporting Requirements*. The plan shall outline provisions for weekly and final reporting. The Qualified Archaeologist shall prepare weekly status reports detailing activities and locations observed (including maps) and summarizing any discoveries for the duration of monitoring to be submitted to LCWA via email for each week in which monitoring activities occur. The Qualified Archaeologist shall prepare a draft Archaeological Resources Monitoring Report and submit it to LCWA within 180 days after completion of the monitoring program or treatment for significant discoveries should treatment extend *beyond* the cessation of monitoring. The final Archaeological Resources Monitoring Report shall be submitted to LCWA within 60 days after receipt of LCWA comments. The Qualified Archaeologist shall also submit the final Archaeological Resources Monitoring Report to the South Central Coastal Information Center.

f. *Curation or Disposition of Cultural Materials*. The plan shall outline the requirements for final disposition of all cultural materials collected during data recovery. Disposition of all archaeological materials shall be in accordance with **Mitigation Measure CUL-15: Curation and Disposition of Cultural Materials**. Disposition of human remains and any associated funerary objects or grave goods shall be in accordance with **Mitigation Measure CUL-18: Human Remains Discoveries**.

g. *Protocols for Native American Coordination and Monitoring*. The plan shall outline requirements for Native American coordination and monitoring, and the Native American monitor(s) role and responsibilities in accordance with **Mitigation Measures CUL-12: Native American Coordination** and **CUL-13: Native American Monitoring**.

Mitigation Measure CUL-10: Construction Worker Cultural Resources Sensitivity Training. For each near-term, mid-term, and long-term project that involves ground disturbance, LCWA shall retain a Qualified

Archaeologist to implement a cultural resources sensitivity training program. The Qualified Archaeologist, or their designee, and a Native American representative shall instruct all construction personnel of the importance and significance of the area as a tribal cultural landscape, the types of archaeological resources that may be encountered, the proper procedures to be enacted in the event of an inadvertent discovery of archaeological resources or human remains, confidentiality of discoveries, and safety precautions to be taken when working with cultural resources monitors. In the event that construction crews are phased, additional trainings shall be conducted for new construction personnel. LCWA or their contractors shall ensure construction personnel are made available for and attend the training. LCWA shall retain documentation demonstrating attendance.

Mitigation Measure CUL-11: Archaeological Resources Monitoring. For each near-term, mid-term, and long-term project, full-time archaeological monitoring of ground disturbance (i.e., demolition, pavement removal, pot-holing or auguring, boring, drilling, grubbing, vegetation removal, brush clearance, weed abatement, grading, excavation, trenching, or any other activity that has potential to disturb soil) shall be conducted in areas and at depths where there is a potential to encounter archaeological materials or human remains, including excavations into existing artificial fill and native soils, based on the project-specific archaeological resources assessment prepared under **Mitigation Measure CUL-4: Archaeological Resources Assessment**. Ground disturbance in locations/depths that have been previously monitored as part of the program shall not be subject to additional monitoring. The archaeological monitor(s) shall be familiar with the types of resources that could be encountered and shall work under the direct supervision of a Qualified Archaeologist. The number of archaeological monitors required to be on site during ground-disturbing activities is dependent on the construction scenario, specifically the number of pieces of equipment operating at the same time, the distance between these pieces of equipment, and the pace at which equipment is working, with the goal of monitors being able to effectively observe soils as they are exposed. Generally, work areas more than 500 feet from one another will require additional monitors. The archaeological monitor(s) shall keep daily logs detailing the types of activities and soils observed, and any discoveries. Archaeological monitor(s) shall have the authority to halt and re-direct ground disturbing activities in the event of a discovery until it has been assessed for significance and treatment implemented, if necessary, based on the recommendations of the Qualified Archaeologist in coordination with LCWA, and the Native American representatives in the event the resource is Native American in origin, and in accordance with the protocols and procedures outlined in **Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan**. Reporting of archaeological monitoring shall be conducted in accordance with the provisions outlined in **Mitigation Measure CUL-9: Archaeological Resources Monitoring and Mitigation Plan**.

Mitigation Measure CUL-12: Native American Coordination. LCWA shall seek input from participating Native American Tribes[1] during the preparation of documents required under **Mitigation Measures CUL-5: Extended Phase I Archaeological Investigation**, **CUL-6: Phase II Archaeological Investigation**, **CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan**, **Mitigation Measure CUL-9: Archaeological Resources Monitoring and Mitigation Plan**, and **CUL-14: Archaeological Resources Discoveries**, including but not limited to work plans, research designs, treatment plans, and associated technical reports. LCWA shall provide participating Native American Tribes with electronic copies of draft documents and afford them 30 days from receipt of a document to review and comment on the document. Native American comments will be provided in writing for consideration by LCWA. LCWA shall document comments and how the comments were/were not addressed in a tracking log.

[1] The term “Participating Native American Tribes” includes those California Native American Tribes who consulted with LCWA pursuant to Assembly Bill 52 (AB 52) during the preparation of the PEIR and who continue to choose to consult with LCWA, as well as those California Native American Tribes who did not participate in consultation on the PEIR but who choose to consult with LCWA pursuant to AB 52 on future CEQA documents.

Mitigation Measure CUL-13: Native American Monitoring. For each near-term, mid-term, and long-term project, full-time Native American monitoring of ground disturbance (i.e., demolition, pavement removal, pot-holing or auguring, boring, drilling, grubbing, vegetation removal, brush clearance, weed abatement, grading, excavation, trenching, or any other activity that has potential to disturb soil) shall be conducted in areas and at depths where there is a potential to encounter archaeological materials or human remains, including excavations into existing artificial fill and native soils, based on the project-specific study prepared under **Mitigation Measure CUL-4: Archaeological Resources Assessment**. LCWA shall retain a Native American monitor(s) from a California Native American Tribe that is culturally and geographically affiliated with the program area (according to the California Native American Heritage Commission) to conduct the monitoring. If more than one Tribe is interested in monitoring, LCWA shall contract with each Tribe that expresses interest and prepare a monitoring rotation schedule. LCWA shall rotate monitors on an equal and regular basis to ensure that each Tribal group has the same opportunity to participate in the monitoring program. If a Tribe cannot participate when their rotation comes up, they shall forfeit that rotation unless LCWA can make other arrangements to accommodate their schedule. The number of Native American monitors required to be on site during ground disturbing activities is dependent on the construction scenario, specifically the number of pieces of equipment operating at the same time, the distance between these pieces of equipment, and the pace at which equipment is working, with the goal of monitors being able to effectively observe soils as they are exposed. Generally, work areas more than 500 feet from one another require additional monitors.

Native American monitors shall have the authority to halt and re-direct ground disturbing activities in the event of a discovery until it has been assessed for significance. The Native American monitor(s) shall also monitor all ground disturbance related to subsurface investigations and data recovery efforts conducted under **Mitigation Measures CUL-5: Extended Phase I Archaeological Investigation**, **CUL-6: Phase II Archaeological Investigation**, and **CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan** for any resources that are Native American in origin, according to the rotation schedule, including those related to the tribal cultural landscape.

Mitigation Measure CUL-14: Archaeological Resources Discoveries. In the event archaeological resources are encountered during construction of the proposed program, all activity in the vicinity of the find shall cease (within 100 feet), and the protocols and procedures for discoveries outlined in **Mitigation Measure CUL-9: Archaeological Resources Monitoring and Mitigation Plan** shall be implemented. The discovery shall be evaluated for potential significance by the Qualified Archaeologist. If the Qualified Archaeologist determines that the resource may be significant (i.e., meets the definition for historical resource in CEQA Guidelines subdivision 15064.5(a) or for unique archaeological resource in PRC subdivision 21083.2(g) or is a contributor to the tribal cultural landscape), the Qualified Archaeologist shall develop an Archaeological Resources Data Recovery and Treatment Plan for the resource following the procedures outlined in **Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan**. When assessing significance and developing treatment for resources that are Native American in origin, including those related to the tribal cultural landscape, the Qualified Archaeologist and LCWA shall consult with the appropriate Native American representatives. The Qualified Archaeologist shall also determine if work may proceed in other parts of the project site while data recovery and treatment is being carried out. LCWA shall consult with the State Lands Commission Staff Attorney regarding any cultural resources discoveries on state lands. The final disposition of archaeological, historical, and paleontological resources recovered on State land under the jurisdiction of the California State Lands Commission must be approved by the Commission.

Mitigation Measure CUL-15: Curation and Disposition of Cultural Materials. LCWA shall curate all Native American archaeological materials, with the exception of funerary objects or grave goods (i.e., artifacts associated with Native American human remains). LCWA shall consult with Native American representatives regarding the final disposition of Native American archaeological materials and on the selection of the curation facility, with preference given to tribal museums. LCWA shall first consider repositories that are accredited by the American Association of Museums and that meet~~s~~ the standards outlined in 36 CFR 79.9. If a suitable accredited repository is not identified, then LCWA shall consider non-accredited repositories as long as they meet the minimum standards set forth by 36 CFR 79.9. If a suitable non-accredited repository is not identified, then LCWA shall donate the collection to a local California Native American Tribe(s) (Gabrielino or Juañeno). Disposition of Native American human remains and associated funerary objects or grave goods shall be determined by the landowner in consultation with LCWA and the Most Likely Descendant in accordance with **Mitigation Measure CUL-18: Human Remains Discoveries**.

LCWA shall curate all historic-period archaeological materials that are not Native American in origin at a repository accredited by the American Association of Museums that meets the standards outlined in 36 CFR 79.9. If no accredited repository accepts the collection, then LCWA may curate it at a non-accredited repository as long as it meets the minimum standards set forth by 36 CFR 79.9. If neither an accredited nor a non-accredited repository accepts the collection, then LCWA shall offer the collection to a public, non-profit institution with a research interest in the materials, or to a local school or historical society in the area for educational purposes. If no institution, school, or historical society accepts the collection, LCWA may retain it for on site display as part of its interpretation and educational elements.

The final disposition of cultural resources recovered on state lands under the jurisdiction of the California State Lands Commission must be approved by the Commission.

Prior to start of each project, LCWA shall obtain a curation agreement and shall be responsible for payment of fees associated with curation for the duration of the program.

Mitigation Measure CUL-16: Future Native American Input. LCWA shall consult with participating California Native American Tribes,[2] to the extent that they wish to participate, during future design of project-level components, plant and native plant selections or palettes, and development of content for educational and interpretative elements, such as signage and Visitors Center displays.

Mitigation Measure CUL-17: Tribal Access Plan. Prior to the start of construction, LCWA shall develop a written access plan to preserve and enhance tribal members' access to, and use of, the restoration project area for religious, spiritual, or other cultural purposes. This plan will allow access to the extent LCWA has the authority to facilitate such access, and be consistent with existing laws, regulations, and agreements governing property within the program area. The access plan may place restrictions on access into certain areas, such as oil operations and other exclusive easements the LCWA does not have access rights to. This access plan shall be developed in coordination with participating California Native American Tribes, to the extent that they wish to participate.

Mitigation Measure CUL-18. Human Remains Discoveries: If human remains are encountered, then LCWA or its contractor shall halt work in the vicinity (within 100 feet) of the discovery and contact the appropriate County Coroner in accordance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5, which requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. If the County Coroner determines the remains are Native American, then the Coroner will notify the California Native American Heritage Commission (NAHC) within 24 hours in accordance with Health and Safety Code subdivision 7050.5I, and Public Resources Code Section 5097.98. The California Native American Heritage Commission shall then identify the person(s) thought to be the Most Likely Descendant (MLD). The MLD may, with the permission of the land owner, or his or her authorized representative, inspect the site of the

[2] The term "Participating Native American Tribes" includes those California Native American Tribes who consulted with LCWA pursuant to AB 52 during the preparation of this PEIR and who continue to choose to consult with LCWA, as well as those California Native American Tribes who did not participate in consultation on the PEIR but who choose to consult with LCWA pursuant to AB 52 on future CEQA documents.

discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The MLD shall complete their inspection and make their recommendation within 48 hours of being granted access by the landowner to inspect the discovery. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials. LCWA and the landowner shall discuss and confer with the MLD on all reasonable options regarding the MLD's preferences for treatment.

Until LCWA and the landowner have conferred with the MLD, the contractor shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity and is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities take into account the possibility of multiple burials.

If the NAHC is unable to identify an MLD, or the MLD identified fails to make a recommendation, or the landowner rejects the recommendation of the MLD and the mediation provided for in Subdivision (k) of Section 5097.94, if invoked, fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall inter the human remains and items associated with Native American human remains with appropriate dignity on the facility property in a location not subject to further and future subsurface disturbance.

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McCawley, William, 1996. First Angelinos: the Gabrielino Indians of Los Angeles. Malki Museum Press/Ballena Press, Banning, California.

3.6 Energy

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

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

Less than Significant Impact. Construction of the proposed project would require the consumption of fuel energy. However, the project site is nearly flat and would require minimal use of grading equipment for project construction. Construction would be short-term and would not require substantial quantities of equipment. Therefore, project construction would not result in wasteful, inefficient, or unnecessary consumption of energy resources. In addition, construction vehicles are already required to comply with governmental measures and regulations to reduce fuel and energy consumption, and the project does not include any electrical infrastructure.

As the project is a restoration project, there would be no or minimal energy consumption during long-term operations.

b) Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Less than Significant Impact. The project would not conflict with or obstruct a state or local renewable energy/energy efficiency plan, as there is very minimal energy usage for construction, and no energy usage for daily operations. The City of Seal Beach's General Plan includes energy conservation opportunities and techniques, aimed at reducing building energy use (City of Seal Beach, 2003). The project would install no habitable structures; therefore, these strategies would not apply to the project.

Avoidance, Minimization and/or Mitigation Measures

No significant impacts to Energy were identified and no mitigation measures are required.

Sources

City of Seal Beach, 2003, General Plan, Accessed 2/27/2023. Available at https://www.sealbeachca.gov/Departments/Community-Development/Planning-Development/General-Plan.

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR, Section 3.6 Greenhouse Gas Emissions and Energy. Accessed 10/10/2022.

3.7 Geology and Soils

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a Known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on 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 or most current edition), 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?	☐	☒	☐	☐

The PEIR indicates the following about geology and soil resources which are relevant to this project site (LCWA, 2021):

- Located in the Peninsular geomorphic province that includes the Los Angeles Basin characterized by a series of mountain ranges separated by long valleys, formed from faults branching from the San Andreas Fault.
- Past research suggests that over the past 20,000 years, the Rio Hondo, San Gabriel, and Santa Ana Rivers have moved back and forth across the coastal flood plains in Los Angeles and Orange County, depositing geologically recent alluvial materials.

- The coastal portion of the floodplain is bound by a line of elongated folded low hills and faults. This portion of the basin is dominated by the northwest-trending Newport-Inglewood Structural Zone, which diagonally crosses the program area as the Newport-Inglewood Fault Zone.
- The topography of the program area is generally flat with elevations of less than 100 feet; however, geologic uplifts have occurred, which have interrupted the plain in different areas and resulted in prominent folds and hills.

a) Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Less than Significant Impact. The Alquist-Priolo and Newport-Inglewood Fault Zones cross the site over the eastern portion, and crosses the proposed perimeter berm and upland fill area. Figure 11 shows the fault zone and fault. Neither construction nor operation are anticipated to cause any substantial adverse impacts to fault rupture. See below for detail about soil composition at the project site. The project is essentially maintaining open space and creating additional sensitive habitat area that is not significantly disturbed by earthshaking and ground rupture. The exception to this condition is the perimeter berm erected to protect against flooding adjacent property during extremely high water. The proposed berm will be constructed to standards suitable to prevent and limit damage in the very unlikely event that the fault ruptures. It is common practice to inspect the earthen berms after smajor earthquake events. The other features such as 1st Street and the bridge-type structure will be installed using construction approaches required within seismic areas to protect their integrity during earthquakes. As no aspect of the proposed restoration project could lead to increased geological risks, no impacts would occur.

ii. Strong seismic ground shaking?

Less than Significant Impact. Due to the project being in an area with consistent seismic activity, there is a possibility of a large earthquake in the region (including during the construction or operation of the project). However, no substantial adverse effects from ground shaking are anticipated as any physical structures that will be created by this project will be installed to seismic engineering standards (e.g., over excavated foundations backfilled with compacted lifts, foundations extended to a sufficient depth to be embedded within competent material or spread footings on pre-compacted foundation soils) to prevent damage or instability during a seismic event. Inspection will occur post-event to identify any needed maintenance or repairs.

iii. Seismic-related ground failure, including liquefaction?

Less than Significant Impact. As previously mentioned, there is a possibility of a large earthquake during the construction or operation of the project. A soils report was conducted by Anchor QEA as part of the technical studies for the program area during the PEIR process. Moisture content ranged from 2.2% to 189.9%. Based on particle size analysis, percent fines ranged from 8.9% to 66.4%. In addition to particle size analysis on geotechnical borings, particle size analysis was conducted on chemical boring composite samples to support the environmental site assessment. Percent fines on the chemical boring composite samples ranged from 39.3% to 73.1%. Along with particle analysis, Atterberg limit tests were conducted on geotechnical samples. The plasticity index of those samples ranged from 9 to 51.

The lithology was observed using visual classification methods within the soil cores sampled through SPT split spoons as well as hand auger cuttings. Two borings were conducted to 26.5 feet, including LCW-17 and LCW-18. These two borings showed a dense silty sand to sandy silt layer in the upper 10 feet. Beneath this layer was a 10-foot-thick layer of fat clay between 10 and 20 feet bgs. Beneath this unit was a silty clayey sand layer that

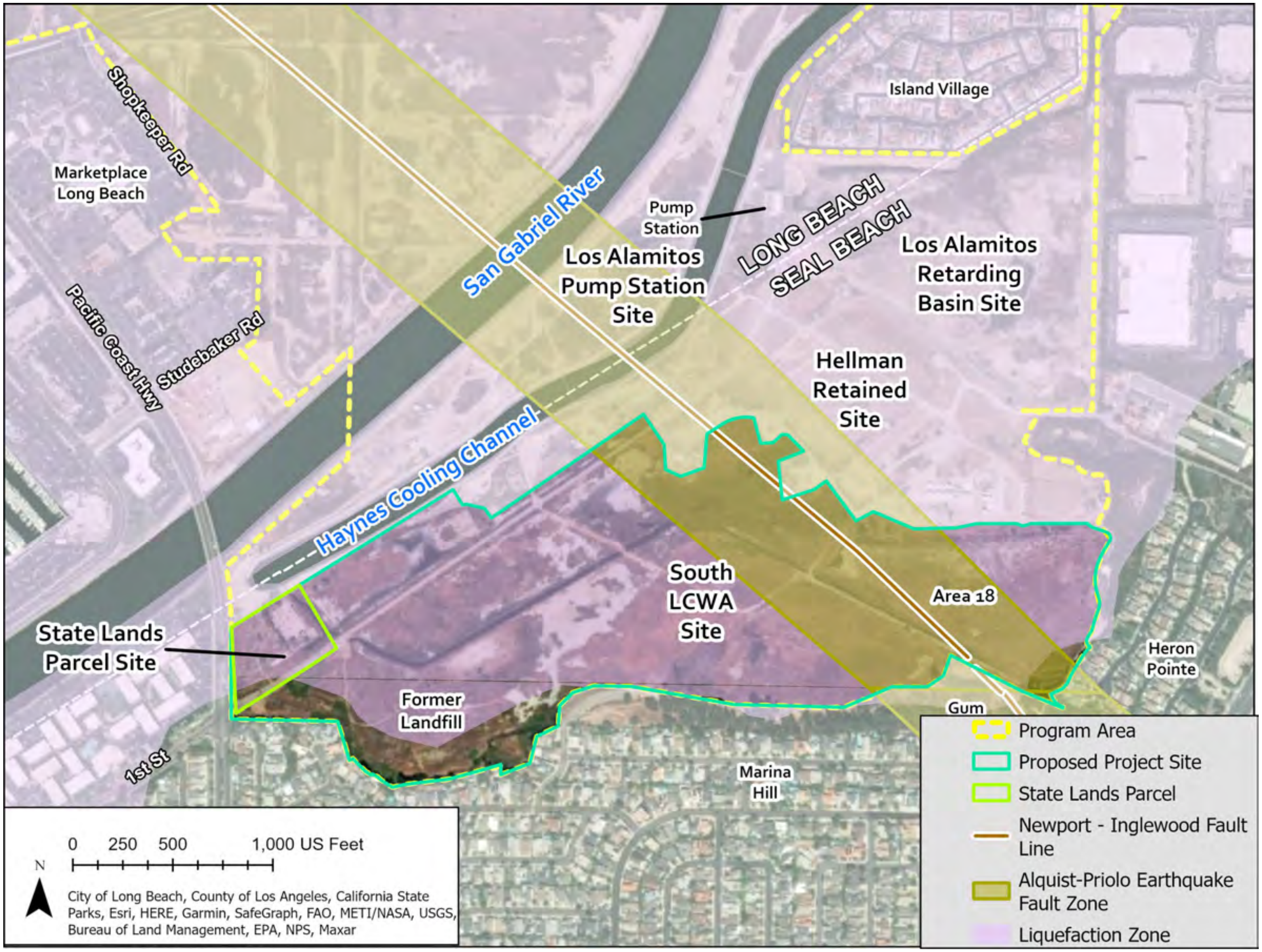

Figure 11: Alquist-Priolo Fault Zone and Fault Location

extended to the termination depth of the boring at 26.5 feet bgs. Borings LCW-05, LCW-09, and LCW-13 were drilled to a depth of 10.5 feet bgs. All three borings showed consistent sandy silt with clay material throughout. This layer was generally between soft and medium stiff, with an SPT N-value range of 4 to 25.

Hand augers (including both the chemical and geotechnical borings) were collected to a depth range of 1.3 to 12.6 feet bgs. The upper unit, observed to a depth range between 2.5 and 5.5 feet bgs, consisted of either sand or silty sand. In most cases, the middle layer consisted of a soft or very soft clay. The overall fines content of both layers varied from boring to boring.

The project site does have a liquefaction potential, but the project is not anticipated to cause any potential substantial adverse effects as any physical structures that will be created by this project will be installed to seismic engineering standards (e.g., over excavated foundations backfilled with compacted lifts, foundations extended to a sufficient depth to be embedded within competent material or spread footings on pre-compacted foundation soils) to prevent damage or instability during a seismic event. Inspection will occur post-event to identify any needed maintenance or repairs (Anchor QEA, 2022; Appendix G).

iv. Landslides?

Less than Significant Impact. There is no likely probability for landslides in the project site due to the fairly flat topography of the site. Per the California Department of Conservation Landslide Inventory, there are no mapped landslides within the project site.

b) Would the Project result in substantial soil erosion or the loss of topsoil?

Less than Significant Impact. Topsoil will be kept onsite unless it is contaminated, and disposal is required for the health of the wetlands. Any topsoil that can be reused will be retained on the site and landscaped with native vegetation to improve its stability and prevent erosion. The project will be required to have a Stormwater Pollution Prevention Plan with Best Management Practices during construction to control any soil loss, this will be done in conjunction with the regulatory permitting through the Regional Water Quality Control Board.

Erosion and deposition are natural and necessary functions of a healthy wetland habitat and tidal connection. There will be some erosion during the operation of the project, but it should be minimal, and most should be captured on site by vegetation.

c) Would the Project 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 offsite landslide, lateral spreading, subsidence, liquefaction or collapse?

Less than Significant Impact with Mitigation. The wetlands restoration is located on ground susceptible to liquefaction (Figure 11). On the project site, there is an unstable subsurface soil condition that could liquify during a major earthquake event, and repair to both roadway and berm may be needed. However, based on conditions on-site since construction of all existing structures (roads, river and cooling channel levees), there has been no surface displacement of any impact by any earthquakes over the past 70 years. Hardscape associated with the project will be installed to seismic engineering standards (e.g., over excavated foundations backfilled with compacted lifts, foundations extended to a sufficient depth to be embedded within competent material or spread footings on pre-compacted foundation soils) to prevent damage or instability during a seismic event. Inspection will occur post-event to identify any needed maintenance or repairs.

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

Less than Significant Impact. The project site is assumed to have fill and soil materials with low to moderate expansion potential (LCWA, 2021). The wetlands restoration has no buildings within the project description, which means there is little to no risk for the public visiting the project site. Should the soil used for the earthen berm for the restoration gradually expand, the berm and trail on the berm could be easily restored and repaired without risk to safety.

e) Would the Project 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?

No Impact. The project has no expectations to use any sort of septic tank or alternative wastewater disposal system. Any project features needing the infrastructure will connect with the City's sewer lines and wastewater disposal systems.

f) Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact with Mitigation. There is a possibility that there will be fossil discoveries at lower depths when there is grading and excavation. The PEIR uses 5 feet below ground surface as the conservative estimate for a possible high potential of paleontological resources on the site. There should be no effects to paleontological resources during the operation of the project. The PEIR has multiple mitigation measures in place to ensure there are no effects to paleontological features that are found during the construction of the project. (LCWA, 2021)

Avoidance, Minimization and/or Mitigation Measures

Less than significant impacts to Geology and Soils were identified and no additional mitigation measures are required beyond those presented in the PEIR as follows:

Mitigation Measure GEO-1: Retention of a Qualified Professional Paleontologist. Prior to the start of construction of any near-term, mid-term, or long-term project, LCWA shall retain a Qualified Professional Paleontologist as defined by the Society of Vertebrate Paleontology to carry out all mitigation related to paleontological resources including: project-level review (**GEO-2**); paleontological resources sensitivity training (**GEO-3**); oversight of paleontological resources monitoring (**GEO-4**); and recovery, treatment, analysis, curation, and reporting (**GEO-5, GEO-6**, and **GEO-7**).

Mitigation Measure GEO-2: Project-Level Paleontological Resources Review and Monitoring Recommendations. Prior to LCWA approval of any near-term, mid-term, and long-term project, the Qualified Professional Paleontologist shall review the *Los Cerritos Wetlands Program Paleontological Resources Assessment* (ESA, 2019), grading plans, and any available geotechnical reports/data to determine the potential for ground disturbance to occur within older alluvium and old shallow marine deposits. If available data is sufficient to accurately determine the depth of older alluvium and old shallow marine deposits within a project site, monitoring shall be required beginning at or just above that depth. If available data is insufficient to determine the depth of older alluvium and old shallow marine deposits, monitoring shall be required beginning at 5 feet below surface (consistent with the accepted depth at which high sensitivity sediments could occur based on regional evidence). The results of the reviews shall be documented in technical memoranda to be submitted to LCWA prior to the start of ground disturbance, along with recommendations specifying the locations, depths, duration, and timing of any required monitoring. The technical memoranda shall include map figures that outline where monitoring is required and at what depths, and shall stipulate whether screen washing is necessary to recover small specimens. Any required screen washing shall follow SVP Guidelines.

Mitigation Measure GEO-3: Paleontological Resources Sensitivity Training. Prior to the start of ground disturbance for any near-term, mid-term, or long-term project, the Qualified Professional Paleontologist shall conduct paleontological resources sensitivity training. The training shall focus on the recognition of the types of paleontological resources that could be encountered within the program area, the procedures to be followed if they are found, confidentiality of discoveries, and safety precautions to be taken when working with paleontological monitors. LCWA shall ensure that construction personnel are made available for and attend the training, and retain documentation demonstrating attendance. The training should be repeated as necessary for incoming construction personnel.

Mitigation Measure GEO-4: Paleontological Resources Monitoring. A qualified paleontological monitor, as defined by the Society of Vertebrate Paleontology, shall monitor all ground-disturbing activities occurring in the older alluvium and old shallow marine deposits for each near term, mid-term, or long-term project.

Monitoring shall be implemented consistent with the locations, depths, duration, and timing recommendations specified in the technical memorandum for the project. Monitors shall work under the direction of the Qualified Professional Paleontologist. The number of monitors required to be on-site during ground-disturbing activities shall be determined by the Qualified Professional Paleontologist and shall be based on the construction scenario – specifically the number of pieces of equipment operating at the same time, the distance between these pieces of equipment, and the pace at which equipment is working – with the goal of monitors being able to effectively observe sediments as they are exposed. Monitors shall have the authority to temporarily halt or divert work away from exposed fossils in order to recover the fossil specimens, and to request assistance from construction equipment operators to recover samples for screen washing as necessary. Monitors shall prepare daily logs detailing the types of activities and soils observed, and any discoveries. The Qualified Professional Paleontologist, in consultation with LCWA, shall have the ability to modify (i.e., increase, reduce, or discontinue) monitoring requirements based on observations of soil types and frequency of discoveries. Requests for modifications shall be submitted in writing to LCWA for approval prior to implementation.

Mitigation Measure GEO-5: Paleontological Discoveries. If any potential fossils are discovered by paleontological resources monitors or construction personnel, all work shall cease at that location (within 100 feet) until the Qualified Professional Paleontologist has assessed the discovery and made recommendations as to the appropriate treatment. The paleontological resources monitor (if one is present) or construction personnel (if a monitor is not present) shall flag the fossiliferous area for avoidance until the Qualified Professional Paleontologist can evaluate the discovery and develop plans for avoidance or removal/salvage of the specimen(s), if deemed significant. Significant discoveries shall be salvaged following SVP Guidelines. LCWA shall consult with the State Lands Commission Staff Attorney regarding any paleontological resources discoveries on state lands.

Mitigation Measure GEO-6: Preparation, Identification, Cataloging, and Curation Requirements. All significant fossil discoveries shall be prepared to the point of identification to the lowest taxonomic level possible, cataloged, and curated into a certified repository with retrievable storage (such as a museum or university). All GPS data, field notes, photographs, locality forms, stratigraphic sections, and other data associated with the recovery of the specimens shall be deposited with the institution receiving the specimens. The Qualified Professional Paleontologist shall be responsible for obtaining a signed curation agreement from a certified repository in southern California prior to the start of the program. Given the length of the program, multiple agreements may be necessary due to changing capacities of repositories. The final disposition of paleontological resources recovered on state lands under the jurisdiction of the California State Lands Commission must be approved by the Commission.

Mitigation Measure GEO-7: Reporting Requirements. The Qualified Professional Paleontologist shall prepare weekly status reports detailing activities and locations observed (with maps) and summarizing any discoveries to be submitted to LCWA via email for each week in which monitoring activities occur. Monthly progress reports summarizing monitoring efforts shall be prepared and submitted to LCWA for the duration of monitored ground disturbance. Reports detailing the results of monitoring for any near-term, mid-term, or long-term project and treatment of significant discoveries shall be submitted to LCWA within 120 days of completion of treatment, or within 30 days of completion of monitoring if no significant discoveries occurred. If significant fossils are recovered, the Qualified Professional Paleontologist shall file the final report with the Natural History Museum of Los Angeles County and the certified repository.

Sources

Anchor QEA. 2022. Southern Los Cerritos Wetlands Restoration Project. Sampling and Analysis Report. (Appendix G).

California Department of Conservation, Landslide Inventory https://maps.conservation.ca.gov/cgs/lsi/app/, accessed 10/7/22.

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR Section 3.5 Geology, Soils, and Paleontological Resources, accessed 10/17/22.

3.8 Greenhouse Gas Emissions

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

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

Less Than Significant Impact. The PEIR Air Quality Study used California Emissions Estimator Model® (CalEEMod) to calculate criteria pollutant emissions as well as CO2e emissions for both construction and operation, which can be used to determine if the program area would exceed SCAQMD standards for GHG emissions. Maximum unmitigated construction CO2e emissions were found to be 9,929.36 lbs./day, or 1,813.31 tons/yr (Appendix C). Amortized over 30 years per SCAQMD, this is equivalent to 60.44 MT CO2e. Maximum unmitigated operational emissions were found to be 10,126.86 lbs./day, or 1,849.37 tons/yr. By adding the amortized construction emissions to the operational emissions, a total of 3,662.68 MT/yr. would be created by the program area in its entirety, which is above the SCAQMD threshold of 3,000 MT/yr.

As discussed under Air Quality (Section 3.3), the footprint of the project site that is analyzed in this document is 20.5% of the total analyzed in the PEIR Air Quality Study. Therefore, the expected GHG emission for the proposed project would be 750.84 MT/yr., below SCAQMD's threshold. Impacts would be less than significant.

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

No Impact. The project would not conflict with any applicable plan, policy, or regulation in regard to Greenhouse Gases. The City of Seal Beach General Plan, adopted in December 2003, does not contain a stand-alone air quality element or a Climate Action Plan. In addition, the nature of the project would lead to restoration of natural features that themselves play a role in Greenhouse Gas mitigation. Therefore, no conflicts with an applicable plans, policies, or regulations would occur.

Avoidance, Minimization and/or Mitigation Measures

Less than significant impacts to Greenhouse Gas Emissions were identified and no mitigation measures are required.

Sources

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR, Section 3.6 Greenhouse Gas Emissions and Energy. Accessed 10/10/2022.

Los Cerritos Wetlands Restoration Air Quality Technical Report, 536 pages (ESA, May 2020).

Moffatt & Nichol, 2023, Southern Los Cerritos Wetlands Restoration Project – Air Quality/Greenhouse Gas Study. (Appendix C).

3.9 Hazards and Hazardous Materials

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 complied pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
e) For a Project located within an airport land use plan, or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.	☐	☐	☐	☒

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

Less than Significant Impact with Mitigation. The project does not propose routine transport, use, or disposal of hazardous materials. The wetland restoration project does not include use of hazardous materials. However, relict oil contamination exists on-site that will be removed as part of the restoration. Contaminated sumps will be removed (anticipated to go to municipal landfill) and testing of the final surface will occur to confirm no residual contamination remains after removal. Sumps to remain have been determined by testing and analysis to be within safe thresholds of Federal standards according to the project geologist (Anchor QEA, 2022 and 2023). There are no hazardous materials to be used during operations of the restored wetlands.

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

Less than Significant Impact. See above text regarding removal of contaminated sumps and testing of the final surface to confirm no residual contamination.

c) Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. The project will not emit any emissions nor involve handling hazardous materials within one-quarter mile of an existing school as there are no schools within one-quarter mile of the project site.

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

Less Than Significant Impact with Mitigation. There are multiple sumps onsite that will need to be removed during construction for restoration. These sumps are assumed to be artifacts with oil contamination from previous land uses. Contaminated sumps will be removed (anticipated to go to municipal landfill) and testing of the final surface will occur to confirm no residual contamination remains after removal. Sumps to remain have been determined by testing and analysis to be within safe thresholds of Federal standards according to the project geologist (Anchor QEA, 2022 and 2023). Any hazards to the construction crew will be mitigated with health and safety plans (HAZ-1) and all relevant environmental regulations. Operations should create no significant hazards to the public or environment, as the site contamination should have been removed during construction.

e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?

No Impact. There are no airports within two miles of the project site.

f) Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. This project would not interfere with any emergency plans for either the City of Long Beach or the City of Seal Beach. There would be no construction material or storage on public roadways, and there will be no road closures associated with the project.

g) Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

No Impact. The project site is not in or near a very high or high fire hazard severity zone.

Avoidance, Minimization and/or Mitigation Measures

Less than significant impacts to Hazards and Hazardous Materials were identified and no additional mitigation measures are required beyond those presented in the PEIR as follows:

Mitigation Measure HAZ-1: Health and Safety Plan. The contractor(s) shall prepare and implement site-specific Health and Safety Plans as required by and in accordance with 29 CFR 1910.120 to protect construction workers and the public during all excavation and grading activities. This Plan shall be submitted to LCWA, the Orange County Environmental Health Division (the CUPA for the City of Seal Beach area), or Long Beach/Signal Hill Joint Powers Authority (the CUPA for the Long Beach area), for review prior to commencement of construction. The Health and Safety Plans shall include, but are not limited to, the following elements:

- Designation of a trained, experienced site safety and health supervisor who has the responsibility and authority to develop and implement the site Health and Safety Plan;
- A summary of all potential risks to construction workers and maximum exposure limits for all known and reasonably foreseeable site chemicals;
- Specified personal protective equipment and decontamination procedures, if needed;
- Emergency procedures, including route to the nearest hospital; and
- Procedures to be followed in the event that evidence of potential soil or groundwater contamination (such as soil staining, noxious odors, debris or buried storage containers) is encountered. These procedures shall be in accordance with hazardous waste operations regulations and specifically include, but are not limited to, the following: immediately stopping work in the vicinity of the unknown hazardous materials release, notifying the LCWA, and the Orange County Environmental Health Division (the CUPA for the City of Seal Beach area), or the Long Beach/Signal Hill Joint Powers Authority (the CUPA for the Long Beach area), the LARWQCB, or CalGEM, as appropriate, and retaining a qualified environmental firm to perform sampling and remediation.

Mitigation Measure HAZ-2: Soil, Landfill Materials, and Groundwater Management Plan. In support of the Health and Safety Plan described in **Mitigation Measure HAZ-1**, the contractor(s) shall develop and implement a Soil, Landfilled Materials, and Groundwater Management Plan that includes a materials disposal plan specifying how the contractor will remove, handle, transport, and dispose of all excavated material in a safe, appropriate, and lawful manner. The Plan shall identify protocols for soil and landfilled materials testing and disposal, identify the approved disposal site, and include written documentation that the disposal site can accept the waste. Contract specifications shall mandate full compliance with all applicable local, state, and federal regulations related to the identification, transportation, and disposal of hazardous materials, including those encountered in excavated soil, landfilled materials, or dewatering effluent.

As part of the Soil, Landfill Materials, and Groundwater Management Plan, the contractor shall develop a groundwater dewatering control and disposal plan specifying how groundwater (dewatering effluent), if encountered, will be handled and disposed of in a safe, appropriate and lawful manner. The Plan shall identify the locations at which groundwater dewatering is likely to be required, the test methods to analyze groundwater for hazardous materials, the appropriate treatment and/or disposal methods, and approved disposal site(s), including written documentation that the disposal site can accept the waste. The contractor may also discharge the effluent under an approved permit to a publicly owned treatment works, in accordance with any requirements the treatment works may have.

The Plan will include information to address the following: In the event that any debris are encountered during excavation that could be associated with the formerly used defense site (FUDS), including but not limited to munitions and explosives of concern (MEC), material potentially presenting an explosive hazard (MPPEH), and munitions constituents (MC), follow the 3Rs of Explosives Safety; Recognize, Retreat and Report: Recognize, when you have encountered munitions; Retreat, note your location as you are backing away. Do not approach, touch, or disturb a suspect munitions, safely leave the area; and Report, immediately what was found to state and or local law enforcement – call 911. Please then notify DTSC.

This Plan shall be submitted to the LCWA, and the Orange County Environmental Health Division (the CUPA for the City of Seal Beach area) for review and approval prior to commencement of construction.

Sources

Anchor QEA, 2022, Southern Los Cerritos Wetlands Restoration Project. Sampling and Analysis Report.

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR, Section 3.7 Hazards and Hazardous Materials. Accessed 10/10/2022.

3.10 Hydrology and Water Quality

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☒	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surface, in a manner which would				
i) result in substantial erosion or siltation on or off-site;	☐	☒	☐	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☒	☐
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
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?	☐	☒	☐	☐

a) Would the project violate or conflict with any adopted water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Less Than Significant Impact with Mitigation. Construction activities would be required to comply with the requirements of SBMC Chapter 9.20 (the City's Stormwater Management Program). SBMC Chapter 9.20 is enforced by City officials during the permit approval process. This chapter requires development projects to comply with the Orange County Drainage Area Management Plan (DAMP) and properly store waste material, to ensure the protection of water quality from stormwater runoff.

There is a possibility that sediment generated by construction will make its way to a body of water, but the project is subject to multiple permits (identified in Table 6) for ensuring that water quality will not be decreased during construction and Best Management Practices will be included that minimize adverse impacts to water quality. Water quality would be improved by reconnecting the marsh floodplain to the Haynes Cooling Channel because the source of seawater is not impaired due to less stormwater contributions as compared to conditions within the San Gabriel River, particularly after storm flows. The local groundwater has already been impacted by historic land uses and is already brackish (a salt and freshwater mixture) water. Due to the non-potable brackish water, there are no groundwater wells in the project area.

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

No Impact. There is no interference with recharge due to the locations of the project within the tidal fringe. Construction will use some of the available public water supply, but not enough to interfere with the groundwater supplies or recharge. Operations will use no existing groundwater supplies, water for temporary irrigation will be from the City water line rather than an aquifer. The only impervious surface created for the project already exists on 1st Street and is being raised and not expanded.

c) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i. result in substantial erosion or siltation on- or off-site;

Less Than Significant Impact with Mitigation. Best Management Practices as detailed in a SWPPP as described in regulatory permit conditions will be in place during construction to minimize the extent of any possible erosion or siltation. It is possible that there will be minor erosion or siltation during the operations of the project, but it will not be substantial due to the existence of typical low energy tidal hydraulics associated with relatively flat expansive wetted areas of the restored wetlands (Moffatt & Nichol, 2022; Appendix H).

ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

Less Than Significant Impact. The project would not increase the rate of surface runoff in a manner that floods on- or off-site because the wetland being created is a relatively level marsh plain that will not slope significantly in any direction. Tidal flooding of the wetlands will regularly occur from seawater sources, but this is a natural process being encouraged and increased and would not be due to surface runoff.

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;

No Impact. One bioswale will be constructed as part of Phase 2, and it will help to increase percolation and reduce surface water thus improving function as water quality treatment and stormwater collection. Runoff water in the project site would be expected to decrease following the restoration of wetlands and the absence of the construction of new impervious surfaces.

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

No Impact. The entire project site is within both a tsunami and flood zone. The restoration and removal of industrial hazards will decrease the risk of releasing pollutants should the project be inundated with water. The restoration will also provide protection from tsunami damage by absorbing energy over the expansive marsh plain and will provide flood protection measures in the form of earthen berms to protect the Hellman Retained Site from flooding. There is no risk of seiche waves at the project site. Figure 12 shows that the project site is not located within the 100-year floodplain, per the Flood Insurance Rate Map (FIRM) map.

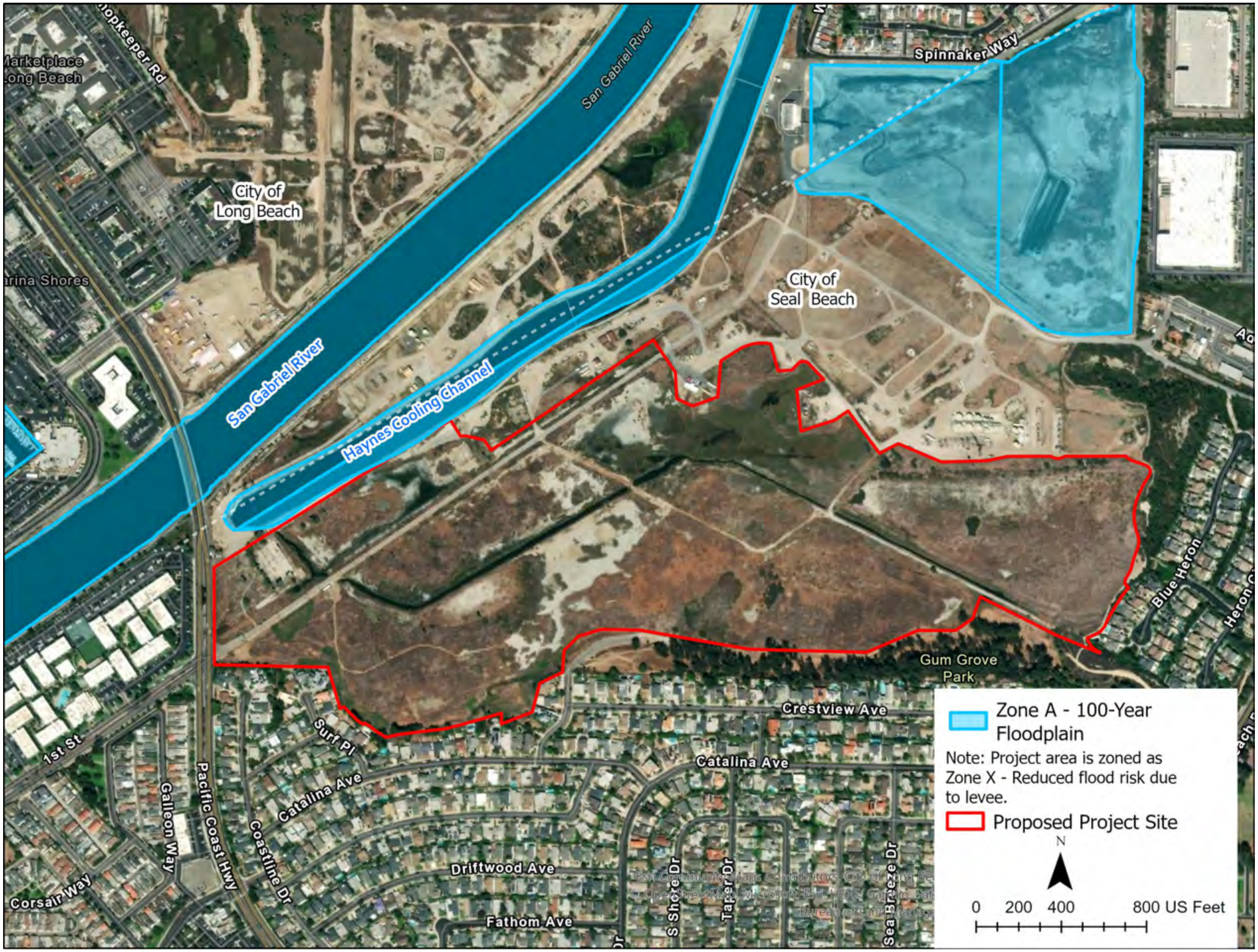

Figure 12: Los Cerritos Wetland Flood Insurance Rate Map (FIRM)

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

Less than Significant Impact with Mitigation. The project would be a benefit to the local water quality control plan and identified beneficial uses, as the restored watershed would increase the water quality for any tidal flows that would flow in and out of the wetlands by natural absorption and uptake of pollutants by the wetland plants and soils.

The Water Quality Control Plan (2019 Update) for the Santa Ana River Basin includes the City of Seal Beach in the plan boundaries. This plan provides water quality objectives and Total Maximum Daily Loads (TMDL) for pollutants in the plan area. As described above, the proposed project would not increase the impervious surface area on the project site. Therefore, there would be no substantial change to precipitation and runoff infiltration and groundwater. The project would not generate increased demand for water.

Avoidance, Minimization and/or Mitigation Measures

Less than significant impacts to Hydrology and Water Quality were identified and no additional mitigation measures are required beyond those presented in the PEIR as follows:

Mitigation Measure HYD-1: A Monitoring and Adaptive Management Plan (MAMP) shall be prepared and implemented prior to commencement of construction or restoration activities. The MAMP shall provide a framework for monitoring site conditions in response to the program implementation. The monitoring shall focus on sediment quality in areas subject to the greatest deposition from storm events and that are also not subject to regular tidal flushing, (e.g., the southwestern corner of the Long Beach City Property site). The sediment quality monitoring shall be performed at a frequency that would capture the potential build-up of contaminants in the deposited sediment before concentration are reached that would impact benthic macro-invertebrates and other sensitive species. The findings of the monitoring efforts shall be used to identify any source of impairment, and if discovered, provide measures for remediation of the sediment source area(s). The MAMP shall be submitted for review and approval to permitting agencies prior to commencement of construction or restoration activities.

Sources

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR, Section 3.8 Hydrology and Water Quality. Accessed 10/17/2022.

Moffatt & Nichol, 2022, 65% Southern Los Cerritos Wetlands Restoration, Phases 1 and 2 Hydraulic and Hydrology Modeling. (Appendix H).

Santa Ana Regional Water Quality Control Board, 2019, Water Quality Control Plan for the Santa Ana River Basin (Basin Plan), Accessed 2/27/2023. Available at https://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/.

3.11 Land Use and Planning

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

According to the Cities of Long Beach and Seal Beach General Plan Land Use Designation (Figure 13), the Project Area mostly has no land use designation or is identified as open space.

The properties within Seal Beach are zoned as Specific Plan Regulation, Open Space Natural, and Oil Extraction (Figure 14). The Hellman Ranch Specific Plan applies to the entire portion of the program area within the City of Seal Beach.

a) Would the Project physically divide an established community?

No Impact. The project will restore existing wetlands and construct new public access trails, and does not include new roads, railroads, or any other feature that is known to divide existing communities. Thus, it would not physically divide an established community.

b) Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. The project is consistent with all applicable goals and policies of the applicable plans, policies, and regulations including the City of Seal Beach General Plan and the City's Municipal Code.

Avoidance, Minimization and/or Mitigation Measures

No significant impacts to Land Use and Planning were identified and no mitigation measures are required.

Sources

City of Seal Beach, 2003, General Plan, Accessed 2/27/2023. Available at https://www.sealbeachca.gov/Departments/Community-Development/Planning-Development/General-Plan.

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR, Section 3.9 Land Use and Planning. Accessed 10/10/2022.

Figure 13: General Plan Land Use Designations

Figure 14: Zoning Boundaries

3.12 Mineral Resources

Would the Project:

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

a) Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact.. The project will not result in the loss of available known mineral resources of value to the region and State. All oil extraction from the surface by the previous landowner has ceased on-site and the project is restoring conditions to pre-extraction conditions for habitat restoration.

b) Would the Project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact. The project will not result in the loss of availability of locally important mineral resources. The project is restoring habitat on-site.

Avoidance, Minimization and/or Mitigation Measures

No significant impacts to Mineral Resources were identified and no mitigation measures are required.

Sources

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR, Section 3.10 Mineral Resources. Accessed 10/17/2022.

3.13 Noise

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

a) Would the Project result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less than Significant Impact with Mitigation. Construction noise is temporary and will not exceed the Noise Ordinance for Seal Beach. There are, however, noise reduction measures that can be utilized when close to sensitive receptors, such as neighborhoods within half a mile from the project site. Typical construction equipment noise levels are shown in Table 10. During operation, noise is negligible.

Table 10: Construction Equipment Noise Levels

Construction Equipment Type	Noise Levels (dBa) at 50 feet
Backhoes	73-92
Compactors	73-76
Compressors	75-86
Concrete Mixers	72-87
Concrete Pumps	81-83
Front Loaders	73-84
Generators	71-83
Pavers	85-87
Saws	71-82
Scrapers, Graders	78-92
Tractors	75-95
Trucks	81-94
Vibrators	68-82

Source: U.S. Department of Transportation (2020)

b) Would the Project result in generation of excessive ground-borne vibration or ground-borne noise levels?

Less than Significant Impact. There should be very low levels of ground-borne vibration or noise during construction due to the equipment that is being used for this project. Construction activities known to generate excessive ground-borne vibration would not be conducted by the project with the exception of approximately one day of piledriving at one location. In addition, the project would adhere to City noise standards.

Chapter 7.15 of the SBMC sets noise standards of 65 dBA at commercial properties at any time, 55 dBA at residential properties from 7:00 a.m. to 10:00 p.m., and 50 dBA at residential properties from 10:00 p.m. to 7:00 a.m. Section 7.15.025 of the SBMC exempts construction noise when performed between 7:00 a.m. and 8:00 p.m. on weekdays, and between 8:00 a.m. and 8:00 p.m. on Saturday.

There should be no ground-borne vibration or noise levels during operations of the project.

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

No Impact. The project site is not located within two miles of a private or public airport, and would not expose visitors, employees, or construction workers to excessive aircraft noise levels.

Avoidance, Minimization and/or Mitigation Measures

No significant impacts to Noise were identified, and no additional mitigation measures or recommended reduction measures beyond those presented in the PEIR as follows (these measures may be modified via consultation with regulatory agencies):

Noise Reduction Measure NOISE-1: Staging Areas and Mufflers. Staging areas for construction shall be located away from existing off-site residences. All construction equipment shall use properly operating mufflers. These requirements shall be included in construction contracts.

Noise Reduction Measure NOISE-2: Limit Grading. All grading activities shall be conducted outside of the nesting season for sensitive bird species. The nesting season has been identified as extending from March 1 to August 15. (Refer to *Biological Resources*, for more information on potential impacts to bird species and the corresponding mitigation).

Noise Reduction Measure NOISE-3: Noise Barriers. Where feasible, grading plans and specifications shall include temporary noise barriers for all grading, hauling, and other heavy equipment operations that would occur within 300 feet of sensitive off-site receptors and occur for more than 20 working days. The noise barriers shall be 12-feet high, but may be shorter if the top of the barrier is at least one foot above the line of sight between the equipment and the receptors. The barriers shall be solid from the ground to the top of the barrier, and have a weight of at least 2.5 pounds per square foot, which is equivalent to ¾ inch thick plywood. The barrier design shall optimize the following requirements: (1) the barrier shall be located to maximize the interruption of line-of-sight between the equipment and the receptor, which is normally at the top-of-slope when the grading area and receptor are at different elevations. However, a top-of-slope location may not be feasible if the top-of-slope is not on the project site; (2) the length and height of the barrier shall be selected to block the line-of-sight between the grading area and the receptors; (3) the barrier shall be located as close as feasible to the receptor or as close as feasible to the grading area; a barrier is least effective when it is at the midpoint between noise source and receptor.

Sources

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR, Section 3.11 Noise. Accessed 10/17/2022.

3.14 Population and Housing

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Induce substantial upland 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?	☐	☐	☐	☒

a) Would the Project 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)?

No Impact. The project is not proposing new homes or businesses, nor is it extending roads or other infrastructure. Most construction workers, wetland employees, and visitors to the completed project will come from local areas or the surrounding Los Angeles area, meaning that there will not be substantial population growth.

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

No Impact. There is no displacement of existing people or housing that will occur as a result of the project.

Avoidance, Minimization and/or Mitigation Measures

No significant impacts to Population and Housing were identified and no mitigation measures are required.

Sources

LCWA, 2019. Los Cerritos Wetlands Restoration Plan Initial Study, accessed 10/17/2022.

3.15 Public Services

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the Project 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 following public services:				
Fire protection?	☐	☒	☐	☐
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government 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 following public services?

i. Fire protection

Less than Significant Impact with Mitigation. There will be a Fire Safety plan on site, and there should be no increase in population during construction. During operations, there would be more visitors to the site, but the wetlands restoration and subsequent increase in water at the site should reduce the possibility for a wildfire at the site.

ii. Police protection

No Impact. There is no anticipated need for additional police during project construction or operation, although there may be private security during any special events but that is not anticipated with any regularity.

iii. Schools

No Impact. The project site has no residential land uses that will bring population growth. There is no expectation that an increase in workers for the project will bring an increase in families to the area, as they will most likely already live in the area or will commute to the project site.

iv. Parks

No Impact. This project will not impact any parks in either Seal Beach or Long Beach.

v. Other public facilities

No Impact. There will be no substantial population growth that will put a strain on any other public facilities in either the City of Long Beach or the City of Seal Beach.

Avoidance, Minimization and/or Mitigation Measures

No significant impacts to Public Services were identified and no additional mitigation measures are required beyond those present in the PEIR as follows:

Mitigation Measure PS-1: Fire Prevention and Protection Training. Prior to the start of construction activities, the Applicant shall prepare and conduct a fire prevention and protection training for all construction personnel associated with the proposed program. Topics shall include general fire prevention practices such as avoiding smoking on the program area as well as specific preventative measures pertaining to high-fire-risk activities including handling of oil and welding and cutting. Personal protection measures including the locations of fire extinguishers on the program area and site exit routes should also be disclosed to ensure construction worker safety in the event of a fire. The material for the training shall be obtained in consultation with the Orange County Fire Authority and the Long Beach Fire Department.

Sources

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR, Section 3.12 Public Services. Accessed 10/17/2022.

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR, Section 3.13 Recreation. Accessed 10/17/2022.

3.16 Recreation

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

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?

No Impact. The Project would create new natural environmental habitat area with passive recreational use opportunities for the area. This would result in a direct beneficial effect to passive recreation and would not result in increased use of existing parks or recreational facilities such that substantial deterioration of these resources would occur.

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?

No Impact. Any recreational facilities (such as pedestrian trails and/or tribal cultural resource features) would be sited and constructed at least fifty (50) feet away from sensitive habitat areas with the least potential to disturb native habitats. Where the 50-foot buffer distance cannot be met, transitional habitat planting of spiny rush (*Junctus acutus*) will be considered for installation between the trail and the wetland to discourage unauthorized access.

Avoidance, Minimization and/or Mitigation Measures

No significant impacts to Recreation were identified and no mitigation measures are required.

Sources

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR, Section 3.13 Recreation. Accessed 10/10/2022.

3.17 Transportation

Would the Project:

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

This project will be consistent with the PEIR, and the PEIR states the following:

"In summary, while construction of the proposed [project] would temporarily increase traffic volumes on the local and regional circulation systems, roadway operations would return to pre-construction levels once construction is complete. All construction trucks would utilize designated truck routes and comply with all applicable roadway regulations and guidance to minimize effects to roadway operations. In addition, implementation of Mitigation Measure TRA-1 would reduce potentially significant impacts related to roadway closures in the local circulation systems by requiring the preparation and implementation of a traffic control plan. Therefore, for these reasons, the proposed [project's] effects on the local and regional circulation systems during construction would be less than significant."

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

No Impact. The project is consistent with programs, plans, ordinances and policies addressing the circulation around the project site. A traffic control plan (**Mitigation Measures TRA-1**) will be used when necessary to minimize the effects from construction (e.g., night closure of a lane on a road, if needed) on adjacent roadways. Any oversized construction equipment that would be brought to or from the site that could affect travel lanes would be transported outside of morning and afternoon rush hours. During operation of the project, no effects on transportation are anticipated.

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Less than Significant Impact. This project as a whole is assumed to have minimal impacts (if any) to Vehicle Miles Traveled (VMT) on the surrounding area. There may be slightly more local trips for employees and visitors to the project site, but these should not affect the total VMT of the project. In addition, VMT would be reduced by bicycle and pedestrian features at the restored wetland including the additional of amenities such as bicycle parking, which will encourage bicycle use.

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

No Impact. See a) above for details.

d) Would the Project result in inadequate emergency access?

No Impact. The project should have no effect on emergency access during construction or operations.

Avoidance, Minimization and/or Mitigation Measures

No impacts to Transportation were identified and no additional mitigation measures are required beyond those presented in the PEIR as follows:

Mitigation Measure TRA-1: Prior to the start of construction of the program component(s) that require a full or partial roadway closure, LCWA shall require the construction contractor(s) to prepare a traffic control plan. The traffic control plan will show all signage, striping, delineated detours, flagging operations and any other devices that will be used during construction to guide motorists, bicyclists, and pedestrians safely through the construction area and allow for adequate access and circulation to the satisfaction of the cities of Seal Beach and Long Beach and Orange and Los Angeles Counties, as applicable. The traffic control plan shall be prepared in accordance with the applicable jurisdiction’s traffic control guidelines and will be prepared to ensure that access will be maintained to individual properties, and that emergency access will not be restricted. Additionally, the traffic control plan will ensure that congestion and traffic delays are not substantially increased as a result of the construction activities. Furthermore, the traffic control plan will include detours or alternative routes for bicyclists using on-street bicycle lanes as well as for pedestrians using adjacent sidewalks. LCWA shall provide written notice at least two weeks prior to the start of construction to owners/occupants along streets to be affected during construction.

During construction, LCWA will maintain continuous vehicular and pedestrian access to any effected residential driveways from the public street to the private property line, except where necessary construction precludes such continuous access for reasonable periods of time. Access will be reestablished at the end of the workday. If a driveway needs to be closed or interfered with as described above, LCWA shall notify the owner or occupant of the closure of the driveway at least five working days prior to the closure. The traffic control plan shall include provisions to ensure that the construction of the proposed program does not interfere unnecessarily with the work of other agencies such as mail delivery, school buses, and municipal waste services.

LCWA shall also notify local emergency responders of any planned partial or full lane closures or blocked access to roadways or driveways required for program construction. Emergency responders include fire departments, police departments, and ambulances that have jurisdiction within the program area. Written notification and disclosure of lane closure location must be provided at least 30 days prior to the planned closure to allow emergency response providers adequate time to prepare for lane closures.

Sources

LCWA, 2020, Los Cerritos Wetlands Restoration Plan Draft Program EIR, Section 3.14 Transportation. Accessed 10/17/2022.

3.18 Tribal Cultural Resources

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

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision © of Public Resource Code Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

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

a) **Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or**

Less Than Significant Impact with Mitigation. No new significant resources were identified as part of the revised cultural resources study (Appendix F). Two previously identified archeological resources within or adjacent to the Project site were evaluated as eligible for the California Register of Historical Resources. A 50-foot buffer will be created around each of these significant resources to ensure that they are avoided by construction activities.

During construction, soil balancing will occur onsite. Mitigation measures from the Los Cerritos Wetlands Restoration Plan Final Program EIR (LCWA, 2021) are sufficient for mitigation for any resources that are found during construction or operations. In particular, continued tribal consultation will ensure that the *Puvungna* Traditional Cultural Landscape is protected from significant effects as the wetlands are restored and access to it and its resources by tribal members is enhanced.

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 of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision(c) of Public Resource Code Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.**

Less Than Significant Impact with Mitigation. See reasoning for 3.18 (a) above. Any resources that are found during construction or operations will be covered under the mitigation measures from the PEIR. One of the benefits of the proposed project is the restoration of natural habitat in part to minimize future impacts to unknown potential resources. Existing resources will be avoided as described in the mitigation measures identified in the PEIR and included herein.

Avoidance, Minimization and/or Mitigation Measures

Less than significant impacts to Tribal Cultural Resources were identified and no additional mitigation measures are required beyond those presented in the PEIR as follows:

Mitigation Measures BIO-1 through BIO-11 as provided in *Biological Resources*, and Mitigation Measures CUL-1, and CUL-4 through CUL-17, as provided in *Cultural Resources*. (Appendix A).

Sources

Cogstone, 2023, Cultural Resources Assessment for the Southern Los Cerritos Wetlands Restoration Project. (Appendix F).

LCWA, 2021, Los Cerritos Wetlands Restoration Plan Final Program EIR, Section 3.15 Tribal Cultural Resources. Accessed 11/09/2022.

3.19 Utilities and Service Systems

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
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 'he 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?	☐	☐	☐	☒

a) Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Less Than Significant Impact. To move it out of the floodplain, 1st Street will be raised onto a berm, and the associated utilities will be reconfigured to lie within the road embankment or remain overhead on poles, depending on the decisions of the utility owners. Construction will generate little wastewater, and it will not require a new or expanded treatment center. Restoring the wetlands will function as a water quality treatment measure for stormwater runoff. Natural gas will not be used for construction or operations of this project. There will be no effect on telecommunications during construction or operation because lines will be either protected in place or relocated by maintained for service.

b) Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less than Significant Impact. During construction only a modest quantity of water will be used for cleaning equipment, dust suppression, and would have less than significant impacts to water supplies. It is expected that up to 5 water trucks per day may be needed to suppress dust. The operations of the restored wetlands will use potable water for temporary irrigation of newly planted vegetation until it becomes established. This time period of temporary irrigation may be up to three years maximum (pending input from regulatory agencies).

c) Would the Project 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?

Less than Significant Impact. There should be a nominal increase in demand during construction, but not enough to create a new or expanded wastewater facility.

d) Would the Project 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?

No Impact. The project will not generate waste that will impair the attainment of solid waste reduction goals.

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

No Impact. The project will comply with federal, state, and local management and reduction statutes and regulations.

Avoidance, Minimization and/or Mitigation Measures

Less than significant impacts to Utilities and Service Systems were identified and no additional mitigation measures are required beyond those presented in the PEIR as follows [at the time of the PEIR a visitor center was proposed; however, this area is now planned to have a Stewardship Site (not a structural building, rather a site that offers stewardship opportunities)]:

Mitigation Measure TRA-1, as provided in Transportation.

Mitigation Measure UTL-1: Water Will Serve Letter. Prior to issuance of a certificate of occupancy of the visitor center, a will serve letter will be obtained to verify that the water mains surrounding the program boundary have the capacity to serve the visitor center.

Mitigation Measure UTL-2: Sewer Capacity Study. Prior to issuance of a certificate of occupancy of the visitor center, a sewer capacity study will be performed to verify that the sewer lines surrounding the program boundary have the capacity to serve the visitor center.

Sources

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3.20 Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

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

No Impact. The project will not substantially impair an adopted emergency response or evacuation plan. There are no plans to affect the main roads around the project site that are likely to be used for in an emergency.

b) Due to slope, prevailing winds, and other factors, would the Project exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

No Impact. The project will not exacerbate wildfire risks. The project site is not in a very high fire hazard severity zone and is in an urbanized area with flat terrain.

c) Would the Project 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?

No Impact. The project will not require any infrastructure that will exacerbate fire risk or that will result in environmental impacts.

d) Would the Project 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?

No Impact. This project will not expose people and structures to significant post-fire environmental issues.

Avoidance, Minimization and/or Mitigation Measures

No significant impacts to Wildfire were identified and no mitigation measures are required.

Sources

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3.21 Mandatory Findings of Significance

	Potentially Significant Impact	Less Than Significant with Mitigation	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?	☐	☐	☒	☐

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, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less than Significant Impact. The project is to restore currently degraded wetlands, which will increase habitat and communities, help increase various fish and wildlife populations, and should not eliminate important examples 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)?

Less Than Significant Impact with Mitigation. The project will restore the Los Cerritos Wetlands and will have beneficial impacts to the flora and fauna. No adverse cumulative impacts are anticipated regarding past, current, or future projects.

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

Less than Significant Impact. This is a relatively small-scale restoration project with little impact on human beings, and any impacts would be temporary and occur during construction.

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APPENDICES

Appendix A: Mitigation Monitoring and Reporting Program

Introduction to the Mitigation Monitoring and Reporting Program

This environmental document is tiered off the Program Environmental Impact Report (PEIR) for the Los Cerritos Wetlands Restoration Plan. As previously stated, the mitigation measures from that PEIR applicable to this portion of the Program Area are included as part of the background for this Southern Los Cerritos Wetlands Restoration Project.

Pursuant to Public Resources Code (PRC) Section 21081.6 and CEQA Guidelines Section 15097, a lead agency is required to adopt a mitigation monitoring and reporting program (MMRP) for assessing and ensuring compliance with the required mitigation measures applied to a proposed project for which an EIR has been prepared. As stated in PRC Section 21081.6(a):

> *… the public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment.*

Section 21081.6 provides general guidelines for implementing mitigation monitoring programs and indicates that specific reporting and/or monitoring requirements, to be enforced during project implementation, which were defined prior to PEIR certification. The lead agency, Los Cerritos Wetlands Authority, may delegate reporting or monitoring responsibilities to another public agency or a private entity that accepts such delegation. LCWA, however, remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the overall program and specifically for this project.

The Mitigation Monitoring and Reporting Program, lists mitigation measures and project design features that are required to reduce the significant effects of the proposed project. These measures correspond to those discussed in Draft EIR Sections 3.1 through 3.16, and those revised in this Final EIR (see Chapter 9, Draft EIR Revisions). To ensure that the mitigation measures are properly implemented, a monitoring program has been devised that identifies the timing and responsible entity for monitoring each measure. LCWA will have the responsibility for implementing the measures, and various public agencies will have the primary responsibility for enforcing, monitoring, and reporting the implementation of the mitigation measures.

The mitigation measures are included exactly as written in the PEIR. Please note that the overall restoration program area is located not only within the City of Seal Beach (Orange County) but extends into the City of Long Beach (Los Angeles County). For this project, no work will be completed within the City of Long Beach (or Los Angeles County), hence, mitigation will not extend into these jurisdictions.

MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
Aesthetics			
Mitigation Measure AES-1: Lighting Plan. Prior to issuance of a grading permit for each individual site that requires construction, a Lighting Plan for the individual site shall be developed and implemented that requires all exterior lighting to be directed downward and focused away from adjacent sensitive uses and habitats to encourage wayfinding and provide security and safety for individuals walking to and from parking areas.	Written verification; visual inspection.	By LCWA prior to issuance of grading permit and continuously during construction.	City of Long Beach City of Seal Beach
Air Quality			
Mitigation Measure AQ-1: Construction NO_X Reduction Measures. The Applicant for the proposed program shall be responsible for the implementation of the following construction-related NO_X reduction measures: • Require all off-road diesel-powered construction equipment greater than 50 hp (e.g., excavators, graders, dozers, scrappers, tractors, loaders, etc.) to comply with EPA-Certified Tier IV emission controls where commercially available. Documentation of all off-road diesel equipment used for this proposed program including Tier IV certification, or lack of commercial availability if applicable, shall be maintained and made available by the contractor to the local permitting agency (City of Seal Beach and City of Long Beach) for inspection upon request. In addition, all construction equipment shall be outfitted with Best Available Control Technology (BACT) devices certified by CARB such as certified Level 3 Diesel Particulate Filter or equivalent. A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit of equipment. If Tier IV construction equipment is not available, LCWA shall require the contractor to implement other feasible alternative measures, such as reducing the number and/or hp rating of construction equipment, and/or limiting the number of individual construction subphases occurring simultaneously. The determination of commercial availability of Tier IV construction equipment shall be made by the City prior to issuance of grading or building permits based on applicant-provided evidence of the availability or unavailability of Tier IV equipment and/or evidence obtained by the City from expert sources such as construction contractors in the region. • Require all main engines for tugboats to comply with EPA- Certified Tier IV emission controls. • Eliminate the use of all portable generators. Require the use of electricity from power poles rather than temporary diesel or gasoline power generators. • Provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow, including during the transportation of oversized equipment and vehicles. • Provide dedicated turn lanes for movement of construction trucks and equipment on site and off site. The location of these dedicated lanes shall be addressed in the Construction Trip Management Plan.	Included in contractor's scope of work; written verification	By LCWA continuously during construction.	City of Long Beach City of Seal Beach California Coastal Commission

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
• Reroute construction trucks away from congested streets or sensitive receptor areas. • Prohibit the idling of on-road trucks and off-road equipment in excess of 5 continuous minutes, except for trucks and equipment where idling is a necessary function of the activity, such as concrete pour trucks. The Applicant or construction contractor(s) shall post signs at the entry/exit gate(s), storage/lay down areas, and at highly visible areas throughout the active portions of the construction site of the idling limit. • On-road heavy-duty diesel haul trucks with a gross vehicle weight rating of 19,500 pounds or greater used to transport construction materials and soil to and from the program area shall be engine model year 2010 or later or shall comply with the USEPA 2007 on-road emissions standards.			
Biological Resources			
Mitigation Measure BIO-1: Avoidance of Special-Status Plants. Prior to LCWA's approval of project plans or publication of subsequent CEQA documents, a qualified botanist/biologist shall conduct a habitat assessment to determine the presence or absence of suitable habitat for special-status plant species. If suitable habitat is determined to be present, focused plant surveys should be conducted in accordance with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW, March 20, 2018). Consistent with the CDFW protocol, such focused special- status plant surveys will be conducted during the appropriate blooming period for these species, with May and June likely having the highest number of species in flower. The results of focused special-status plant species will be incorporated into restoration design plans. The locations of any special-status plants within 25 feet of proposed disturbance areas shall be identified and mapped. Individual plants shall be flagged for avoidance and an avoidance buffer of at least 10 feet shall be established around the plant(s). If special-status plants cannot be avoided, they shall be incorporated into the proposed program's restoration design at a minimum ratio of 1:1 (one plant planted for every one plant removed, or 1 square foot of absolute cover planted for every 1 square foot of absolute cover removed). For special- status plant species with small population numbers (less than 50 individuals), higher mitigation ratios up to 7:1 will be incorporated, where on-site seed sources are available. Higher mitigation ratios of up to 3:1 will be incorporated where suitable habitat area can support populations of large individual numbers. Special-status plants that cannot be avoided shall be salvaged prior to impacts using species- specific propagation methods, such as transplanting, seed and cuttings. Seed collection shall occur during the appropriate time of year for each species. Seeds shall be propagated by a qualified horticulturalist or in a local nursery, and shall be incorporated into habitat-specific seed mixes that will be used for revegetation of the restoration areas. Plant transplantation of perennial species is a potential mitigation technique but must be used sparingly and only when receiving site parameters are a suitable match from the donor location. Performance standard for the success of propagated or transplanted species will be achieved with the survival of the appropriate number of individuals meeting the mitigation ratio (1:1 for most species) after five years of growth and the establishment of a self-propagating population for annual	Written verification.	Prior to LCWA's approval of project plans or publication of subsequent CEQA documents	City of Long Beach City of Seal Beach California Coastal Commission California Department of Fish and Wildlife

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
species for a minimum of three years after revegetation completion for a specific area.			
Mitigation Measure BIO-2: Environmental Awareness Training and Biological Monitoring. Prior to commencement of activities within the program area, a qualified biologist shall prepare a Worker Environmental Awareness Program (WEAP) that provides a description of potentially occurring special-status species and methods for avoiding inadvertent impacts. The WEAP training shall be provided to all construction personnel. Attendees shall be documented on a WEAP training sign-in sheet. Initial grading and vegetation removal activities shall be supervised by a qualified monitoring biologist, who will be present during all construction activities. The biologist shall ensure that impacts to special-status plants and wildlife, including wetland vegetation, are minimized to the greatest extent feasible during implementation of program activities on the South, Isthmus, Central and North Areas. If any special- status wildlife species are encountered during construction and cannot be avoided, the monitoring biologist shall have the authority to temporarily halt construction activities until a plan for avoidance has been prepared and approved by CDFW, and implemented by the monitoring biologist. Relocation of a federal- or state-listed species shall not be allowed without first obtaining take authorization from USFWS and/or CDFW.	Included in construction contractor's scope of work and agreements; written verification	Prior to commencement of construction activities	City of Long Beach City of Seal Beach California Coastal Commission California Department of Fish and Wildlife
Mitigation Measure BIO-3: Belding's Savannah Sparrow Breeding Habitat. Prior to LCWA's approval of project plans or publication of subsequent CEQA documents, a qualified biologist shall map suitable Belding's savannah sparrow habitat as the location and amount of suitable habitat is anticipated to change over time. The results of habitat mapping will be incorporated into restoration design plans Project activities shall be limited to July 16 through February 14 within suitable costal marsh habitat to avoid impacts to breeding Belding's savannah sparrow. Suitable Belding's savannah sparrow breeding habitat that will be impacted by the proposed program shall be created within the program area at a minimum ratio of 1:1 (area created:area impacted). Restored breeding habitat shall consist of a minimum 60 percent absolute cover of salt marsh vegetation, and shall consist of a hydrologic regime similar to that currently present in the North Area or South Area, respectively. Other unique conditions within coastal salt marsh communities shall exist as well, such as, similar slope, aspect, elevation, soil, and salinity. A Mitigation, Maintenance and Monitoring Program shall be prepared and approved by CDFW prior to implementation. The proposed program shall be implemented by a qualified restoration ecologist, and at a minimum, shall include success criteria and performance standards for measuring the establishment of Belding's savannah sparrow breeding habitat, responsible parties, maintenance techniques and schedule, 5-year monitoring and reporting schedule, adaptive management strategies, and contingencies. Moreover, in accordance the CESA, an Incidental Take Permit (or other mitigation options identified in accordance with Fish & Game Code, §§ 2080.1, 2081, subds. (b) and (c)) shall be obtained from CDFW if any Belding's savannah sparrow may be impacted during construction or operations of the program. The amount of potential take shall be determined prior to design approval of each restoration area based on consultation with CDFW. Lastly, take authorization shall be obtained prior to commencement of any ground disturbing activities.	Written verification	Prior to LCWA's approval of project plans or publication of subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission California Department of Fish and Wildlife

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
Mitigation Measure BIO-4: Nesting Bird and Raptor Avoidance. A qualified biologist shall identify areas where nesting habitat for birds and raptors is present prior to LCWA's approval of project plans or publication of subsequent CEQA documents. To ensure the avoidance of impacts to nesting avian species, the following measures shall be implemented: • Construction and maintenance activities shall be limited to the non-breeding season (September 1 through December 31) to the extent feasible. If construction or maintenance activities will occur during the avian nesting season (January 1 through August 31), a qualified biologist shall conduct pre-construction nesting avian surveys within no more than 5 days prior to the initiation of construction activities to identify any active nests. If a lapse in work of 5 days or longer occurs, another survey shall be conducted to verify if any new nests have been constructed prior to work being reinitiated. • If active nests are observed, an avoidance buffer shall be demarcated by a qualified biologist with exclusion fencing and shall be maintained until the biologist determines that the young have fledged and the nest is no longer active.	Written verification	Prior to LCWA's approval of project plans or subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission
Mitigation Measure BIO-5: Habitat Assessment and Pre- Construction Surveys for Burrowing Owl. A qualified biologist shall conduct a pre-construction burrowing owl survey of each restoration area (including required survey buffer areas) prior to LCWA's approval of project plans or publication of subsequent CEQA documents. If burrowing owls are detected, the habitat will be avoided ad /or enhanced by the restoration design. In addition, a Burrowing Owl Management Plan shall be prepared and approved by CDFW, and implemented, prior to commencement of construction. The Burrowing Owl Management Plan shall be prepared in accordance with the CDFW 2012 Staff Report on Burrowing Owl Mitigation and shall address specific minimization and avoidance measures for burrowing owls, such as avoidance of occupied habitat, translocation of individuals, and on site revegetation.	Written verification; submittal of Burrowing Owl Management Plan	Prior to LCWA's approval of project plans or publication of subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission California Department of Fish and Wildlife
Mitigation Measure BIO-6: Minimization of Light Spillage. A Program Lighting Plan shall be designed to minimize light trespass and glare into adjacent habitat areas prior to the commencement of activities within the program area. Nighttime lighting associated with the visitor center, parking lot, and trails shall be shielded downward and/or directed away from habitat areas to minimize impacts to nocturnal species, including breeding birds.	Submittal of Program Lighting Plan	Prior to commencement of construction activities	City of Long Beach City of Seal Beach California Coastal Commission
Mitigation Measure BIO-7: Pre-Construction Bat Surveys. A qualified biologist shall conduct a pre-construction bat survey of each restoration area prior to final approval of the area's restoration plan. If suitable bat roosting habitat is determined to be present, a presence/absence survey shall be conducted prior to commencement of construction activities. A qualified biologist shall conduct the preconstruction clearance survey of suitable bat roosting habitat, such as mature palm trees. If bats are determined to be roosting, the biologist will determine whether it is a day roost (non-breeding) or maternity roost (lactating females and dependent young). If a day roost is determined, the biologist shall ensure that direct mortality to roosting individuals will not occur by requiring that trees	Written verification; submittal of Bat Exclusion Plan (if needed)	Prior to final approval of the area's restoration plan.	City of Long Beach City of Seal Beach California Coastal Commission California Department of Fish and Wildlife

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
with roosts are not directly impacted (e.g., removed) until after the roosting period. If a maternity roost is determined to be present, the biologist shall determine a suitable buffer distance between construction activities and the roosting site. If direct disturbance to the maternity roost could occur, a Bat Exclusion Plan shall be prepared and approved by CDFW, and implemented, prior to impacting the roost. At a minimum, the Plan shall include avoidance and minimization measures to reduce potential impacts to breeding bats during construction activities and prescribed methods to safely and humanely evict bats from the roost to avoid mortality.			
Mitigation Measure BIO-8: Focused Surveys for Special- Status Wildlife Species. Should suitable habitat occur for terrestrial or aquatic special-status species, a qualified biologist shall conduct focused habitat assessments and focused surveys to determine presence, absence and/or abundance for special-status wildlife species listed in Table 3.3-5. Both habitat assessments and focused surveys shall occur prior to LCWA's approval of the project plans or the publication of subsequent CEQA documents for any project site that potentially contains special-status species. Agency-approved protocols shall be used for specific species where appropriate during the required or recommended time of year. For all other target (special-status) species, prior to initiating surveys, survey methods shall be verified and approved in writing by CDFW and USFWS or NMFS for all state- and/or federally-protected species, respectively. If special-status species are detected, the project-specific restoration plan should be designed to minimize impacts to special-status wildlife to the greatest extent feasible and a Wildlife Avoidance Plan shall be prepared and approved by CDFW and USFWS or NMFS prior to commencement of construction. The Wildlife Avoidance Plan shall include specific species minimization and avoidance measures, measures to minimize impacts to occupied habitat, such as avoidance and revegetation, as well as relocation/translocation protocols. The plan shall require that a qualified biological monitor approved by CDFW be onsite prior to and during ground and habitat disturbing activities to move special status species or other wildlife of low mobility out of harm's way that could be injured or killed by ground disturbing activities. If special-status species cannot be avoided, Incidental Take Permits from the National Marine Fisheries Service or United States Fish and Wildlife Service and California Department of Fish and Wildlife will be required. The amount of potential take shall be determined prior to design approval of each restoration area based on consultation with NMFS or USFWS and CDFW and take authorization shall be obtained prior to commencement of any ground disturbing activities. If an incidental take permit is being obtained, compensatory mitigation for the loss of occupied habitat shall be provided through purchase of credit from an existing mitigation bank, private purchase of mitigation lands, or on-site preservation, as approved by the resource agencies. Compensatory mitigation shall be provided at a minimum 1:1 ratio to reduce potential effects to less-than-significant levels.	Written verification; submittal of Wildlife Avoidance Plan (if needed)	Prior to LCWA's approval of the project plans or publication of subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission California Department of Fish and Wildlife United States Fish and Wildlife Service National Marine Fisheries Service
Mitigation Measure BIO-9: Revegetation of Sensitive Natural Communities. Sensitive natural communities located on the program area include: *Anemopsis californica – Helianthus nuttallii – Solidago spectabilis* Herbaceous Alliance, *Arthrocnemum subterminale* Herbaceous Alliance, *Baccharis salicina* Provisional Shrubland Alliance, *Cressa truxillensis – Distichlis spicata* Herbaceous Alliance, *Frankenia salina* Herbaceous Alliance, *Isocoma*	Written verification; submittal of a Mitigation, Maintenance and Monitoring Program	Prior to LCWA's approval of project plans or publication of subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission California Department of Fish

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
menziesii Shrubland Alliance, *Leymus cinereus – Leymus triticoides* Herbaceous Alliance, *Salicornia pacifica* Herbaceous Alliance, *Salix gooddingii* Woodland Alliance, *Schoenoplectus californicus – Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance and *Spartina foliosa* Herbaceous Alliance. Prior to LCWA's approval of project plans or publication of subsequent CEQA documents, the area(s) that will be impacted shall be delineated and quantified using current Global Information System (ArcGIS) mapping software. Sensitive Natural Communities that will be impacted by the proposed program shall be created within the program area at a minimum ratio of 1:1 (area created:area impacted). A mitigation ratio of a minimum 2:1 for natural communities with a rarity ranking of S3 or higher will be incorporated into the restoration designs. Restored Sensitive Natural Communities shall consist of a minimum 60 percent absolute vegetation cover and shall include community-specific growing conditions, such as, similar slope, aspect, elevation, soil, and salinity. Moreover, soils within mudflat areas shall be salvaged (where feasible) for areas that are proposed for activities such as grading, and reintroduced in new mudflat and/or wetland areas that will be created. A Mitigation, Maintenance and Monitoring Program shall be prepared and approved by CDFW prior to implementation. The Program shall be implemented by a qualified restoration ecologist, and at a minimum, shall include success criteria and performance standards for measuring the establishment of Sensitive Natural Communities, responsible parties, maintenance techniques and schedule, 5-year monitoring and reporting schedule, adaptive management strategies, and contingencies.			and Wildlife
Mitigation Measure BIO-10: Jurisdictional Resources Permitting. Prior to LCWA's approval of project plans or publication of subsequent CEQA documents, a jurisdictional delineation report shall be prepared that describes these jurisdictional resources and the extent of jurisdiction under the USACE, RWQCB, CDFW, and CCC. If it is determined during final siting that jurisdictional resources cannot be avoided, the project applicant shall be subject to provisions as identified below: 1. If avoidance is not feasible, prior to ground disturbance activities that could impact these aquatic features, the project applicant shall file the required documentation and receive the following. a. Nationwide Permit or equivalent permit issued from USACE; b. Water Quality Certification issued from the Los Angeles RWQCB; c. Streambed Alteration Agreement issued from CDFW; and d. Coastal Development Permit issued from CCC. 2. Compensatory mitigation for impacts to jurisdictional resources is not anticipated as the proposed program's goal is the restoration and expansion of coastal salt marsh within the proposed program. 3. The project proponent shall comply with the mitigation measures detailed in permits issued from the USACE, RWQCB, CDFW, and CCC.	Written verification	Prior to LCWA's approval of project plans or publication of subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission California Department of Fish and Wildlife United States Army Corps of Engineers Regional Water Quality Control Board
Mitigation Measure BIO-11: Monitoring and Adaptive Management Plan. In conjunction with Section 3.8, *Hydrology and Water Quality*, a Monitoring and Adaptive Management Plan (MAMP) shall be prepared and implemented prior to commencement of construction	Written verification; submittal of Monitoring and Adaptive	Prior to commencement of construction activities	City of Long Beach City of Seal Beach

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
or restoration activities. The MAMP shall provide a framework for monitoring site conditions in response to the proposed program implementation. The MAMP shall include provisions for conducting a pre-construction survey to collect baseline data for existing wetland function. The MAMP shall require that monitoring focus on the functional wetland values as well as sediment quality in areas subject to the greatest deposition from storm events and that are also not subject to regular tidal flushing, (e.g., the southwestern corner of the Long Beach Property site). The MAMP shall identify habitat functions, such as biotic structure and hydrology, that shall be monitored as part of the proposed program's monitoring and reporting requirements. The MAMP shall identify sediment quality monitoring requirements that shall be performed at a frequency that would capture the potential build-up of contaminants in the deposited sediment before concentration are reached that would impact benthic macro-invertebrates and other sensitive species. The MAMP shall require that the findings of the monitoring efforts be used to identify any source of functional loss of wetlands and water quality impairment, and if discovered, provide measures to improve wetland function and for remediation of the sediment source area(s). Upon completion of restoration activities, the proposed program shall demonstrate a no net loss of aquatic resource functions and demonstrate an increase in wetland functions and values throughout the entire site. The MAMP shall be submitted for review and approval to responsible permitting agencies prior to commencement of construction or restoration activities.	Management Plan		California Coastal Commission
Cultural Resources			
Mitigation Measure CUL-1: Cultural Resources Personnel Professional Qualifications Standards. Cultural resources consulting staff shall meet, or be under the direct supervision of an individual meeting, the minimum professional qualifications standards (PQS) set forth by the Secretary of the Interior (SOI) (codified in 36 Code of Federal Regulations [CFR] Part 61; 48 FR 44738-44739).	Included in construction contractor's scope of work and agreements; written verification	By LCWA prior to the commencement of construction.	City of Long Beach City of Seal Beach California Coastal Commission
Mitigation Measure CUL-2: Historic Resources Assessment. For each near-term, mid-term, and long-term project, LCWA shall retain an SOI-qualified architectural historian (Qualified Architectural Historian) to conduct a historic resources assessment including: a records search at the South Central Coastal Information Center; a review of pertinent archives and sources; a pedestrian field survey; recordation of all identified historic resources on California Department of Parks and Recreation 523 forms; and preparation of a technical report documenting the methods and results of the assessment. The report(s) shall be submitted to LCWA for review and approval prior to LCWA's approval of project plans or publication of subsequent CEQA documents. The Qualified Architectural Historian shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its completion. A Historic Resources Assessment shall not be required for any project site that has already undergone the same or similar assessment as part of the program as long as the assessment is deemed adequate by the Qualified Architectural Historian for the purposes of the project currently under consideration.	Written verification, submittal of assessment	By LCWA prior to approval of project plans or preparation of subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission
Mitigation Measure CUL-3: Historic Resources Evaluation. Prior to LCWA's approval of project plans or the publication of subsequent CEQA documents for any project site containing unevaluated historic resources, a Qualified Architectural Historian shall	Written verification, submittal of evaluation	By the LCWA prior to approval of project plans or preparation	City of Long Beach City of Seal Beach California Coastal Commission

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
determine if the project has the potential to result in adverse impacts to identified historic resources. For any historic resource that may be adversely impacted, the Qualified Architectural Historian shall evaluate the resource for listing in the California Register under Criteria 1-4 in order to determine if the resource qualifies as a historical resource. If a historic resource is found eligible, the Qualified Architectural Historian shall determine if the project would cause a substantial adverse change in the significance of the resource. If a substantial adverse change would occur (i.e., the project would demolish the resource or materially alter it in an adverse manner), the Qualified Architectural Historian shall develop appropriate mitigation measures to be incorporated into subsequent CEQA documents. These measures may include, but would not be limited to, relocation, HABS/HAER/HALS documentation, development and implementation of an interpretative and commemorative program, or development and implementation of a salvage plan. All evaluations and resulting technical reports shall be completed and approved by LWCA prior to LCWA's approval of project plans or publication of subsequent CEQA documents. The Qualified Architectural Historian shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its acceptance by LCWA.		of subsequent CEQA documents.	
Mitigation Measure CUL-4: Archaeological Resources Assessment. For each near-term, mid-term, and long-term project that involves ground disturbance, LCWA shall retain an SOI-qualified archaeologist (Qualified Archaeologist) to conduct an archaeological resources assessment including: a records search at the South Central Coastal Information Center; a Sacred Lands File search at the Native American Heritage Commission; updated geoarchaeological review incorporating previously unavailable data (such as geotechnical studies); a pedestrian field survey; recordation of all identified archaeological resources on California Department of Parks and Recreation 523 forms; and preparation of a technical report. The technical report shall: document the methods and results of the study; provide an assessment of the project's potential to encounter subsurface archaeological resources and human remains based on a review of the project plans, depth of proposed ground disturbance, and available project-specific geotechnical reports; and provide recommendations as to whether additional studies are warranted (i.e., Extended Phase I presence/absence testing or resource boundary delineation, Phase II testing and evaluation). The report(s) shall be submitted to LCWA for review and approval prior to approval of project plans or publication of subsequent CEQA documents. The Qualified Archaeologist shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its completion. An Archaeological Resources Assessment shall not be required for any project site that has already undergone the same or similar assessment as part of the program as long as the assessment is deemed adequate by the Qualified Archaeologist for the purposes of the project currently under consideration.	Written verification, submittal of report	By LCWA, prior to approval of project plans or preparation of subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission
Mitigation Measure CUL-5: Extended Phase I Archaeological Investigation. Prior to LCWA's approval of project plans or the publication of subsequent CEQA documents for any project with a high potential to encounter subsurface archaeological resources as determined by the project-specific archaeological resources assessment conducted under Mitigation Measure CUL-4: Archaeological Resources Assessment, a Qualified Archaeologist shall conduct an Extended Phase I investigation to identify the presence/absence of subsurface archaeological resources. Prior to the initiation of field	Written verification, submittal of report	By LCWA, prior to approval of project plans or preparation of subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
work for any Extended Phase I investigation, the Qualified Archaeologist shall prepare a work plan outlining the investigation's objectives, goals, and methodology (e.g., field and lab procedures, collection protocols, curation and reporting requirements, Native American input/monitoring, schedule, security measures). For investigations related to Native American archaeological resources, monitoring shall be required in accordance with Mitigation Measures CUL-13: Native American Monitoring. All work plans shall outline the protocols and procedures to be followed in the event that human remains and associated funerary objects or grave goods (i.e., artifacts associated with human remains) are encountered in accordance with Mitigation Measure CUL-18: Human Remains Discoveries. Disposition of archaeological materials recovered during Extended Phase I investigations shall be in accordance with Mitigation Measure CUL-15: Curation and Disposition of Cultural Materials. Disposition of human remains and any associated funerary objects or grave goods shall be in accordance with Mitigation Measure CUL-18: Human Remains Discoveries. Projects occurring within the same timeframe may be covered by one overarching work plan. All investigations and resulting technical reports shall be completed and approved by LCWA prior to LCWA's approval of project plans or publication of subsequent CEQA documents. The Qualified Archaeologist shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its acceptance by LCWA. An Extended Phase I investigation shall not be required for any project site or resource that has already undergone the same or similar investigation as part of the program as long as the investigation is deemed adequate by the Qualified Archaeologist for the purposes of the project currently under consideration.			
Mitigation Measure CUL-6: Phase II Archaeological Investigation. Prior to LCWA's approval of project plans or the publication of subsequent CEQA documents for any project site containing known unevaluated archaeological resources as identified by the project-specific archaeological resources assessment conducted under Mitigation Measure CUL-4: Archaeological Resources Assessment, a Qualified Archaeologist shall determine if the project has the potential to result in adverse impacts to identified archaeological resources (this may include initial Extended Phase I testing to identify the boundaries of resources, if necessary to properly assess potential impacts, following the procedures outlined under Mitigation Measure CUL-5: Extended Phase I Archaeological Investigation). For any archaeological resource that may be adversely impacted, the Qualified Archaeologist shall conduct Phase II testing and shall evaluate the resource for listing in the California Register under Criteria 1-4 in order to determine if the resource qualifies as a historical resource. LCWA shall consider the significance of the resource to Native American groups prior to requiring any Phase II subsurface testing. If the resource does not qualify as a historical resource, it shall then be considered for qualification as a unique archaeological resource. Native American or prehistoric archaeological resources shall also be considered as contributors to the tribal landscape to determine if they contribute to the significance of the landscape. Prior to the initiation of field work for any Phase II investigation, the Qualified Archaeologist shall prepare a work plan outlining the investigation's objectives, goals, and methodology (e.g., research design, field and lab procedures, collection protocols, data requirements/thresholds, evaluation criteria, curation and reporting requirements, Native American input/monitoring, schedule, security measures). The Qualified Archaeologist and LCWA shall coordinate with participating Native American Tribes during preparation of Phase II work plans related to Native American archaeological resources to ensure cultural	Written verification, submittal of report	By LCWA, prior to approval of project plans or preparation of subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
values ascribed to the resources, beyond those that are scientifically important, are considered in the evaluation, including those related to the tribal cultural landscape. For investigations related to Native American archaeological resources, Native American Tribal coordination and monitoring shall be required in accordance with Mitigation Measures CUL-12: Native American Coordination and CUL-13: Native American Monitoring. All work plans shall outline the protocols and procedures to be followed in the event that human remains and associated funerary objects or grave goods (i.e., artifacts associated with human remains) are encountered in accordance with Mitigation Measure CUL-18: Human Remains Discoveries. Disposition of archaeological materials recovered during Extended Phase I or Phase II investigations shall be in accordance with Mitigation Measure CUL-15: Curation and Disposition of Cultural Materials. Disposition of human remains and any associated funerary objects or grave goods shall be in accordance with Mitigation Measure CUL-18: Human Remains Discoveries. Projects occurring within the same timeframe may be covered by one overarching work plan. All investigations and resulting technical reports shall be completed and approved by LWCA prior to LCWA's approval of project plans or publication of subsequent CEQA documents. The Qualified Archaeologist shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its acceptance by LCWA.			
Mitigation Measure CUL-7: Avoidance and Preservation in Place of Archaeological Resources. In the event historical resources or unique archaeological resources or resources that contribute to the significance of the tribal cultural landscape are identified, avoidance and preservation in place shall be the preferred manner of mitigating impacts to such resources. Preservation in place maintains the important relationship between artifacts and their archaeological context and also serves to avoid conflict with traditional and religious values of groups who may ascribe meaning to the resource. Preservation in place may be accomplished by, but is not limited to, avoidance, incorporating the resource into open space, capping, or deeding the site into a permanent conservation easement. If avoidance is determined by the LCWA to be infeasible in light of factors such as the nature of the find, proposed project design, costs, and other considerations, then that resource shall be subject to Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan. If avoidance and preservation in place of a resource is determined by LCWA to be feasible, then that resource shall be subject to Mitigation Measure CUL-9: Archaeological Resources Monitoring and Mitigation Plan.	Field verification, written report	By LCWA continuously throughout construction	City of Long Beach City of Seal Beach California Coastal Commission
Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan. A Qualified Archaeologist shall prepare a Phase III Archaeological Resources Data Recovery and Treatment Plan for significant archaeological resources (i.e., resources that qualify as historical resources or unique archaeological resources or that contribute to the significance of the tribal cultural landscape) that will be adversely impacted by a project. Consistent with *CEQA Guidelines* Section 15126.4, data recovery shall not be required for a historical resource if LCWA determines that testing or studies already completed have adequately recovered the scientifically consequential information for resources eligible under California Register Criterion 4. The Qualified Archaeologist and LCWA shall consult	Written verification, submittal of plan	By LCWA, prior to the start of field work for data recovery efforts for resources that are eligible under California Register Criterion 4 (data potential).	City of Long Beach City of Seal Beach California Coastal Commission

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
with interested Native American Tribes for recovery/treatment of Native American archaeological resources during preparation of the plan(s) to ensure cultural values ascribed to the resources, beyond those that are scientifically important, are considered in assessing treatment, including those related to the tribal cultural landscape. Projects occurring within the same timeframe may be covered by one overarching plan. The plan(s) shall be submitted to LCWA for review and approval prior to the start of field work for data recovery efforts for resources that are eligible under California Register Criterion 4 (data potential). Data recovery field work shall be completed prior to the start of any project-related ground disturbance. Treatment for archaeological resources that are eligible under California Register Criterion 1 (events), Criterion 2 (persons), or Criterion 3 (design/workmanship) shall be completed within 3 years of completion of the project. Each plan shall include: a. *Research Design.* The plan shall outline the applicable cultural context(s) for the region, identify research goals and questions that are applicable to each resource or class of resources, and list the data needs (types, quantities, quality) required to answer each research question. The research design shall address all four California Register Criteria (1–4) and identify the methods that will be required to inform treatment, such as subsurface investigation, documentary/archival research, and/or oral history, depending on the nature of the resource. The research design shall also include consideration of Native American or prehistoric archaeological resources as contributors to the tribal cultural landscape. b. *Data Recovery for Resources Eligible under Criterion 4.* The plan shall outline the field and laboratory methods to be employed, and any specialized studies that will be conducted, as part of the data recovery effort for resources that are eligible under California Register Criterion 4 (data potential). If a resource is eligible under additional criteria, treatment beyond data recovery shall be implemented (see CUL-6c). c. *Treatment for Resources Eligible under Criteria 1, 2, or 3.* In the event a resource is eligible under California Register Criterion 1 (events), Criterion 2 (persons), or Criterion 3 (design/workmanship), then resource-specific treatment shall be developed to mitigate project-related impacts to the degree feasible. This could include forms of documentation, interpretation, public outreach, ethnographic and language studies, publications, and educational programs, depending on the nature of the resource, and may require the retention of additional technical specialists. Treatment measures shall be generally outlined in the plan based on existing information on the resource. Once data recovery is completed and the results are available to better inform resource-specific treatment, the treatment measures shall be formalized and implemented. Treatment shall be developed by the Qualified Archaeologist in consultation with LCWA and Native American Tribal representatives for resources that are Native American in origin, including those related to the tribal cultural landscape. d. *Security Measures.* The plan shall include recommended security measures to protect archaeological resources from vandalism, looting, and non-intentionally damaging activities during field work. e. *Procedures for Discovery of Human Remains and Associated Funerary Objects or Grave Goods.* The plan shall outline the protocols and procedures to be followed in the event *that* human remains and associated funerary objects or grave goods are			

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
uncovered. Protocols and procedures shall be in accordance with Mitigation Measure CUL-18: Human Remains Discoveries. f. *Reporting Requirements.* Upon completion of data recovery for resources eligible under Criterion 4, the Qualified Archaeologist shall document the findings in an Archaeological Data Recovery Report. The draft Archaeological Data Recovery Report shall be submitted to the LCWA within 360 days after completion of data recovery, and the final Archaeological Data Recovery Report shall be submitted to LCWA within 60 days after the receipt of LCWA comments. The Qualified Archaeologist shall submit the final Archaeological Data Recovery Report to the South Central Coastal Information Center within 30 days of its acceptance by LCWA. Upon completion of all other treatment for resources eligible under Criteria 1, 2, or 3, the Qualified Archaeologist shall document the resource-specific treatment that was implemented for each resource and verification that treatment has been completed in a technical document (report or memorandum). The document shall be provided to LCWA within 30 days after completion of treatment. g. *Curation or Disposition of Cultural Materials.* The plan shall outline the requirements for final *disposition* of all cultural materials collected during data recovery. Disposition of all archaeological materials shall be in accordance with Mitigation Measure CUL-15: Curation and Disposition of Cultural Materials. Disposition of human remains and any associated funerary objects or grave goods shall be in accordance with Mitigation Measure CUL-18: Human Remains Discoveries.			
h. *Protocols for Native American Coordination and Monitoring.* The plan shall outline the role and responsibilities of Native American Tribal representatives in *accordance* with Mitigation Measure CUL-12: Native American Coordination. It shall outline communication protocols, timelines for review of archaeological resources documents, and provisions for Native American monitoring. The plan shall include provisions for full-time Native American monitoring of all data recovery field work for resources that are Native American in origin, including those related to the tribal cultural landscape, in accordance with Mitigation Measure CUL-13: Native American Monitoring.			
Mitigation Measure CUL-9: Archaeological Resources Monitoring and Mitigation Plan. For each near-term, mid- term, and long-term project that involves ground disturbance, a Qualified Archaeologist shall prepare an Archaeological Resources Mitigation and Monitoring Plan taking into account the final LCWA-approved project design plans, depths/locations of ground disturbance, proximity to known archaeological resources, and potential to encounter subsurface archaeological resources. Projects occurring within the same timeframe may be covered by one overarching plan. The Qualified Archaeologist and LCWA shall coordinate with participating Native American Tribes during preparation of the plan(s). Each plan shall include: a. *Establishment of Environmentally Sensitive Areas.* The plan shall outline areas that will be designated Environmentally Sensitive Areas (including maps), if needed. Significant or unevaluated *archaeological* resources that are being avoided and are within 50 feet of the construction zone shall be designated as Environmentally Sensitive Areas. The resources shall be *delineated* with exclusion markers to ensure avoidance. These	Written verification, submittal of plan	By the LCWA, prior to approval of project plans or preparation of subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
areas shall not be marked as archaeological resources, but shall be designated as “exclusion zones” on project plans and protective fencing in order to discourage unauthorized disturbance or collection of artifacts. b. *Provisions for Archaeological Monitoring.* The plan shall outline requirements for archaeological monitoring and the archaeological monitor(s) role and responsibilities in accordance with Mitigation Measure CUL-11: Archaeological Resources Monitoring. Ground disturbance in locations/depths that have been previously monitored as part of the program shall not be subject to additional monitoring. c. *Procedures for Discovery of Archaeological Resources.* Procedures to be implemented in the event of an archaeological discovery shall be fully defined in the plan and shall be in accordance with Mitigation Measure CUL- 14: Archaeological Resources Discoveries. Procedures outlined shall include stop-work and protective measures, notification protocols, procedures for significance assessments, and appropriate treatment measures. The plan shall state avoidance or preservation in place is the preferred manner of mitigating impacts to historical resources, unique archaeological resources, and contributors to the significance of the tribal cultural landscape, but shall provide procedures to follow should avoidance be infeasible in light of factors such as the nature of the find, project design, costs, and other considerations. If, based on the recommendation of a Qualified Archaeologist, it is determined that a discovered archaeological resource constitutes a historical resource or unique archaeological resource or is a contributor to the significance of the tribal cultural *landscape*, then *avoidance* and preservation in place shall be the preferred manner of mitigating impacts to such a resource in accordance with Mitigation Measure CUL-7: Avoidance and Preservation in Place of Archaeological Resources. In the event that preservation in place is determined to be infeasible and data recovery through excavation is the only feasible mitigation available, an Archaeological Resources Data Recovery and Treatment Plan shall be prepared and implemented following the procedures outlined in Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan. LCWA shall consult with appropriate Native American representatives in determining treatment of resources that are Native American in origin to ensure cultural values ascribed to the resources, beyond those that are scientifically important, are considered, including those related to the tribal cultural landscape.			
d. *Procedures for Discovery of Human Remains and Associated Funerary Objects or Grave Goods.* The plan shall outline the protocols *and* procedures to be followed in the event that *human* remains and associated funerary objects or grave goods are uncovered. Protocols and procedures shall be in accordance with Mitigation Measure CUL-18: Human Remains Discoveries. e. *Reporting Requirements.* The plan shall outline provisions for weekly and final reporting. The Qualified Archaeologist shall prepare weekly status reports detailing activities and locations observed (including maps) and summarizing any discoveries for the duration of monitoring to be submitted to LCWA via email for each week in which monitoring activities occur. The Qualified Archaeologist shall prepare a draft Archaeological Resources Monitoring Report and submit it to LCWA within 180 days after completion of the monitoring program or treatment for significant discoveries should treatment extend			

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
beyond the cessation of monitoring. The final Archaeological Resources Monitoring Report shall be submitted to LCWA within 60 days after receipt of LCWA comments. The Qualified Archaeologist shall also submit the final Archaeological Resources Monitoring Report to the South Central Coastal Information Center. f. *Curation or Disposition of Cultural Materials.* The plan shall outline the requirements for final disposition of all cultural materials collected during data recovery. Disposition of all archaeological materials shall be in accordance with Mitigation Measure CUL-15: Curation and Disposition of Cultural Materials. Disposition of human remains and any associated funerary objects or grave goods shall be in accordance with Mitigation Measure CUL-18: Human Remains Discoveries. g. *Protocols for Native American Coordination and Monitoring.* The plan shall outline requirements for Native American coordination and monitoring, and the Native American monitor(s) role and responsibilities in accordance with Mitigation Measures CUL-12: Native American Coordination and CUL-13: Native American Monitoring.			
Mitigation Measure CUL-10: Construction Worker Cultural Resources Sensitivity Training. For each near- term, mid-term, and long-term project that involves ground disturbance, LCWA shall retain a Qualified Archaeologist to implement a cultural resources sensitivity training program. The Qualified Archaeologist, or their designee, and a Native American representative shall instruct all construction personnel of the importance and significance of the area as a tribal cultural landscape, the types of archaeological resources that may be encountered, the proper procedures to be enacted in the event of an inadvertent discovery of archaeological resources or human remains, confidentiality of discoveries, and safety precautions to be taken when working with cultural resources monitors. In the event that construction crews are phased, additional trainings shall be conducted for new construction personnel. LCWA or their contractors shall ensure construction personnel are made available for and attend the training. LCWA shall retain documentation demonstrating attendance.	Included in construction contractor's scope of work; written verification	By LCWA continuously throughout construction	City of Long Beach City of Seal Beach California Coastal Commission
Mitigation Measure CUL-11: Archaeological Resources Monitoring. For each near-term, mid-term, and long-term project, full-time archaeological monitoring of ground disturbance (i.e., demolition, pavement removal, pot-holing or auguring, boring, drilling, grubbing, vegetation removal, brush clearance, weed abatement, grading, excavation, trenching, or any other activity that has potential to disturb soil) shall be conducted in areas and at depths where there is a potential to encounter archaeological materials or human remains, including excavations into existing artificial fill and native soils, based on the project-specific archaeological resources assessment prepared under Mitigation Measure CUL-4: Archaeological Resources Assessment. Ground disturbance in locations/depths that have been previously monitored as part of the program shall not be subject to additional monitoring. The archaeological monitor(s) shall be familiar with the types of resources that could be encountered and shall work under the direct supervision of a Qualified Archaeologist. The number of archaeological monitors required to be on site during ground-disturbing activities is dependent on the construction scenario, specifically the number of pieces of equipment operating at the same time, the distance between these pieces of equipment, and the pace at which equipment is working, with the goal of monitors being able to effectively observe soils as they are exposed.	Field verification	By LCWA continuously throughout construction	City of Long Beach City of Seal Beach California Coastal Commission

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
Generally, work areas more than 500 feet from one another will require additional monitors. The archaeological monitor(s) shall keep daily logs detailing the types of activities and soils observed, and any discoveries. Archaeological monitor(s) shall have the authority to halt and re-direct ground disturbing activities in the event of a discovery until it has been assessed for significance and treatment implemented, if necessary, based on the recommendations of the Qualified Archaeologist in coordination with LCWA, and the Native American representatives in the event the resource is Native American in origin, and in accordance with the protocols and procedures outlined in Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan. Reporting of archaeological monitoring shall be conducted in accordance with the provisions outlined in Mitigation Measure CUL-9: Archaeological Resources Monitoring and Mitigation Plan.			
Mitigation Measure CUL-12: Native American Coordination. LCWA shall seek input from participating Native American Tribes during the preparation of documents required under Mitigation Measures CUL-5: Extended Phase I Archaeological Investigation, CUL-6: Phase II Archaeological Investigation, CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan, Mitigation Measure CUL 9: Archaeological Resources Monitoring and Mitigation Plan, and CUL-14: Archaeological Resources Discoveries, including but not limited to work plans, research designs, treatment plans, and associated technical reports. LCWA shall provide participating Native American Tribes with electronic copies of draft documents and afford them 30 days from receipt of a document to review and comment on the document. Native American comments will be provided in writing for consideration by LCWA. LCWA shall document comments and how the comments were/were not addressed in a tracking log.	Written verification	By LCWA continuously throughout construction	City of Long Beach City of Seal Beach California Coastal Commission
Mitigation Measure CUL-13: Native American Monitoring. For each near-term, mid-term, and long-term project, full-time Native American monitoring of ground disturbance (i.e., demolition, pavement removal, pot-holing or auguring, boring, drilling, grubbing, vegetation removal, brush clearance, weed abatement, grading, excavation, trenching, or any other activity that has potential to disturb soil) shall be conducted in areas and at depths where there is a potential to encounter archaeological materials or human remains, including excavations into existing artificial fill and native soils, based on the project-specific study prepared under Mitigation Measure CUL-4: Archaeological Resources Assessment. LCWA shall retain a Native American monitor(s) from a California Native American Tribe that is culturally and geographically affiliated with the program area (according to the California Native American Heritage Commission) to conduct the monitoring. If more than one Tribe is interested in monitoring, LCWA shall contract with each Tribe that expresses interest and prepare a monitoring rotation schedule. LCWA shall rotate monitors on an equal and regular basis to ensure that each Tribal group has the same opportunity to participate in the monitoring program. If a Tribe cannot participate when their rotation comes up, they shall forfeit that rotation unless LCWA can make other arrangements to accommodate their schedule. The number of Native American monitors required to be on site during ground disturbing activities is dependent on the construction scenario, specifically the number of pieces of equipment operating at the same time, the distance between these pieces of equipment, and the pace at which equipment is working, with the goal of monitors being able to effectively observe soils as they are exposed. Generally, work areas more than 500 feet from one another require additional monitors. Native	Written verification, field verification	By LCWA continuously throughout construction	City of Long Beach City of Seal Beach California Coastal Commission

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
American monitors shall have the authority to halt and re-direct ground disturbing activities in the event of a discovery until it has been assessed for significance. The Native American monitor(s) shall also monitor all ground disturbance related to subsurface investigations and data recovery efforts conducted under Mitigation Measures CUL-5: Extended Phase I Archaeological Investigation, CUL-6: Phase II Archaeological Investigation, and CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan for any resources that are Native American in origin, according to the rotation schedule, including those related to the tribal cultural landscape.			
Mitigation Measure CUL-14: Archaeological Resources Discoveries. In the event archaeological resources are encountered during construction of the proposed program, all activity in the vicinity of the find shall cease (within 100 feet), and the protocols and procedures for discoveries outlined in Mitigation Measure CUL-9: Archaeological Resources Monitoring and Mitigation Plan shall be implemented. The discovery shall be evaluated for potential significance by the Qualified Archaeologist. If the Qualified Archaeologist determines that the resource may be significant (i.e., meets the definition for historical resource in *CEQA Guidelines* subdivision 15064.5(a) or for unique archaeological resource in PRC subdivision 21083.2(g) or is a contributor to the tribal cultural landscape), the Qualified Archaeologist shall develop an Archaeological Resources Data Recovery and Treatment Plan for the resource following the procedures outlined in Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan. When assessing significance and developing treatment for resources that are Native American in origin, including those related to the tribal cultural landscape, the Qualified Archaeologist and LCWA shall consult with the appropriate Native American representatives. The Qualified Archaeologist shall also determine if work may proceed in other parts of the project site while data recovery and treatment is being carried out. LCWA shall consult with the State Lands Commission Staff Attorney regarding any cultural resources discoveries on state lands. The final disposition of archaeological, historical, and paleontological resources recovered on State land under the jurisdiction of the California State Lands Commission must be approved by the Commission.	Field verification	By LCWA continuously throughout construction	City of Long Beach City of Seal Beach California Coastal Commission
Mitigation Measure CUL 15: Curation and Disposition of Cultural Materials. LCWA shall curate all Native American archaeological materials, with the exception of funerary objects or grave goods (i.e., artifacts associated with Native American human remains). LCWA shall consult with Native American representatives regarding the final disposition of Native American archaeological materials and on the selection of the curation facility, with preference given to tribal museums. LCWA shall first consider repositories that are accredited by the American Association of Museums and that meet the standards outlined in 36 CFR 79.9. If a suitable accredited repository is not identified, then LCWA shall consider non-accredited repositories as long as they meet the minimum standards set forth by 36 CFR 79.9. If a suitable non-accredited repository is not identified, then LCWA shall donate the collection to a local California Native American Tribe(s) (Gabrielino or Juañeno) for educational purposes. Disposition of Native American human remains and associated funerary objects or grave goods shall be determined by the landowner in consultation with LCWA and the Most Likely Descendant in accordance with Mitigation Measure CUL 18: Human Remains Discoveries.	Written verification, submittal of curation agreement	By LCWA prior to the start of each project	City of Long Beach City of Seal Beach California Coastal Commission California State Lands Commission

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
LCWA shall curate all historic-period archaeological materials that are not Native American in origin at a repository accredited by the American Association of Museums that meets the standards outlined in 36 CFR 79.9. If no accredited repository accepts the collection, then LCWA may curate it at a non-accredited repository as long as it meets the minimum standards set forth by 36 CFR 79.9. If neither an accredited nor a non-accredited repository accepts the collection, then LCWA shall offer the collection to a public, non-profit institution with a research interest in the materials, or to a local school or historical society in the area for educational purposes. If no institution, school, or historical society accepts the collection, LCWA may retain it for on-site display as part of its interpretation and educational elements. The final disposition of cultural resources recovered on state lands under the jurisdiction of the California State Lands Commission must be approved by the Commission. Prior to start of each project, LCWA shall obtain a curation agreement and shall be responsible for payment of fees associated with curation for the duration of the program.			
Mitigation Measure CUL16: Future Native American Input. LCWA shall consult with participating California Native American Tribes, to the extent that they wish to participate, during future design of project-level components, plant and native plant selections or palettes, and development of content for educational and interpretative elements, such as signage and Visitors Center displays.	Written verification	By LCWA prior to approval of project plans or preparation of subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission
Mitigation Measure CUL17: Tribal Access Plan. Prior to the start of construction, LCWA shall develop a written access plan to preserve and enhance tribal members' access to, and use of, the restoration project area for religious, spiritual, or other cultural purposes. This plan will allow access to the extent LCWA has the authority to facilitate such access, and be consistent with existing laws, regulations, and agreements governing property within the program area. The access plan may place restrictions on access into certain areas, such as oil operations and other exclusive easements the LCWA does not have access rights to. This access plan shall be developed in coordination with participating California Native American Tribes, to the extent that they wish to participate.	Written verification, submittal of access plan	By LCWA prior to approval of project plans or preparation of subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission
Mitigation Measure CUL-18: Human Remains Discoveries: If human remains are encountered, then LCWA or its contractor shall halt work in the vicinity (within 100 feet) of the discovery and contact the appropriate County Coroner in accordance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5, which requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. If the County Coroner determines the remains are Native American, then the Coroner will notify the California Native American Heritage Commission (NAHC) within 24 hours in accordance with Health and Safety Code subdivision 7050.5(c), and Public Resources Code Section 5097.98. The California Native American Heritage Commission shall then identify the person(s) thought to be the Most Likely Descendant (MLD). The MLD may, with the permission of the land owner, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The MLD shall complete their inspection and make their recommendation within 48 hours of being granted	Field verification; written verification	By LCWA continuously throughout construction	City of Long Beach City of Seal Beach California Coastal Commission

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
access by the landowner to inspect the discovery. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials. LCWA and the landowner shall discuss and confer with the MLD on all reasonable options regarding the MLD's preferences for treatment. Until LCWA and the landowner have conferred with the MLD, the contractor shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity and is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities take into account the possibility of multiple burials. If the NAHC is unable to identify an MLD, or the MLD identified fails to make a recommendation, or the landowner rejects the recommendation of the MLD and the mediation provided for in Subdivision (k) of Section 5097.94, if invoked, fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall inter the human remains and items associated with Native American human remains with appropriate dignity on the facility property in a location not subject to further and future subsurface disturbance.			
Geology and Soils			
Mitigation Measure GEO-1: Retention of a Qualified Professional Paleontologist. Prior to the start of construction of any near-term, mid-term, or long-term project, LCWA shall retain a Qualified Professional Paleontologist as defined by the Society of Vertebrate Paleontology to carry out all mitigation related to paleontological resources including: project-level review (Mitigation Measure GEO-2); paleontological resources sensitivity training (GEO-3); oversight of paleontological resources monitoring (Mitigation Measure GEO-4); and recovery, treatment, analysis, curation, and reporting (Mitigation Measures GEO-5**,** GEO-6**,** and GEO-7).	Included in construction contractor's scope of work; written verification	By LCWA prior to the commencement of construction.	City of Long Beach City of Seal Beach California Coastal Commission
Mitigation Measure GEO-2: Project-Level Paleontological Resources Review and Monitoring Recommendations. Prior to LCWA approval of any near-term, mid-term, and long- term project, the Qualified Professional Paleontologist shall review the *Los Cerritos Wetlands Program Paleontological Resources Assessment* (ESA, 2019), grading plans, and any available geotechnical reports/data to determine the potential for ground disturbance to occur within older alluvium and old shallow marine deposits. If available data is sufficient to accurately determine the depth of older alluvium and old shallow marine deposits within a project site, monitoring shall be required beginning at or just above that depth. If available data is insufficient to determine the depth of older alluvium and old shallow marine deposits, monitoring shall be required beginning at 5 feet below surface (consistent with the accepted depth at which high sensitivity sediments could occur based on regional evidence). The results of the reviews shall be documented in technical memoranda to be submitted to LCWA prior to the start of ground disturbance, along with recommendations specifying the locations, depths, duration, and timing of any required monitoring. The technical memoranda shall include map figures that outline where monitoring is required and at what depths, and shall stipulate whether screen washing is necessary to recover small specimens. Any required screen washing shall follow SVP Guidelines.	Written verification, submittal of technical memoranda	By LCWA, prior to approval of project plans or preparation of subsequent CEQA documents.	City of Long Beach City of Seal Beach California Coastal Commission

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
Mitigation Measure GEO-3: Paleontological Resources Sensitivity Training. Prior to the start of ground disturbance for any near-term, mid-term, or long-term project, the Qualified Professional Paleontologist shall conduct paleontological resources sensitivity training. The training shall focus on the recognition of the types of paleontological resources that could be encountered within the program area, the procedures to be followed if they are found, confidentiality of discoveries, and safety precautions to be taken when working with paleontological monitors. LCWA shall ensure that construction personnel are made available for and attend the training, and retain documentation demonstrating attendance. The training should be repeated as necessary for incoming construction personnel.	Written verification	By LCWA prior to commencement of ground disturbance and continuously during construction.	City of Long Beach City of Seal Beach and/or California Coastal Commission
Mitigation Measure GEO-4: Paleontological Resources Monitoring. A qualified paleontological monitor, as defined by the Society of Vertebrate Paleontology, shall monitor all ground-disturbing activities occurring in the older alluvium and old shallow marine deposits for each near term, mid-term, or long-term project. Monitoring shall be implemented consistent with the locations, depths, duration, and timing recommendations specified in the technical memorandum for the project. Monitors shall work under the direction of the Qualified Professional Paleontologist. The number of monitors required to be on site during ground-disturbing activities shall be determined by the Qualified Professional Paleontologist and shall be based on the construction scenario – specifically the number of pieces of equipment operating at the same time, the distance between these pieces of equipment, and the pace at which equipment is working – with the goal of monitors being able to effectively observe sediments as they are exposed. Monitors shall have the authority to temporarily halt or divert work away from exposed fossils in order to recover the fossil specimens, and to request assistance from construction equipment operators to recover samples for screen washing as necessary. Monitors shall prepare daily logs detailing the types of activities and soils observed, and any discoveries. The Qualified Professional Paleontologist, in consultation with LCWA, shall have the ability to modify (i.e., increase, reduce, or discontinue) monitoring requirements based on observations of soil types and frequency of discoveries. Requests for modifications shall be submitted in writing to LCWA for approval prior to implementation.	Written verification	By LCWA, prior to the commencement of ground disturbing activities and continuously during construction.	City of Long Beach City of Seal Beach California Coastal Commission
Mitigation Measure GEO-5: Paleontological Discoveries. If any potential fossils are discovered by paleontological resources monitors or construction personnel, all work shall cease at that location (within 100 feet) until the Qualified Professional Paleontologist has assessed the discovery and made recommendations as to the appropriate treatment. The paleontological resources monitor (if one is present) or construction personnel (if a monitor is not present) shall flag the fossiliferous area for avoidance until the Qualified Professional Paleontologist can evaluate the discovery and develop plans for avoidance or removal/salvage of the specimen(s), if deemed significant. Significant discoveries shall be salvaged following SVP Guidelines. LCWA shall consult with the State Lands Commission Staff Attorney regarding any paleontological resources discoveries on state lands.	Field verification; written verification	By LCWA continuously throughout construction	City of Long Beach City of Seal Beach California Coastal Commission California State Lands Commission
Mitigation Measure GEO-6: Preparation, Identification, Cataloging, and Curation Requirements. All significant fossil discoveries shall be prepared to the point of	Field verification; written verification, signed	By LCWA continuously	City of Long Beach City of Seal Beach

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
identification to the lowest taxonomic level possible, cataloged, and curated into a certified repository with retrievable storage (such as a museum or university). All GPS data, field notes, photographs, locality forms, stratigraphic sections, and other data associated with the recovery of the specimens shall be deposited with the institution receiving the specimens. The Qualified Professional Paleontologist shall be responsible for obtaining a signed curation agreement from a certified repository in southern California prior to the start of the program. Given the length of the program, multiple agreements may be necessary due to changing capacities of repositories. The final disposition of paleontological resources recovered on state lands under the jurisdiction of the California State Lands Commission must be approved by the Commission.	curation agreement	throughout construction	California Coastal Commission California State Lands Commission
Mitigation Measure GEO-7: Reporting Requirements. The Qualified Professional Paleontologist shall prepare weekly status reports detailing activities and locations observed (with maps) and summarizing any discoveries to be submitted to LCWA via email for each week in which monitoring activities occur. Monthly progress reports summarizing monitoring efforts shall be prepared and submitted to LCWA for the duration of monitored ground disturbance. Reports detailing the results of monitoring for any near-term, mid-term, or long- term project and treatment of significant discoveries shall be submitted to LCWA within 120 days of completion of treatment, or within 30 days of completion of monitoring if no significant discoveries occurred. If significant fossils are recovered, the Qualified Professional Paleontologist shall file the final report with the Natural History Museum of Los Angeles County and the certified repository.	Written verification, submittal of weekly reports	By LCWA throughout the construction period in which monitoring is required.	City of Long Beach City of Seal Beach California Coastal Commission
Hazards and Hazardous Materials			
Mitigation Measure HAZ-1: Health and Safety Plan. The contractor(s) shall prepare and implement site-specific Health and Safety Plans as required by and in accordance with 29 CFR 1910.120 to protect construction workers and the public during all excavation and grading activities. This Plan shall be submitted to LCWA, the Orange County Environmental Health Division (the CUPA for the City of Seal Beach area), or Long Beach/Signal Hill Joint Powers Authority (the CUPA for the Long Beach area), for review prior to commencement of construction. The Health and Safety Plans shall include, but are not limited to, the following elements:	Written verification, submittal of plans.	Prior to the issuance of a grading permit	City of Long Beach City of Seal Beach Orange County Environmental Health Division Long Beach/Signal Hill Joint Powers Authority
• Designation of a trained, experienced site safety and health supervisor who has the responsibility and authority to develop and implement the site Health and Safety Plan;			
• A summary of all potential risks to construction workers and maximum exposure limits for all known and reasonably foreseeable site chemicals;			
• Specified personal protective equipment and decontamination procedures, if needed;			
• Emergency procedures, including route to the nearest hospital; and			
Procedures to be followed in the event that evidence of potential soil or groundwater contamination (such as soil staining, noxious odors, debris or buried storage containers) is encountered. These procedures shall be in accordance with hazardous waste operations			

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
regulations and specifically include, but are not limited to, the following: immediately stopping work in the vicinity of the unknown hazardous materials release, notifying the LCWA, and the Orange County Environmental Health Division (the CUPA for the City of Seal Beach area), or the Long Beach/Signal Hill Joint Powers Authority (the CUPA for the Long Beach area), the LARWQCB, or CalGEM, as appropriate, and retaining a qualified environmental firm to perform sampling and remediation.			
Mitigation Measure HAZ-2: Soil, Landfill Materials, and Groundwater Management Plan. In support of the Health and Safety Plan described in Mitigation Measure HAZ-1, the contractor(s) shall develop and implement a Soil, Landfilled Materials, and Groundwater Management Plan that includes a materials disposal plan specifying how the contractor will remove, handle, transport, and dispose of all excavated material in a safe, appropriate, and lawful manner. The Plan shall identify protocols for soil and landfilled materials testing and disposal, identify the approved disposal site, and include written documentation that the disposal site can accept the waste. Contract specifications shall mandate full compliance with all applicable federal, state, and local regulations related to the identification, transportation, and disposal of hazardous materials, including those encountered in excavated soil, landfilled materials, or dewatering effluent. As part of the Soil, Landfill Materials, and Groundwater Management Plan, the contractor shall develop a groundwater dewatering control and disposal plan specifying how groundwater (dewatering effluent), if encountered, will be handled and disposed of in a safe, appropriate and lawful manner. The Plan shall identify the locations at which groundwater dewatering is likely to be required, the test methods to analyze groundwater for hazardous materials, the appropriate treatment and/or disposal methods, and approved disposal site(s), including written documentation that the disposal site can accept the waste. The contractor may also discharge the effluent under an approved permit to a publicly owned treatment works, in accordance with any requirements the treatment works may have. The Plan will include information to address the following: In the event that any debris are encountered during excavation that could be associated with the FUDS, including but not limited to munitions and explosives of concern (MEC), material potentially presenting an explosive hazard (MPPEH), and munitions constituents (MC), follow the 3Rs of Explosives Safety; Recognize, Retreat and Report: Recognize, when you have encountered munitions; Retreat, note your location as you are backing away. Do not approach, touch, or disturb a suspect munitions, safely leave the area; and Report, immediately what was found to state and or local law enforcement – call 911. Please then notify DTSC. This Plan shall be submitted to the LCWA, and the Orange County Environmental Health Division (the CUPA for the City of Seal Beach area), or the Long Beach/Signal Hill Joint Powers Authority (the CUPA for the Long Beach area), or the Orange County Environmental Health Division (the CUPA for the City of Seal Beach area) for review and approval prior to commencement of construction.	Written verification, submittal of report	By the LCWA prior to the issuance of a grading permit	City of Long Beach City of Seal Beach Orange County Environmental Health Division Long Beach/Signal Hill Joint Powers Authority
Hydrology and Water Quality			
Mitigation Measure HYD-1: A Monitoring and Adaptive Management Plan (MAMP) shall be prepared and implemented prior to commencement of construction or restoration	Written verification, submittal of report	By the LCWA prior to the commencement	City of Long Beach City of Seal Beach

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
activities. The MAMP shall provide a framework for monitoring site conditions in response to the program implementation. The monitoring shall focus on sediment quality in areas subject to the greatest deposition from storm events and that are also not subject to regular tidal flushing, (e.g., the southwestern corner of the Long Beach Property site). The sediment quality monitoring shall be performed at a frequency that would capture the potential build-up of contaminants in the deposited sediment before concentration are reached that would impact benthic macro-invertebrates and other sensitive species. The findings of the monitoring efforts shall be used to identify any source of impairment, and if discovered, provide measures for remediation of the sediment source area(s). The MAMP shall be submitted for review and approval to permitting agencies prior to commencement of construction or restoration activities.		of construction	California Coastal Commission
Noise			
Noise Reduction Measure NOISE-1: Staging Areas and Mufflers. Staging areas for construction shall be located away from existing off-site residences. All construction equipment shall use properly operating mufflers. These requirements shall be included in construction contracts.	Included in construction contractor's agreements	By the LCWA prior to the commencement of construction	City of Long Beach City of Seal Beach California Coastal Commission
Noise Reduction Measure NOISE-2: Limit Grading. All grading activities shall be conducted outside of the nesting season for sensitive bird species. The nesting season has been identified as extending from March 1 to August 15. (Refer to Section 3.3 Biological Resources for more information on potential impacts to bird species and the corresponding mitigation).	Included in construction contractor's agreements	By the LCWA prior to the commencement of construction	City of Long Beach City of Seal Beach California Coastal Commission
Noise Reduction Measure NOISE-3: Noise Barriers. Where feasible, grading plans and specifications shall include temporary noise barriers for all grading, hauling, and other heavy equipment operations that would occur within 300 feet of sensitive off-site receptors and occur for more than 20 working days. The noise barriers shall be 12-feet high, but may be shorter if the top of the barrier is at least one foot above the line of sight between the equipment and the receptors. The barriers shall be solid from the ground to the top of the barrier, and have a weight of at least 2.5 pounds per square foot, which is equivalent to ¾ inch thick plywood. The barrier design shall optimize the following requirements: (1) the barrier shall be located to maximize the interruption of line-of-sight between the equipment and the receptor, which is normally at the top-of- slope when the grading area and receptor are at different elevations. However, a top-of-slope location may not be feasible if the top-of-slope is not on the project site; (2) the length and height of the barrier shall be selected to block the line-of-sight between the grading area and the receptors; (3) the barrier shall be located as close as feasible to the receptor or as close as feasible to the grading area; a barrier is least effective when it is at the midpoint between noise source and receptor.	Written verification, submittal of plans	By the LCWA prior to the issuance of a grading permit.	City of Long Beach City of Seal Beach California Coastal Commission
Public Services			
Mitigation Measure PS-1: Fire Prevention and Protection Training. Prior to the start of construction activities, the Applicant shall prepare and conduct a fire prevention and protection training for all construction personnel associated with the proposed program. Topics shall include general fire prevention practices such as avoiding smoking on the program area as well as specific preventative measures pertaining to high-fire-risk activities	Written verification	By the LCWA prior to the commencement of construction activities.	City of Long Beach City of Seal Beach California Coastal Commission

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
including handling of oil and welding and cutting. Personal protection measures including the locations of fire extinguishers on the program area and site exit routes should also be disclosed to ensure construction worker safety in the event of a fire. The material for the training shall be obtained in consultation with the Orange County Fire Authority and the Long Beach Fire Department.			
Transportation			
Mitigation Measure TRA-1: Prior to the start of construction of the program component(s) that require a full or partial roadway closure, LCWA shall require the construction contractor(s) to prepare a traffic control plan. The traffic control plan will show all signage, striping, delineated detours, flagging operations and any other devices that will be used during construction to guide motorists, bicyclists, and pedestrians safely through the construction area and allow for adequate access and circulation to the satisfaction of the cities of Seal Beach and Long Beach and Orange and Los Angeles Counties, as applicable. The traffic control plan shall be prepared in accordance with the applicable jurisdiction's traffic control guidelines and will be prepared to ensure that access will be maintained to individual properties, and that emergency access will not be restricted. Additionally, the traffic control plan will ensure that congestion and traffic delays are not substantially increased as a result of the construction activities. Furthermore, the traffic control plan will include detours or alternative routes for bicyclists using on- street bicycle lanes as well as for pedestrians using adjacent sidewalks. LCWA shall provide written notice at least two weeks prior to the start of construction to owners/occupants along streets to be affected during construction. During construction, LCWA will maintain continuous vehicular and pedestrian access to any affected residential driveways from the public street to the private property line, except where necessary construction precludes such continuous access for reasonable periods of time. Access will be reestablished at the end of the workday. If a driveway needs to be closed or interfered with as described above, LCWA shall notify the owner or occupant of the closure of the driveway at least five working days prior to the closure. The traffic control plan shall include provisions to ensure that the construction of the proposed program does not interfere unnecessarily with the work of other agencies such as mail delivery, school buses, and municipal waste services. LCWA shall also notify local emergency responders of any planned partial or full lane closures or blocked access to roadways or driveways required for program construction. Emergency responders include fire departments, police departments, and ambulances that have jurisdiction within the program area. Written notification and disclosure of lane closure location must be provided at least 30 days prior to the planned closure to allow emergency response providers adequate time to prepare for lane closures.	Written verification, submittal of plan	By the LCWA construction contractor prior to the commencement of construction.	City of Long Beach City of Seal Beach California Coastal Commission
Utilities and Service Systems			
Mitigation Measure UTL-1: Water Will Serve Letter. Prior to issuance of a certificate of occupancy of the visitor center, a will serve letter will be obtained to verify that the water mains surrounding the program boundary have the capacity to serve the visitor center.	Written verification.	By the LCWA prior to issuance of a certificate of occupancy.	City of Seal Beach

Mitigation Measure	Method of Verification	Responsibility / Timing of Implementation	Enforcement Agency
Mitigation Measure UTL-2: Sewer Capacity Study. Prior to issuance of a certificate of occupancy of the visitor center, a sewer capacity study will be performed to verify that the sewer lines surrounding the program boundary have the capacity to serve the visitor center.	Written verification.	By the LCWA prior to issuance of a certificate of occupancy.	City of Seal Beach

Appendix B: Southern Los Cerritos Wetlands Restoration Project Basis of Design Components

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MEMORANDUM

To:	Eric Zahn
Cc:	Sally Gee
From:	The M&N Design Team (M&N, CRC, Anchor)
Date:	1/31/23
Subject:	Basis of Design Components
M&N Job No.:	210644

Introduction

This memorandum represents the 65% Draft Basis of Design (BOD) document. It presents the project design and its rationale for the record and for clarification of project design components. The BOD is also intended for stimulating input from the LCWA and the Technical Advisory Committee.

One over-arching goal of the design is to create a project that is self-sustaining and resilient with minimal maintenance over time. Project-specific goals are listed below.

1. Restore tidal wetland processes and functions to the maximum extent possible.

2. Maximize contiguous habitat areas and maximize the buffer between habitat and sources of human disturbance.

3. Create a public access and interpretive program that is practical, protective of sensitive habitat and ongoing oil operations, economically feasible, and will ensure a memorable visitor experience.

4. Incorporate phasing of implementation to accommodate existing and future potential changes in land ownership and usage, and as funding becomes available.

5. Strive for long-term restoration success.

6. Integrate experimental actions and research into the project, where appropriate, to inform restoration and management actions for this project.

The philosophy in the design is to minimize structures and dependence on features (mechanical items) that require active operation, maintenance and/or replacement.

Draft Basis of Design Components

1. Sources of Seawater – The project is proposed to be phased to capitalize on two sources of seawater that are available at different points in time. An existing 42-inch culvert with an invert elevation of -1.0 foot NGVD connects the site to the San Gabriel River and can serve as the seawater source in the near-term timeframe. The second seawater source is the Haynes Cooling Channel (HCC) immediately adjacent to the project site and it is assumed to be available on or after 2029. The project will be connected to the 42-inch culvert in Phase 1 and then be connected to the Haynes Cooling Channel in Phase 2. It is also assumed at this time that the existing culvert will not be relied upon as the primary tidal connection and could be closed but not permanently sealed. It could be left in place to become functional in the future if needed for any reason as a back-up water source. If the HCC cannot be obtained as a water source in the future, then the phase 2 footprint may have to be redesigned and the phasing may need to be revised (Coastal Restoration Consultants, or CRC 2021).

Different tidal conditions will exist in Phases 1 and 2 because the 42-inch culvert does not convey as much seawater as efficiently to and from the site as will the Phase 2 open channel connection. Modeling conducted for prior work (Moffatt & Nichol, or M&N 2015) and for this specific effort (M&N 2022) indicates that the existing tide range is 2.8 feet with a culvert-only connection to the SGR as Phase 1. Tidal elevations range from a high of +2.9 feet and a low of +0.1 feet. The modeling also indicates a potential tide range of nearly 8 feet with a connection to the Haynes Cooling Channel as Phase 2. This suggests that low tides in Phase 1 are limited to an elevation of approximately +0.1 foot NGVD, while it drops to nearly -3.7 feet NGVD in Phase 2.

For Phase 1, the existing culvert connection to the San Gabriel River is assumed to be used. The culvert would likely need to be cleaned out, and the gate is either:

A. Left as is – to simplify permitting and is assumed to be the most likely scenario at this point;

B. Removed entirely – could trigger extra permitting from USACE under section 408 or,

C. Replaced with a new automated device for controlling water levels such as a Self-Regulating Tide gate (SRT) – This action may also require a USACE 408 permit.

For Phase 2, it is assumed that an open channel connection to the Haynes Cooling Channel exists. Full ocean tides will be provided by this connection.

2. Tidal Channels – The current plan is based on ultimate implementation of Phase 2 with a full tide range. With the uncertainty of Phase 2 occurring, if the tide range remains constricted 2.8 feet, then the design of Phase 1 and the bed elevation of the tidal channels could be reconsidered. Low marsh habitat elevations may need to be revised if this is to be the case, but other habitat elevations should function successfully as presently designed. The tidal channel layout and sources of seawater are shown in Figure 1.

Tidal channels provide important habitat and are crucial for distributing tidal flows throughout the marsh. The smallest channels, first-order tidal creeks, are typically found throughout mid-marsh plains and are generally less than a few feet wide and deep and typically drain completely on most low tides. First-order creeks merge to form second-order tidal creeks, which are larger and deeper and may drain only on lower low tides. Second-order creeks merge to form larger third-order creeks and so on. Third-order and higher order creeks typically contain sub-tidal habitat, which is important especially for fish. Natural tidal creeks tend to be meandering due to the generally flat nature of most natural marsh plains.

The 65% engineering drawings show the largest sub-tidal channel proposed through the site to be deepened to an elevation of -4.5 feet NGVD to provide 1 foot of water in the channel at the lowest low tide in the future Phase 2. This same channel will hold nearly 4.5 feet of water in the channel at low tide in Phase 1. The goal is to keep the water in the channel cool and oxygenated in prolonged dry weather conditions. In Phase 1, tidal creeks in the areas that are set aside for minimal to no grading will generally be left to develop on their own around existing small ditches that were dug by vector control to help minimize ponding of tidal waters. These are expected to develop after the full tidal connection allows greater tidal dynamics and thus flows with more potential to cut channels. Except where the new main sub-tidal channel intersects it, the existing tidal channel through the site will remain undisturbed except where culverts will be removed, and also potentially within the experimental area. The lower part of this channel contains a diversity of native invertebrates that if preserved, will help populate the newly restored habitats more quickly than if they had to colonize from neighboring systems such as Steamshovel Slough.

3. Habitat Areas and Elevations – This project is designed to provide a diversity of quality wetland, transitional, and upland habitats on this site, considering opportunities and constraints. The layout of the habitat distribution and size of the areas was prepared to optimize the habitat function on-site. The proposed habitat plan for Phases 1 and 2 is shown in Figure 2. The entire grading plan for the site is designed for fully tidal conditions, which will occur in Phase 2. This is

done so that most areas of Phase 1 will not need to be graded twice, causing additional disturbance to developing habitats.

The result of the ultimate Phase 2 design approach is that lower elevation habitats will experience a relatively high tidal inundation frequency (wetted more often than needed) until Phase 2 is implemented. The cordgrass marsh area for instance will likely be too wet for cordgrass establishment and the entire sub-tidal channel will remain inundated in the near-term. These areas will provide mudflat and sub-tidal habitat in the near-term. At mid-marsh and high-marsh elevations, tidal muting in Phase 1 is less so it is expected that these habitats will function more or less naturally in Phases 1 and 2. The highest high tides will be muted in Phase 1 so the upper limit of the high-marsh and the transition zone will move higher between phases, but both of these habitats will still be in the establishment phase when Phase 2 is implemented. Therefore their elevation ranges will be more a product of revegetation efforts (planting and irrigating) than natural processes. Limited areas at the interface between Phases 1 and 2 will need to be graded in both phases, mainly to connect the Phase 1 sub-tidal channel with both the Haynes Channel and with the upstream extension of the main sub-tidal channel on-site..

Grading shall be done in such a way as to provide for naturalized surfaces with uneven terrain rather than artificially smooth and flat marsh plains. The contractor will be required to create uneven terrain with "micro-topography" or "lumps and bumps" in the areas for mid-marsh, high marsh, transitional habitat, and filled upland habitats. This can be achieved by several methods including ripping graded surfaces, and by "side-casting" earth material when excavating micro-channels to form a low berm parallel to the channels, and then creating gaps in the new berm to result in mounds spaced at random intervals along the channel banks. It can also be achieved by leaving relatively higher existing mounds in place during the grading of the marsh plain to provide more natural unevenness. The Los Cerritos Wetlands Restoration plan by Coastal Restoration Consultants (CRC) dated May 26, 2021 provides examples of the uneven terrain concept.

See details below for each sub-habitat area. The habitat ranges indicated below are all assuming current sea level. The relationship between elevation and inundation frequency will change as sea level rises. The relationship between inundation frequency and habitat type will generally not change.

A. Sub-tidal habitats occur below the lowest tide levels (-3.9 ft NGVD) in fully-tidal systems (Phase 2) or where drainage is limited resulting in permanent ponding in muted-tidal systems (Phase 1). Sub-tidal habitats have an inundation frequency of 100%.

B. Unvegetated low intertidal habitats will occur below the lowest areas of vegetation and have an inundation frequency of 100% to 40%. This inundation range is often referred to as mudflat, but this project is not designed to have any mudflats at current sea level for Phase 2. There will be unvegetated low intertidal habitats in tidal channels, and in Phase 1 mudflat will exist in the future low marsh (cordgrass) area where hydrologic conditions will not yet be suitable for cordgrass until the Phase 2 connection to the HCC. This is described in item C below.

C. Cordgrass marsh areas can occur in along tidal and sub-tidal creeks and on flats that are inundated between about 20% and 40% of the time. The cordgrass marsh area within the project is designed to be inundated 20% of the time once the Phase 2 connection to the Haynes Cooling Channel is made to maximize the time before it converts to mudflat with SLR. This elevation is expected to be +1.9 feet NGVD. During Phase 1, however, when tides are muted the vertical position of the 20%-40% inundation elevation range will be higher compared to Phase 2. Therefore, the low marsh (cordgrass) area is expected to temporarily be mudflat habitat until Phase 2 is implemented.

D. Areas that are graded to mid-marsh elevation are designed to be at +3.3 feet NGVD, which is the upper limit of the 2.0 – 3.3 feet NGVD range for this habitat (and an inundation frequency of 4% to 20%). This will allow mid-marsh habitat to exist at current sea level and with about 1.3 feet of sea level rise. Without beneficial sediment additions, these habitats will convert to cordgrass marsh with further sea level rise and eventually to unvegetated low intertidal habitat (mudflats) with about 2.6 feet of sea level rise. Much of the areas labeled as “minimal- to no-grading” in Phase 1 fall within the elevation range for mid-marsh and are expected to function as such. It is expected that in Phase 1 the elevation range for mid-marsh will be lower by nearly 0.8 feet than the Phase 2 elevations. The graded mid-marsh areas will include tidal creeks and microtopographic variation that will create mud panne habitat in depressions and small patches of high marsh on small mounds. This topographic heterogeneity increases the overall habitat value of the mid-marsh plain.

E. Areas that are graded to high marsh elevation are designed to be at +4.7 feet NGVD, which is the upper limit of the 3.4 – 4.7 foot NGVD range for this habitat (and an inundation frequency of 0.05 % to 4%). This will allow high-marsh habitat to persist with about 1.3 feet of sea level rise. As with graded mid-marsh habitats, high-marsh will convert with every 1.3 feet of sea level rise to mid-marsh, cordgrass marsh, and unvegetated low intertidal (mudflats). Some of the “minimal- to no-grading areas in Phase 1 will be high marsh and fall into this elevation range. As with mid-marsh, the inundation frequency of high-marsh areas is not expected to change between Phase 1 and 2. High marsh areas will not have tidal creeks but should have topographic heterogeneity like the mid-marsh, mainly in the form of small mounds that can support transition zone shrubs such as California boxthorn (*Lycium californica*). This habitat heterogeneity increases the overall habitat value of the high marsh habitat.

F. Salt panne habitat will be restored in large depressional areas between about +4.1 and +4.7 feet NGVD. Salt pannes flood with a combination of rainfall and/or when extreme high tides overtop the low point surrounding the depression. The ponded water evaporates over time, concentrating salts, often leaving a salt crust on the soil surface when not flooded. The high soil salinity and prolonged flooding exclude most vegetation from salt pannes; however, the upper edges can support the rare annual plant Coulter’s goldfields (*Lasthenia glabrata* ssp. *coulteri*). When not flooded, salt pannes can provide habitat for rare invertebrates such as tiger beetles and nesting for western snowy plovers. The sill elevation for tidal flooding of the salt panne areas should be set at +4.7 feet NGVD.

G. The transition zone habitat areas occur between the high-marsh and upland areas in a zone that is not flooded by the highest typical annual tides but is flooded during anomalous high tides (e.g., in El Nino years) and when high tides coincide with significant rainfall. These rare flooding events leave soils that are too salty for most upland plants and too dry for most salt marsh plants. The width of the transition zone varies between marshes; systems with significant riverine inputs can have more extreme water levels during fluvial flooding events. For this project, which has minimal fluvial connections, the transition zones are designed to be at between +4.8 feet and +5.7 feet NGVD, or about one foot above the highest high tide. This elevation range is expected to be appropriate during both Phases 1 and 2.

H. Non-tidal areas above 5.7 feet NGVD will be restored using native upland species. In areas that have relatively well-drained soils (sandy loams or on 3:1 or steeper slopes), coastal sage scrub can be restored. Heavier soils that are not well drained might support less diverse scrub communities and native grasslands.

I. A non-tidal strip of area between Area 18 and the northern and eastern property lines is expected to support native riparian trees, which are thriving in a bioswale setting immediately east of the project area. Excavation in this area is not required. Non-native vegetation and weeds will be removed and the area will be replanted with native vegetation.

4. Flood Protection – A combination of earthen berms and natural high terrain will protect neighboring properties from potentially increased flooding risk due to improved connection to the SGR culvert in Phase 1 and future connection to the Haynes Cooling Channel in Phase 2. A berm will be installed up to an elevation of +7.5 feet NGVD along the northern boundary of the site with the active Hellman oil field. It will provide a 6-foot width across the crest for pedestrian access. That berm will “tie-into” higher existing elevations at the western end of Area 18. Area 18 and natural high

ground protect neighbors to the east and south of the site except near the eastern end of the existing tidal channel where there is currently regular tidal flooding of a small wetland on City of Seal Beach property. The future hydrology of this area under project conditions is being assessed. The existing First Street roadway through the site will be elevated up to +10.0 feet NGVD and out of the reach of future high water for safe travel by vehicular traffic to the Hellman (oil field) site. Finally, the levee along the Haynes Cooling Channel will remain in place in Phase 1 to keep the water bodies of the wetland and channel separated, but will be partially removed in Phase 2 to allow full connection between water bodies. This is not shown on the 65% design drawings because the levee is not on LCWA property. Flood protection features area shown on Figure 3.

5. Earthwork Balance – A significant amount of excavation is proposed in the project. Each phase results in lowering of areas on the site and generation of surplus soils. Soil disposal offsite is costly. The eastern high ground at Area 18 may be able to be raised significantly to serve as a spoil area for excess earth fill. The grading plan shows it being raised to between +20 and 22 feet NGVD in Phase 1. The other area that may be able to be raised is the former City landfill site at the southwest portion of the site. The raising of that site is shown in the drawings and has been factored into the earthwork quantities. Any fill in the landfill area needs to be kept low enough to not block views from the neighborhood in Seal Beach. In contrast however, blocking views of the nearby oil operations from Heron Point may be desirable. These fill areas would be restored with native upland plant communities.

Additionally, there may be a future need for soil on-site that could be used for beneficial sedimentation in the restored intertidal habitats, which will be needed as sea level rise triggers habitat conversion. Soil for this use could be stockpiled somewhere on site and vegetated to control erosion but not to necessarily create habitat. Generally, the soil volume produced by the project will be a surplus of nearly 274,000 cubic yards (cy). Grading for this project is designed such that the cut and fill quantities balance. Due to the amount of artificial fill and high topographic elevations already present on the site, importing material will not be needed. Advance planning should occur with LCWA members to plan for beneficial soil re-use to reduce future project costs and impacts from material disposal. An example would be providing fill to the Port of Long Beach if it were suitable for project development. The preliminary earthwork quantities are shown in Table 1 below. These quantities may change as the project is further designed. A cut and fill graphic is shown in Figure 4.

Table 1: Table of Material Quantities

Item	Cut Quantity (cy)	Fill Quantity (cy)	Net Quantity (cy)
Phase 1 Grading	97,263	71,371	25,892 Cut
Phase 2 Grading	176,671	199,352	<22,681> Fill
Totals	273,934	270,723	3,211 Cut

6. Soil Preparation – Information in this section is provided by CRC (2021). Topsoil (3-6 inches) should be grubbed from graded and filled areas. This soil and plant material, which will contain a significant amount of weed propagules, should be buried at least 12 inches deep in fill areas or hauled off site in order to limit weed infestations in restored uplands. After intertidal areas are graded to the proper elevation, the soil should be ripped to a depth of 12 inches in order to create small-scale topographic heterogeneity and assure soils are not overly compacted. High marsh and transition zones should also be disked to break up large clods of soil. Low marsh and tidal and sub-tidal channels should not be ripped or disked. Low ground pressure equipment should be used in restored marsh areas to avoid soil compaction.

Upland areas that are graded or receive fill should be ripped to 18 inches and then disked. Selective placing of fill based on soil salinity should assure that at least the top 36 inches of soil has a salinity less than 3 parts per thousand. Saltier soil should be placed as deeply as possible in fill areas or hauled off site. Salty soil can also be stockpiled for future use in beneficial sedimentation of the restored marsh. Regular soil testing will be conducted during grading to assure soils in the fill areas are appropriate for supporting target plant communities. A soil amendment plan will be developed in final engineering design.

7. Preservation of Sensitive Plants On-Site – Information in this section is also provided by CRC (2021). Two rare plants that are known to occur on the project site have the potential to constrain certain restoration actions. Lewis' evening primrose (*Camissoniopsis lewisii*), a small annual plant, is a California Native Plant Society (CNPS) Rank 3 species, which means it may be in need of protection but a lack of sufficient data on its distribution exists to make this determination. This somewhat ambiguous listing makes it difficult to determine how the agencies will view potential impacts to this species. This is a species normally found on very sandy soils in dune systems or on bars along creeks and rivers. It occurs in two areas on imported sand at the project site; in Area 18 and just north of the landfill area on soil that likely has less than 5% silt and clay (i.e., beach sand). Relatively little is known about propagation of this species though it seems to sprout readily from its seedbank with very limited rainfall at the site. Southern tarplant (*Centromadia parryi* ssp. *australis*) is an annual species tolerant of salty clayey soils that is scattered throughout the project site. It is a CNPS Rank 1b, meaning it is rare throughout its range and therefore given a high level of protection, especially in the coastal zone. Propagation of this species is relatively easy where non-native annual species can be controlled. Since both species are annuals, their distribution and population size vary from year to year based on the amount of rainfall. Both species have been mapped in at least two years so there is reasonabe confidence of their distribution at the site. There will inevitably be some impacts to one or both of these species that will trigger the need for some mitigation. There will be many opportunities to establish new areas that support southern tarplant in upland areas with good weed control. Preserving Lewis' evening primrose will require protecting or expanding the area of sand where this species occurs. The mitigation ratio for any impacts to either species is still to be determined with the agencies.

8. Riparian Swale – A riparian area shown in the Conceptual Restoration Plan (CRC 2021) was proposed at the east end of the site. However, due to topographic constraints the project team has decided to simply maintain the existing function along the eastern project boundary rather than create a new swale. An existing riparian area is being sustained by fresh groundwater shallow enough for trees to reach. The project proposes no changes to the site other than non-native vegetation removal and planting of native species.

9. Contaminated Sump Sites – Certain sites within the project area listed as former oil sumps will need to be removed and backfilled. Contamination left in twelve sumps was commonly placed next to oil wells to collect and circulate drilling muds. The project investigated potential oil contamination in near-surface soils (down to 6 feet below ground surface) and made determinations about their handling. Five sumps that exist on-site will require excavation and removal. The sumps are numbered as 1, 2, 3, 7 and 11. It is assumed they are entirely removed to 6 feet below grade with 2:1 side slopes within their entire outlines and hauled off to a municipal landfill. The volume of material estimated to be hauled away is 26,600 cy. The contractor will stockpile the material on-site, test it for contamination levels, and then haul it off to a landfill. Surplus sediment from grading will be used to backfill the excavation footprints of these sumps. Seven other sumps on-site do not require removal due to the relatively low level of contamination in each. The sumps to remain are numbers 4, 5, 6, 8, 9, 10 and 12. Figure 5 shows the sumps to be removed and those to remain. This excavation and backfill activity is factored into the earthwork quantities. There are several sumps in the minimal to no grading areas in Phase 1. Sump 11 is within this area and will require clean up, so there will be a short-term disturbance to areas supporting Belding's savanna sparrow breeding habitat during the clean-up. Removing these contaminants will likely be a long-term benefit to this species at the site as the presence of the contaminants may be detrimental to the health of the birds and their reproductive success. Agencies will determine what mitigation will be needed, but the project is expected to greatly expand habitat for this species overall.

10. Contaminated Non-Sump Sites – Sites that are generally labeled as potentially contaminated but are not specifically categorized as sumps will generally be left unaltered. However, there are small areas that may be graded in shallow lifts to create intertidal habitat. Areas that are currently supporting salt marsh habitat will remain unaltered.

11. Construction Staging and Access – Construction staging includes activities such as equipment and material storage, may serve as the contractor field office location, and may provide construction access points. Staging is proposed at the existing State Lands Commission site, along the southern shoulder of First Street outside of the fence line, and at the site of the existing shipping container off of First Street currently used for stewardship programs. Staging at the State Lands parcel is proposed to occur outside of the existing concrete pads and to only occur on existing vacant ground, and will avoid wetlands. Staging along First Street is only to be located along the southern shoulder of the road and outside of the fence line to provide continued passage of vehicles into and out of the site, as needed. Staging at the location of the existing shipping container is on a small site and may only be suitable for the construction trailer or other small-scale storage needs. Southern tarplant has been observed at or near all of these areas, and is especially widespread at the State Lands Commission site. Potential impacts to this species will need to be considered in choosing a preferred footprint for one or more staging areas. An additional construction staging area is proposed at the midpoint of the northern project boundary.

Construction access points are at 1st Street off Pacific Coast Highway, and at Adolfo Lopez Street. Figure 6 shows construction staging and access sites.

12. Road Surface Removal – The existing road surface at the eastern end of the site near Area 18 and paralleling the existing drainage ditch will be removed and the site lowered to be the elevation of mid-marsh; much of that road is currently at or near the elevation of mid-marsh. This shall be done to provide colonization by wetland plant species and to provide for research plots as addressed below. Disposal of the asphalt or concrete will be addressed in the construction documents.

13. Research Plots – Wetland research test plots will be created along the existing eastern relic roadway alignment once the road is removed. The research plots will allow for quantitative evaluation of sea level rise effects and perhaps adaptive management approaches. This area is labeled in the design and details have been developed in the 65% design stage. Discussion of this item is found in CRC 2021.

14. Channel Under First Street – The specifics of the channel connection under First Street have been determined in the 65% design stage. The channel underneath the road will remain relatively large in cross-section using either a large span pre-cast concrete box structure with three sides or a pre-fabricated bridge. The connection is designed to not mute tides and to accommodate 3.3 feet of SLR.

15. Seal Beach Wetland at the Southeast Corner – A portion of the project site located near the far east end straddles a wetland and the property fence line runs through a marsh. Some of that marsh is located on the project site and the rest is located within the City of Seal Beach. There is a desire to not impact it, but in all likelihood the new tidal connection and proposed grading could result in tides inundating that site. This project proposes a small earthen berm between the far eastern end of the Hellman Channel and the property fence line to reduce the amount of tidal inundation entering that small area. The dimensions of this proposed berm may need to be lengthened to protect the wetlands on the Seal Beach side from inundation. However, the design needs to be vetted through the City and the agencies to identify the appropriate action for this specific site.

16. Public Access Pathways – Public access is incorporated into the project design. New earthen trails are proposed and shown schematically in the 65% design along 1st Street and over the southern land fill area with a trail that connects to an existing trail along Gum Grove Park. The final location of the trails may need to be further assessed out in the final engineering stage and after additional meetings with the public, representative Native American nations, and the regulatory agencies.

17. Cultural Resource Considerations – Native American studies and outreach are in process and are informing the project design. At this time the project has intentionally avoided any work in perimeter upland areas (e.g., Gum Grove Park) in consideration of such resources, but pathways and special land use areas may be added to meet the needs of Native Americans in future design iterations. One example is the reburial site proposed within the southern portion of the project area that is shown on the 65% design plans.

18. Soil Texture – Soils in salt marshes, especially in the mid-marsh and lower, tend to have high silt and clay content. The fine texture is important for carbon sequestration, nutrient cycling and other natural processes. The entire project area is located on what was historically tidal marsh and it is expected that those historic marsh soils are intact at some depth. Ideally, those soils will become the surface of the restored marsh in many areas. In any case, the final grading should assure that the top 12-24 inches of soil in the mid-marsh and cordgrass marsh areas is over 40% clay and less than 25% sand. High-marsh areas can have similar soils to lower areas of the marsh or be quite sandy. Salt panne soils should be over 80% silt and clay in at least the top 6-12 inches. Selective grading should be used to assure topsoil (upper 12-24 inches) in fill areas are appropriate for upland restoration. This means they should have very low salinity, a loamy texture, and should not compacted.

19. Easements and Utilities – Easements and utilities exist on-site that need to be protected. Certain utilities (e.g., the Seal Beach main waterline) will be resleeved by the City. A portion of that City waterline will be re-routed to attach to a new structure (box culvert or bridge) over the main tidal channel. A utility easement for SCE also exists along the 1st Street entry road, and another easement for the local homeowner association to the east exists along the eastern property line. Undergrounding of the overhead power line owned by SCE along First Street is assumed to occur and is shown on the plans. The project will coordinate with the City of Seal Beach for waterline relocation and with SCE for undergrounding of the power lines.

20. Tree Removal – Certain existing trees will be removed as part of the project. The trees to be removed will be shown on the plans in the 65% design phase or a later phase. A majority of the trees are palm trees. Surplus organic material from the trees should be considered for use on site to create habitat features (brush piles or downed wood) or chipped to provide a surface for trails or for ground cover in landscaped areas.

21. Planting – Planting and irrigation of installed habitat areas will occur consistent with the Restoration Plan developed by CRC (2021). The Implementation guidance section of the plan calls for planting to occur on man-made transitional habitat areas, and in some intertidal marsh habitat areas. Planting would be done to accelerate the colonization process of target habitats, and would focus on areas that will be disturbed during construction. Irrigation may be needed to help establish the plants along the slopes of berms and control soil salinity in other areas with intertidal salt marsh, transitional, and upland habitat, but it should not be required permanently. Planting is shown on the 65% plans, but irrigation will be deferred to final engineering for construction due to its undefined location(s).

References

Coastal Restoration Consultants. 2021. Los Cerritos Wetlands Habitat Restoration Plan. May 26, 2021.

Moffatt & Nichol. 2015. Los Cerritos Wetlands Final Conceptual Restoration Plan. August 2015.

Moffatt & Nichol. 2022. Draft Hydrology Memorandum. January 31, 2023.

FIGURES:

1. Project Layout
2. Proposed Habitats
3. Flood Protection Features
4. Cut and Fill Map (“Heat Map”)
5. Sumps to Remain or be Removed
6. Construction Staging and Access Sites

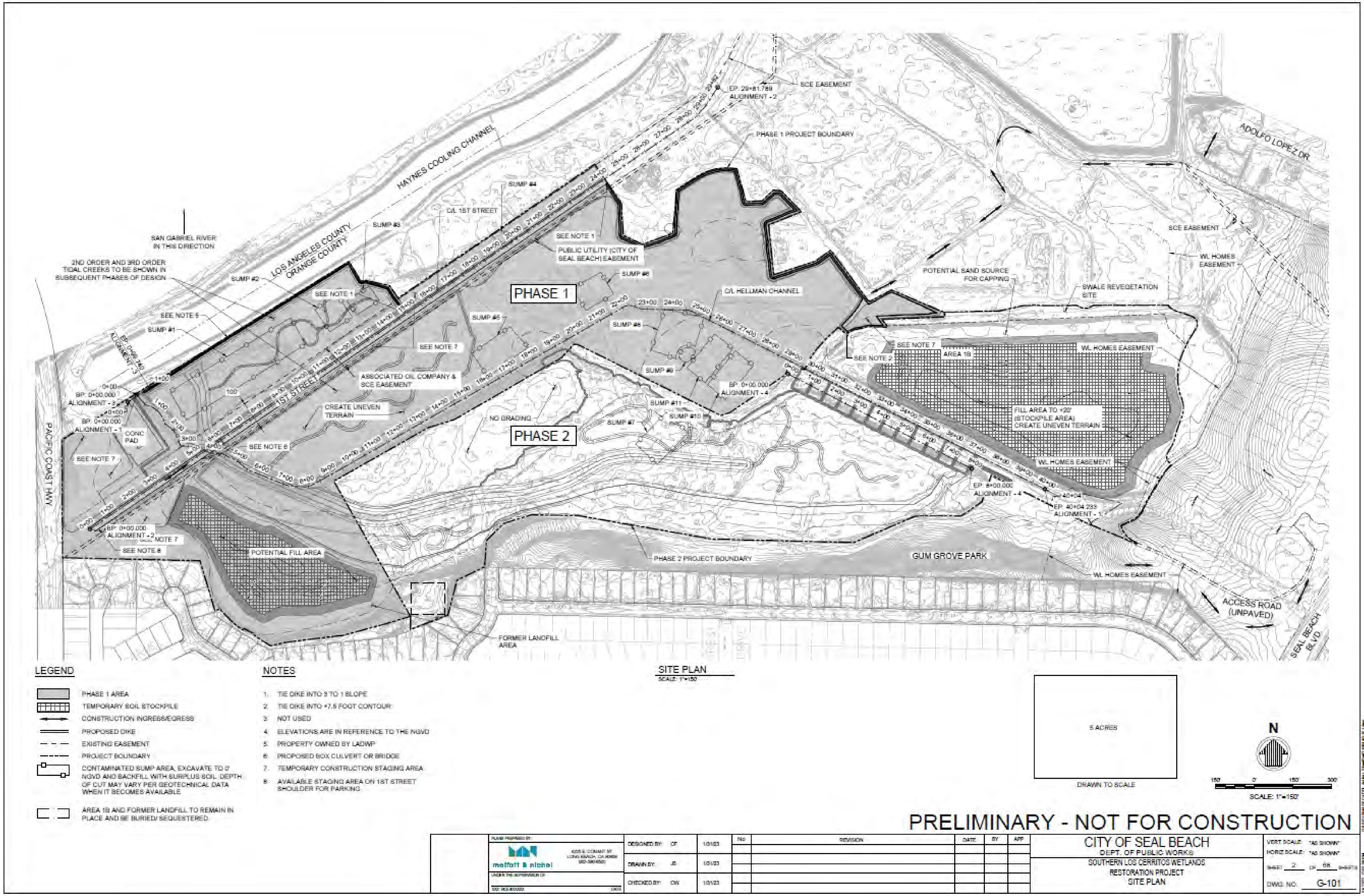

FIGURE 1 – PROJECT LAYOUT WITH SOURCES OF SEAWATER AND THE TIDAL CHANNEL NETWORK

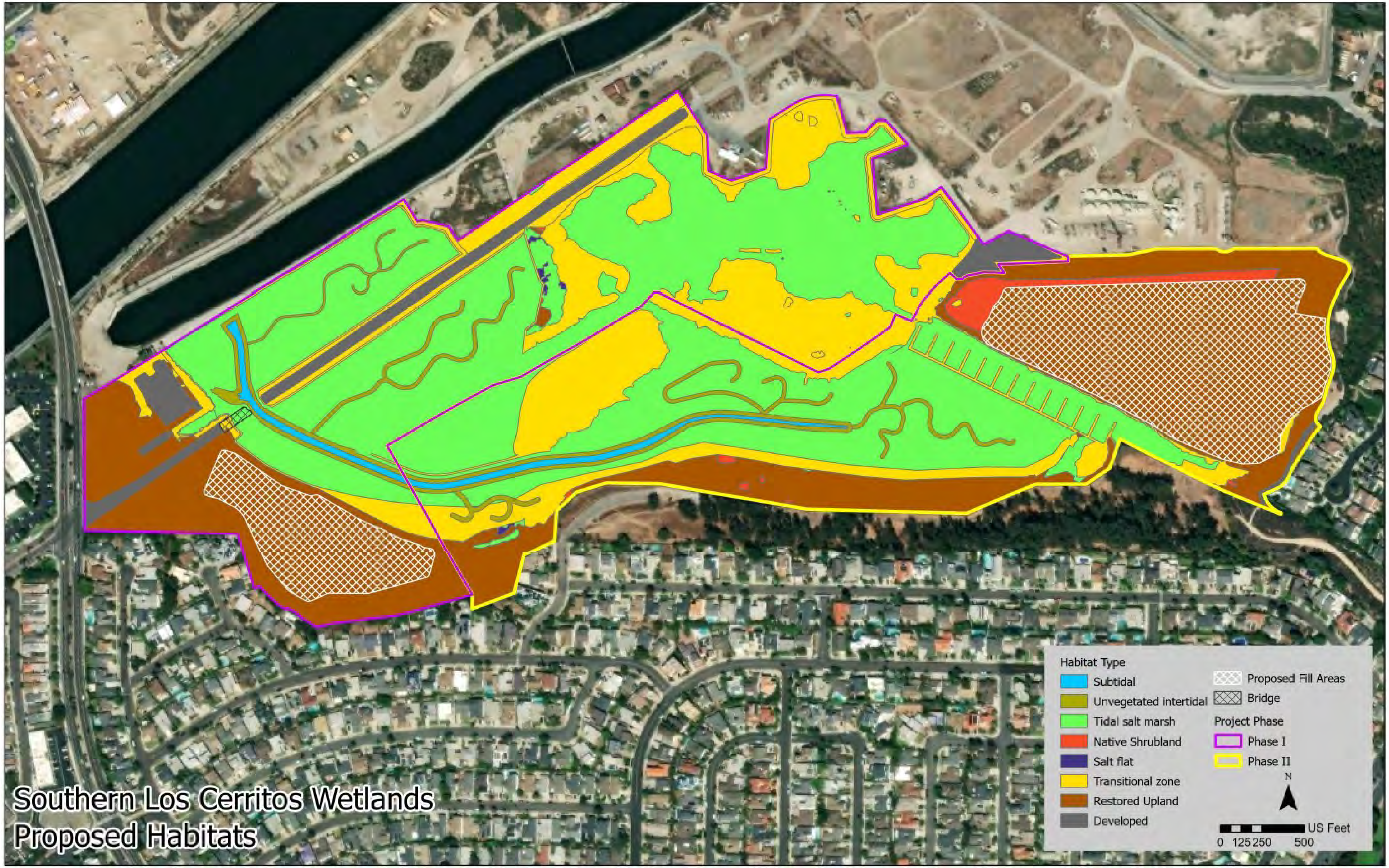

FIGURE 2 – PROPOSED HABITATS

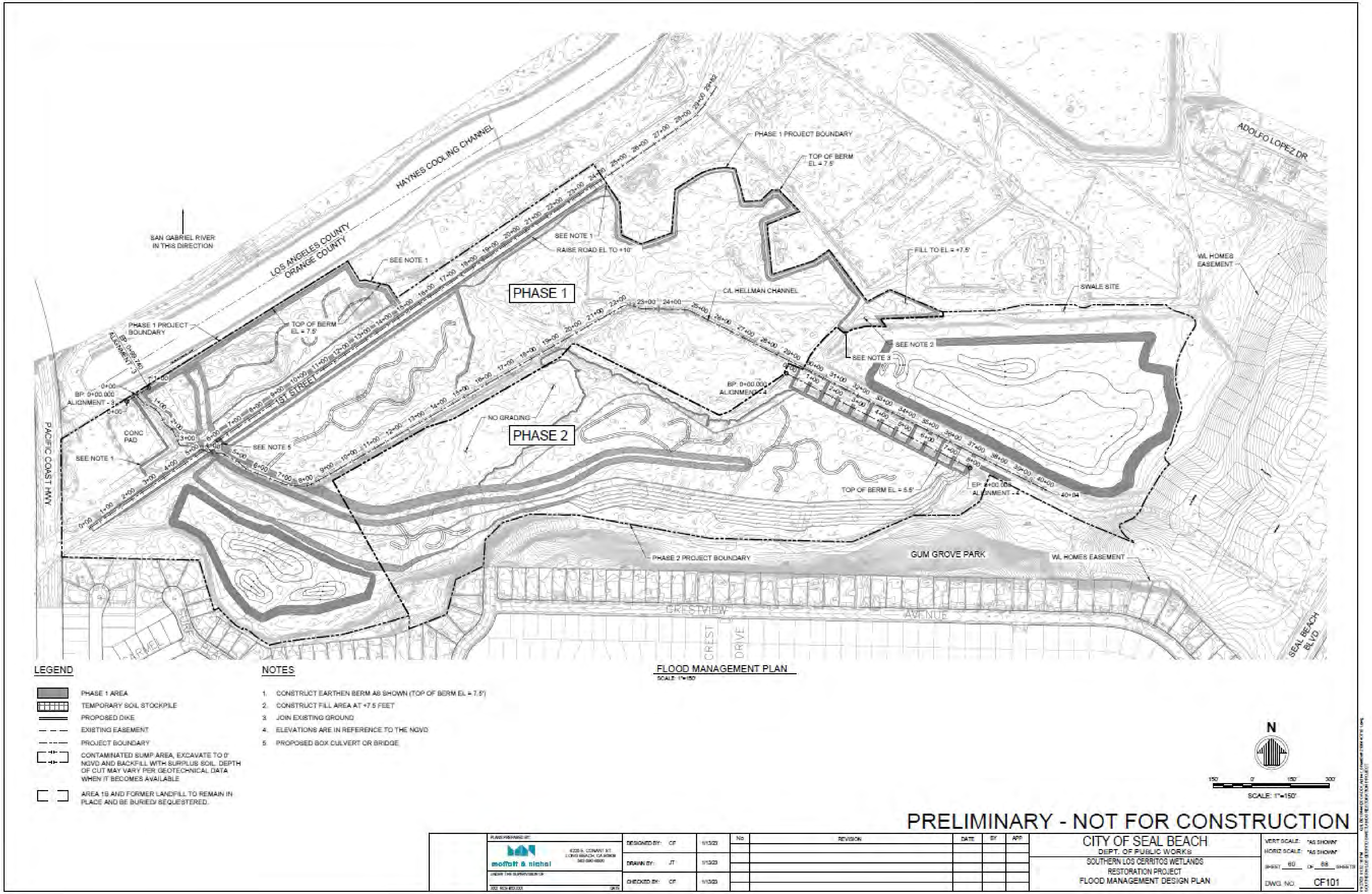

FIGURE 3 – PROJECT FLOOD MANAGEMENT DESIGN PLAN WITH FLOOD PROTECTION FEATURES

FIGURE 4 – PROJECT CUT AND FILL VALUES

FIGURE 5 – SUMPS TO REMAIN OR BE REMOVED

FIGURE 6 – CONSTRUCTION STAGING AND ACCESS SITES

Appendix C: Southern Los Cerritos Wetlands Restoration Project – Air Quality/Greenhouse Gas Study

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MEMORANDUM

To:	**Chris Webb and Stephanie Oslick**
From:	**John Thomason**
Date:	**3/27/2023**
Subject:	**Southern Los Cerritos Wetlands Restoration Project Air Quality/Greenhouse Gas Study**
M&N Job No.:	**210644**

Background

The Southern Los Cerritos Wetland Restoration Project is focused on restoring 103.5-acres of tidal wetlands in Los Cerritos Wetland, Seal Beach California (Figure 1). Moffatt & Nichol (M&N) and its team partners have contracted with Los Cerritos Wetlands Authority (LCWA) to provide environmental compliance for the project, among other services.

Figure 1: Southern Los Cerritos Wetlands Restoration Project (LCWA, 2021)

Introduction

The Southern Los Cerritos Wetlands Restoration Project (project) is part of a larger program on approximately 400 additional adjacent acres that was analyzed in a Program Environmental Impact Report (PEIR) by ESA in 2020. An Air Quality/Greenhouse Gas Emissions (AQ/GHG) study was conducted by ESA to determine environmental impacts per the California Environmental Quality Act (CEQA) as they relate to AQ and GHG questions in the CEQA Appendix G checklist. ESA used the California Emissions Estimator Model (CalEEMod) to determine criteria pollutant and GHG emission levels during program construction and operations activities over the entire 500+ acre program area.

The PEIR, based on the AQ/GHG study, concluded that Potentially Significant Impacts could occur for the overall program area with respect to NOx construction emissions and sensitive receptors. Specifically, that NOx emissions during program area construction would exceed South Coast Air Quality Management District (SCAQMD) thresholds even with mitigation measures incorporated, and that construction activity directly adjacent to the homes on the southern border of the program area would violate SCAQMD Local Significance Thresholds (LSTs), although this was not specifically quantified due to future project features in that area being unknown at the time.

Methodology

The project analyzed in Moffatt & Nichol's Initial Study/Mitigated Negative Declaration (IS/MND) represents 20.5% of the total program area analyzed in the PEIR (based on area), including CalEEMod outputs for both construction and operations. Because the previous AQ/GHG was found to be accurate, complete, and is part of a certified PEIR, there is no need to re-run CalEEMod for this project. To quantify AQ and GHG emissions for this project to determine any impacts under CEQA, a total of 20.5% of both criteria pollutant and CO2e emissions were based on the PEIR Air Quality study previously performed, which is incorporated by reference into the IS/MND.

Discussion

What follows summarizes our findings per the methodology described above and will be included in the IS/MND. The PEIR identified AQ/GHG mitigation measures for the overal program, and they are also included in the IS/MND.. For this project, no mitigation is necessary to achieve less than significant impacts.

Air Quality

The project would not conflict with any applicable air quality plans. The Final PEIR found that the only non-attained threshold for construction emissions for the larger Los Cerritos Wetlands Restoration Plan is NOx, and this project should contribute less than significant impacts for regional air quality standards, as multiple mitigation measures are already in place from the PEIR that would bring these effects down to a less than significant level. In addition, the Air Quality Study completed for the full program analyzed 503 acres. The project analyzed in this document has a footprint of 103.5 acres, meaning emissions for the proposed project are approximately 20.5% of the totals found in the program-wide EIR. The anticipated number of pieces of construction equipment, the standard types of equipment, the amount of grading, and duration of construction for this project is therefore lower than what was anticipated and analyzed in the PEIR (LCWA, 2021).

As stated above, the only criteria pollutant for which the overall program was found to exceed relevant thresholds was NOx for construction emissions only, and that it could be mitigated below the regional threshold for NOx. Specifically, Table 6 of the Air Quality Study performed by ESA (and incorporated into this document by reference) found that the maximum NOx emissions for construction would be 268 lbs./day, exceeding the SCAQMD threshold of 100 lbs./day. As the proposed project analyzes only 20.5% of the total acreage calculated for the exceedance, it is expected that the proposed project analyzed herein would emit a maximum of 54.94 lbs./day of NOx, substantially below the SCAQMD threshold and without need for mitigation.

The South Coast Air Basin is in non-attainment of the NAAQS for O3 and PM2.5 and also in non-attainment of the CAAQS for O3, PM10, and PM2.5. As discussed above, there would not be exceedances to the SCAQMD daily regional threshold for NOx or any other criteria pollutant during either construction or operational phases of the proposed project.

The Air Quality Study referenced above found potentially significant impacts to sensitive receptors at the program level based on SCAQMD Localized Significance Thresholds (LSTs) in Source Receptor Areas (SRAs) 4 and 18. Construction screening LST's were used for a 5-acre area at a distance of 50 meters for SRA 4 and 25 meters for SRA 18. The analysis found that LSTs were exceeded due to residences found near the southern border of the program area. This analysis, however, was done for the full program of over 500 acres which is approximately five times larger than the footprint of the proposed project analyzed herein. As a result, it is not expected that construction operations would affect the residences adjacent to the southern boundary of the project site, in addition to the fact that construction would be temporary in nature. Operations impacts do not have the potential to affect sensitive receptors due to the fact that the project proposes to restore natural wetlands.

Greenhouse Gases

The PEIR Air Quality Study used CalEEMod to calculate criteria pollutant emissions as well as CO2e emissions for both construction and operation, which can be used to determine if the program would exceed SCAQMD standards for GHG emissions. Maximum unmitigated construction CO2e emissions were found to be 9,929.36 lbs./day, or 1,813.31 tons/yr. Amortized over 30 years per SCAQMD, this is equivalent to 60.44 MT CO2e. Maximum unmitigated operational emissions were found to be 10,126.86 lbs./day, or 1,849.37 tons/yr. By adding the amortized construction emissions to the operational emissions, a total of 3,662.68 MT/yr. would be created by the program in its entirety, which is above the SCAQMD threshold of 3,000 MT/yr.

As discussed above under Air Quality, the footprint of the project that is analyzed in this document is 20.5% of the total analyzed in the PEIR Air Quality Study. Therefore, the expected GHG emission for the proposed project would be 750.84 MT/yr., below SCAQMD's threshold. Impacts would be less than significant.

Summary

Air Quality and Greenhouse Gas emissions for the project site were calculated based on the AQ/GHG study previously completed for the program area as part of the PEIR. No significant impacts would occur in either topic area for this project.

References

ESA, Los Cerritos Wetlands Restoration Plan Air Quality/Greenhouse Gas Study, 10/2020.

LCWA, Los Cerritos Wetlands Restoration Plan Final Program EIR, Air Quality and Greenhouse Gas sections, 10/2020.

Appendix D: Southern Los Cerritos Wetlands Restoration Project – Biological Resources Report

Southern Los Cerritos Wetlands Restoration Project

Biological Resources Report

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LOS CERRITOS WETLANDS AUTHORITY
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Biological Resources Report:
Southern Los Cerritos Wetlands Restoration Project

Contents

List of Tables

List of Exhibits

List of Appendices

Acronyms and Abbreviations

ACOE	Army Corps of Engineers
ArcGIS	Global Information System
Cal-IPC	California Invasive Plant Council
CCA	California Coastal Act
CCC	California Coastal Commission
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Ranks
CSLC	California State Lands Commission
eDNA	Environmental Deoxyribonucleic Acid
ESHA	Environmentally Sensitive Habitat Areas
FESA	Federal Endangered Species Act
FGC	Fish and Game Code
LCW	Los Cerritos Wetlands
LCWA	Los Cerritos Wetlands Authority
MBTA	Migratory Bird Treaty Act
MCVII	*A Manual of California Vegetation, Second Edition*
NMFS	National Marine Fisheries Service
NPPA	Native Plant Protection Act
NWI	National Wetlands Inventory
OHW	Ordinary High Water

SLR	Sea Level Rise
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

EXECUTIVE SUMMARY

The Southern Los Cerritos Wetlands Area Project would implement a large-scale restoration project to restore and enhance 103.54 acres of degraded southern California salt marsh and coastal habitat within the Los Cerritos Wetlands Complex. The Southern Los Cerritos Wetlands Project Area is located mostly on land owned by the Los Cerritos Wetlands Authority (LCWA) which is a joint powers authority (JPA) comprised of the State Coastal Conservancy, the Rivers and Mountains Conservancy, and the cities of Long Beach and Seal Beach. This project is part of the first phase of restoring the entire Los Cerritos Wetlands Complex which totals approximately 500 acres. The purpose of this report is to communicate the results of project-level focused biological surveys required by the project's Program EIR. Surveys were performed for special status flora and fauna, nesting birds and raptors, Belding's savannah sparrow, burrowing owl, bats, and sensitive plant communities. Furthermore, a jurisdictional wetlands delineation was performed to identify areas under the jurisdiction of several regulatory agencies. The surveys found a total of 3 special status plant species and 7 special status animal species present within the Project Area. Of note, 25 breeding pairs of Belding's savannah sparrow (BSS) were documented. Nesting birds (besides BSS) were not observed within the Project Area; however, raptor breeding behavior was observed adjacent to the Project Area in neighboring Gum Grove Park. Burrowing owls and bats were not documented. A total of 10.69 acres of federal jurisdictional wetlands/water and a total of 27.19 acres of state jurisdictional wetlands were documented. Finally, 6 different sensitive natural communities were identified, of which 5 have a sensitivity ranking of S3 or higher. The Program EIR's Mitigation and Monitoring Program sets forth clear guidelines for how this project will avoid, minimize or mitigate for any impacts to biological resources that may result from the project.

1.0 Introduction

The Southern Los Cerritos Wetlands Restoration Project proposes to restore and enhance the ecological and biological function of historic wetland and transitional habitats as well as provide opportunities for public access. This project will design a tidal wetland restoration plan that takes into consideration sea level rise, tribal cultural resources, the local community, and other neighboring private and public entities. Dredging, moving of fill, and removal of contaminated material will likely need to take place throughout the site in order to achieve the goal of maximizing contiguous tidal salt marsh habitat. Currently tidal waters enter the Project Area through an approximately 48-inch-wide culvert connected to the San Gabriel River. While this culvert does provide some tidal prism, it is heavily muted due to the size and position of this culvert. Therefore, the project will be aiming to create improved tidal connections and is targeting the adjacent Haynes Cooling Channel to achieve this objective. Additionally, there are possible opportunities to work with local surrounding landowners to create a more optimal tidal connection that would allow for higher rates of hydrologic exchange between the marsh and the ocean while considering the effects of climate change and sea level rise.

While this large-scale restoration project will potentially result in an improvement to the functioning of existing biological resources, a variety of focused ecological surveys were conducted in order to ascertain the breadth of impacts and determine the exact existing biological resources that could be affected based on the initial findings of the Program Environmental Impact Report (PEIR). This report provides a project level analysis of potential impacts to biological resources including vegetation communities, special status species, and potential jurisdictional waters and wetlands.

1.1 Project Location

The 103.54-acre Project Area is primarily located approximately 0.08 miles southeast of the San Gabriel River Pacific Coast Highway Bridge in the City of Seal Beach, California in the County of Orange (Exhibit A). The Project's central geographic location is Latitude 33.751066°; Longitude -118.099411° primarily in section 11 of Township 5 South, and Range 12 West, on the United Stated Geological Survey (USGS) Seal Beach and Los Alamitos 7.5-minute series topographical quadrangles. The Project Area is bounded by the San Gabriel River to the west, oil extraction operations to the north, and residential neighborhoods and park space to the east and south (Exhibit B). The property is bordered by industrial, open space, and residential land uses.

The property is currently accessible from Pacific Coast Highway via 1st Street which extends through the property and leads to the neighboring oil operations. This asphalt access road bisects the site and is subject to several easements for other landowners and for the utilities that run parallel to it both above and below ground. The site is currently closed to the public and is only accessible during public programming or with prior approval from the property owner. The main 100-acre parcel is owned by the Los Cerritos Wetlands Authority (LCWA) who controls access to the property's gates that connect to trails and old maintenance roads that traverse the site. Additionally, 3.5 acres of property owned by the

California State Lands Commission is included. The LCWA has a long-term non-exclusive lease agreement in place to manage this property.

1.2 Project Description

The Los Cerritos Wetlands Authority (LCWA) is a governmental entity developed in 2006 by a joint powers agreement between the State Coastal Conservancy, the Rivers and Mountains Conservancy, and the cities of Seal Beach and Long Beach. It was created with the purpose "to provide for a comprehensive program of acquisition, protection, conservation, restoration, maintenance and operation, and environmental enhancement of the Los Cerritos Wetlands area consistent with the goals of flood protection, habitat protection and restoration, and improved water supply, water quality, groundwater recharge, and water conservation." The LCWA has acquired 165 acres of coastal habitat since its inception. This acreage includes the 100-acre South LCWA Site (AKA Hellman Ranch Lowlands) which falls completely within the proposed project boundary. A portion of the site is comprised of southern coastal salt marsh habitat, while a majority of the remaining area is occupied by non-native plant species alliances. Mixed in with this vegetation are features such as a tidal creek, salt flats, tidal flats, utilities, a developed asphalt roadway, dirt maintenance roadways, dumped fill, and remnants various human-made structures that have accumulated over time. The State Lands Parcel Site is comprised of a mix of tidal wetland in the northern portion of the property where the culvert connects to the San Gabriel River. A portion of this property is comprised of a concrete pad that is approximately 0.83 acres in size. The rest of this property is also developed and covered by degrading asphalt that is being invaded by various ruderal plant species.

The Southern Los Cerritos Wetlands Restoration Project Area is part of the first phase of restoration of the overall Los Cerritos Wetlands Complex that encompasses approximately 503 acres of open space. Overall, the Project Area has been subject to historical degradation and fragmentation and requires improved tidal connection as well as other restorative actions in order to improve the site's ecological function and protect it from eventual sea level rise due to climate change (Coastal Restoration Consultants, 2021).

1.3 Regulatory Setting

Several state, federal, and local regulations are potentially relevant to the subject property. The regulations listed below have been sourced from and are consistent with Section 3.3.3 (Regulatory Framework) of the Biological Resources Section (Section 3.3) of the *Los Cerritos Wetlands Restoration Plan: Final Program Environmental Impact Report* (ESA, 2020). These include:

1.3.1 Federal Regulations

Endangered Species Act (USC Title 16, Sections 1531 through 1543)

The purpose of FESA and subsequent amendments is to protect and recover imperiled species and the ecosystems upon which they depend. FESA is administered by the USFWS and the Commerce Department's NMFS. USFWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife such as whales and anadromous fish such as salmon. Under FESA, species may be listed as either endangered or threatened. "Endangered" means a species is in danger of extinction throughout all or a significant portion of its range. “Threatened” means a species is likely to become endangered within the foreseeable future. Under provisions of FESA Section 9(a)(1)(B), it is unlawful to “take” any listed species. “Take” is defined in FESA Section 3(18): “… harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”

FESA Section 7 stipulates that any federal action that may affect a species listed as threatened or endangered requires a formal consultation with USFWS/NMFS to ensure that the action is not likely to jeopardize the continued existence of the listed species or result in destruction or adverse modification of designated critical habitat. 16 United States Code (USC) 1536(a)(2).

FESA Section 10 provides the basis for non-federal entities to obtain take authorization. For those actions for which no federal nexus exists, non-federal entities that wish to conduct otherwise lawful activities that may incidentally result in the take of a listed species must first obtain a Section 10 permit from USFWS/NMFS. The non-federal entity is required to develop a Habitat Conservation Plan (HCP) as part of the permit application process. Upon development of an HCP, the USFWS/NMFS can issue incidental take permits for listed species where the HCP specifies, at minimum, the following: (1) the level of impact that will result from the taking, (2) steps that will minimize and mitigate the impacts, (3) funding necessary to implement the plan, (4) alternative actions to the taking considered by the applicant and the reasons why such alternatives were not chosen, and (5) such other measures that the Secretary of the Interior may require as being necessary or appropriate for the plan.

In addition to the prohibitions on the take of listed species, USFWS/NMFS are also required to designate areas of “Critical Habitat” for species listed under FESA. FESA defines critical habitat as “the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and specific areas outside the geographical area occupied by the species at the time it is listed that are determined by the Secretary to be essential for the conservation of the species.”

Marine Mammal Protection Act (16 USC 31)

The MMPA prohibits, with certain exceptions, the "take" of marine mammals in United States waters and by United States citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. Jurisdiction for MMPA is shared by USFWS and the NMFS. The USFWS’s Branch of Permits is responsible for issuing take permits when exceptions are made to MMPA.

Migratory Bird Treaty Act (16 USC Sections 703 through 711)

The Migratory Bird Treaty Act (MBTA) is the domestic law that affirms, or implements, a commitment by the United States to four international conventions (with Canada, Mexico, Japan, and Russia) for the protection of a shared migratory bird resource. The MBTA makes it unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, or kill migratory birds. The law also applies to the removal of nests occupied by migratory birds during the breeding season. The MBTA makes it unlawful to take, pursue, molest, or disturb these species, their nests, or their eggs anywhere in the United States.

Fish and Wildlife Coordination Act (16 USC Sections 661–666c)

The Fish and Wildlife Coordination Act (FWCA) authorizes the Secretaries of Agriculture and Commerce to provide assistance to and cooperate with federal and state agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals, as well as to study the effects of domestic sewage, trade wastes, and other polluting substances on wildlife. The amendments enacted in 1946 require consultation with USFWS and the fish and wildlife agencies of states where the "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted … or otherwise controlled or modified" by any agency under a federal permit or license. Consultation is to be undertaken for the purpose of "preventing loss of and damage to wildlife resources." The 1958 amendments expanded the instances in which diversions or modifications to water bodies would require consultation with USFWS. These amendments permitted lands valuable to the Migratory Bird Management Program to be made available to the state agency exercising control over wildlife resources.

Magnuson-Stevens Fishery Conservation and Management Act (16 USC Sections 1801 et seq.)

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) is the primary law governing marine fisheries management in United States federal waters. Magnuson-Stevens Act Section 305(b), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), requires federal agencies to consult with NMFS on activities that may adversely affect EFH for species that are managed under federal fishery management plans in United States waters. The statutory definition of EFH includes those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity, which encompasses all physical, chemical, and biological habitat features necessary to support the entire life cycle of the species in question.

Federal Clean Water Rule

In 2015, the USACE and the United States Environmental Protection Agency (USEPA) issued the Clean Water Rule detailing the process for determining CWA jurisdiction over waters of the United States (WOTUS) (USACE 2015). The rule is currently in effect in California and 21 other states. The 2015 Clean Water Rule includes a detailed process for determining which areas may be subject to jurisdiction under the Clean Water Act, and broadly classifies features into three categories: those that are jurisdictional by rule (Category A below), those that excluded by rule (Category C below) and those features that require a "significant nexus test" (Category B below).

The significant nexus test includes consideration of hydrologic and ecologic factors. For circumstances such as those described in Category B below, the significant nexus test would take into account physical indicators of flow (evidence of an ordinary high water mark [OHWM]), if a hydrologic connection to a Traditionally Navigable Water (TNW) exists, and if the aquatic functions of the water body have a significant effect (more than speculative or insubstantial) on the chemical, physical, and biological integrity of a TNW. The USACE and USEPA will apply the significant nexus standard to assess the flow characteristics and functions of a potential WOTUS to determine if it significantly affects the chemical, physical, and biological integrity of the downstream TNW.

Wetlands (including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas) are also considered WOTUS and are defined by USACE as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3[b]; 40 CFR 230.3[t]). Indicators of three wetland parameters (i.e., hydric soils, hydrophytic vegetation, and wetlands hydrology), as determined by field investigation, must be present for a site to be classified as a wetland by USACE (Environmental Laboratory 1987).

2015 Clean Water Rule Key Points Summary

(A) The USACE and USEPA will assert jurisdiction over the following waters (jurisdictional by rule):

- TNWs.
- Interstate waters and wetlands.
- Territorial seas.
- Impoundments of waters (reservoirs, etc.).
- Tributaries with the following attributes:
    - Contributes flow to a TNW.
    - Contain bed, banks, and ordinary high water mark.
    - Can be natural, man-altered, or man-made.
    - Can have constructed breaks (culverts, pipes, etc.) or natural breaks.
- Waters “adjacent” to TNW and their tributaries, including:
    - Waters that are bordering, contiguous, or neighboring a TNW, interstate water, territorial sea, impoundment, or tributary. Includes waters separated from other ‘‘waters of the United States’’ by constructed dikes or barriers, natural river berms, beach dunes, or similar.
    - Waters within 100 feet of the OHWM of a TNW, interstate water, territorial sea, impoundment, or tributary.
    - Waters within the 100-year floodplain and within 1,500 feet of a TNW, interstate water, territorial sea, impoundment, or tributary.
    - Waters within 1,500 feet of the high tide line or OHWM of a TNW or territorial sea.

(B) The USACE and USEPA will decide jurisdiction over the following waters based on a fact specific analysis to determine whether they have a significant nexus with a TNW unless excluded by rule (significant nexus test):

- Vernal pools that have a significant nexus to a TNW or territorial sea.
- Waters within the 100-year floodplain of a TNW, interstate water or territorial sea.
- Waters within 4,000 feet of the high tide line or OHWM of a TNW, interstate water, territorial sea, impoundment or tributary.

(C) The USACE and USEPA will not assert jurisdiction over the following features (excluded by rule):

- Waste treatment facilities including basins and percolation ponds.
- Prior converted cropland.
- The following types of ditches:
    - Ephemeral ditches that are not a relocated tributary or excavated in a tributary.
    - Intermittent ditches that are not a relocated tributary, excavated in a tributary, or drain wetlands.
    - Ditches that do not flow, either directly or through another water, into a TNW, interstate waters, territorial sea.
- Artificially irrigated areas that would revert to upland.
- Artificial, constructed lakes and ponds created in dry land such as stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, cooling ponds.
- Swimming pools or reflecting pools in dry land.
- Small ornamental waters created in dry land.
- Water-filled depressions created in dry land from mining or construction activities including pits for fill, sand, or gravel.
- Erosional features including gullies and rills that are not tributaries, non-wetland swales and constructed grass waterways.
- Puddles.
- Groundwater.
- Storm water control features created in dry land.
- Wastewater recycling structures created in dry land, including detention and retention basins, groundwater recharge basins, percolation ponds, and water distributary structures.
- USACE and the USEPA have issued a set of guidance documents detailing the process for determining Clean Water Act (CWA) jurisdiction over waters of the United States following the 2008 Rapanos decision. The USEPA and USACE issued a summary memorandum of the guidance for implementing the Supreme Court's decision in Rapanos that addresses the jurisdiction over waters of the United States under the CWA. The complete set of guidance documents, summarized as key points below, were used to collect relevant data for evaluation by the USEPA and the USACE to determine CWA jurisdiction over the proposed program and to complete the "significant nexus test" as detailed in the guidelines.
- Section 401 of the CWA gives the state authority to grant, deny, or waive certification of proposed federally licensed or permitted activities resulting in discharge to waters of the United States. The State Water Resources Control Board (State Water Board) directly regulates multi-regional projects and supports the Section 401 certification and wetlands program statewide. The Regional Water Quality Control Board (RWQCB) regulates activities pursuant to Section 401(a)(1) of the federal CWA, which specifies that certification from the state is required for any applicant requesting a federal license or permit to conduct any activity including but not limited to the construction or operation of facilities that may result in any discharge into navigable waters. The certification shall originate from the state or appropriate interstate water pollution control agency

in/where the discharge originates or will originate. Any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA.

- The significant nexus test includes consideration of hydrologic and ecologic factors. For circumstances such as those described in point B below, the significant nexus test would take into account physical indicators of flow (evidence of an ordinary high water mark [OHWM]), if a hydrologic connection to a Traditionally Navigable Water (TNW) exists, and if the aquatic functions of the water body have a significant effect (more than speculative or insubstantial) on the chemical, physical, and biological integrity of a TNW. The USACE and USEPA will apply the significant nexus standard to assess the flow characteristics and functions of the tributary drainage to determine if it significantly affects the chemical, physical, and biological integrity of the downstream TNW.
- Wetlands (including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas) are also considered waters of the United States and are defined by USACE as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3[b]; 40 CFR 230.3[t]). Indicators of three wetland parameters (i.e., hydric soils, hydrophytic vegetation, and wetlands hydrology), as determined by field investigation, must be present for a site to be classified as a wetland by USACE (Environmental Laboratory 1987).

Rapanos Guidance Key Points Summary

(A) The USACE and USEPA will assert jurisdiction over the following waters:

- TNWs
- Wetlands adjacent to TNWs
- Non-navigable tributaries of TNWs that are relatively permanent (flows three months or longer)
    - Wetlands that abut such tributaries

(B) The USACE and USEPA will decide jurisdiction over the following waters based on whether they have a significant nexus with a TNW:

- Non-navigable tributaries that are not relatively permanent
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent
- Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary

(C) The USACE and USEPA will not assert jurisdiction over the following waters:

- Swales or erosional features (gullies, small washes characterized by low volume, infrequent, or short-duration flow)
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water

Rivers and Harbor Act of 1899 Section 10

Section 10 of the Rivers and Harbors Act of 1899 requires that regulated activities conducted below the ordinary high water (OHW) elevation of navigable waters of the United States be approved/permitted by the USACE. Regulated activities include placement and removal of structures, work involving dredging, disposal of dredged material, filling, excavation, or any other disturbance of soils/sediments or modification of a navigable waterway. Navigable waters of the United States are those that are subject to the ebb and flow of the tide shoreward to the mean high water mark and/or are presently used, or have been used in the past or may be susceptible to use to transport interstate or foreign commerce. Navigable waters of the United States are not necessarily the same as state navigable waterways. Tributaries and backwater areas associated with navigable waters of the United States, and located below the OHW elevation of the adjacent navigable waterway, are also regulated under Section 10.

1.3.2 State Regulations

California Endangered Species Act (California Fish and Game Code Sections 2050 et seq.)

CESA establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. For projects that would affect a listed species under both the CESA and the FESA, compliance with the FESA would satisfy the CESA if CDFW determines that the federal incidental take authorization is "consistent" with the CESA under California Fish and Game Code Section 2080.1. For projects that would result in take of a species listed under the CESA only, the Applicant would have to apply for a take permit under Section 2081(b).

California Fully Protected Species

California fully protected species are described in California Fish and Game Code Sections 3511, 4700, 5050, and 5515. These statutes prohibit take or possession of fully protected species. The CDFW is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species.

California State Fish and Game Code Sections 2080 and 2081

California Fish and Game Code Section 2080 states that "No person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the Commission [State Fish and Game Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter, or the Native Plant Protection Act, or the California Desert Native Plants Act.". Pursuant to Sections 2080.1 or 2081 of the code, CDFW may authorize individuals or public agencies to import, export, take, or possess state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or Memoranda of Understanding if the take is incidental to an otherwise lawful activity, impacts of the authorized take are minimized and fully mitigated, the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and the project operator ensures adequate funding to implement the measures required by CDFW, which makes this determination based on available scientific information and considers the ability of the species to survive and reproduce.

California State Fish and Game Code Sections 3503, 3503.5, 3513, and 3800

California Fish and Game Code Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. California Fish and Game Code Section 3800 affords protection to all nongame birds, which are all birds occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds. California Fish and Game Code Section 3513 upholds the MBTA by prohibiting any take or possession of birds that are designated by the MBTA as migratory nongame birds except as allowed by federal rules and regulations promulgated pursuant to the MBTA.

California State Fish and Game Code Section 1602

Under this section of the California Fish and Game Code, a project proponent is required to notify CDFW prior to any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake.

Clean Water Act Section 401

Under CWA Section 401, the local RWQCB must certify that actions receiving authorization under CWA Section 404 also meet state water quality standards. The RWQCB requires projects to avoid impacts to wetlands if feasible and requires that projects do not result in a net loss of wetland acreage or a net loss of wetland function and values. Compensatory mitigation for impacts to wetlands and/or waters of the state is required.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code Sections 13000–16104) (Porter-Cologne Act) provides the basis for water quality regulation within California and defines water quality objectives as the limits or levels of water constituents that are established for reasonable protection of beneficial uses. Porter-Cologne is administered by the State Water Resources Control Board (State Water Board) and nine Regional Water Quality Control Boards (RWQCBs), collectively referred to as the Water Boards. The State Water Board sets statewide water quality standards, issues statewide general permits, conducts statewide surface and groundwater monitoring and assessment, administers water rights, regulates drinking water supplies, and issues orders for cleaning up contaminated sites.

The nine semi-autonomous Regional Water Boards are responsible for setting water quality standards and objectives, issuing waste discharge requirements, determining compliance with those requirements, and taking appropriate enforcement actions. Each Water Quality Control Region is regulated through a Water Quality Control Plan, or "Basin Plan," which is updated every three years. The Basin Plans contain the regulations adopted by the Regional Water Boards to control the discharge of waste and other controllable factors affecting the quality or quantity of waters of the state. The Los Cerritos Wetlands Restoration Plan area lies on the boundary of two water quality control regions: Los Angeles and Santa Ana. This boundary is defined by the City and County line.

The Porter-Cologne Act requires the Los Angeles Regional Water Quality Control Board (LARWQCB) to establish water quality objectives, while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Beneficial uses, together with the corresponding water quality objectives, are defined as standards, per federal regulations. Therefore, the regional plans form the regulatory standards for meeting state and federal requirements for water quality control. Changes in water quality are only allowed if the change is consistent with the maximum beneficial use designated by the state, does not unreasonably affect the present or anticipated beneficial uses, and does not result in water quality less than that prescribed in the water quality control plans.

California Coastal Act

The state legislature enacted the CCA (PRC Sections 30000 et seq.) to provide for the conservation and planned development of the state's coastline. The CCA defines the "coastal zone" as the area of the state which extends 3 miles seaward and generally about 1,000 yards inland; however, the inland extent of the coastal zone can extend in certain circumstances to a maximum of 5 miles inland from mean high tide line. In developed urban areas, the coastal zone extends substantially less than 1,000 yards inland.

The CCC approves coastal development permits (CDPs) for areas within its original and retained jurisdiction, such as waters of the state and tidelands, energy projects, and federal (federally approved, conducted, or funded) projects consistent with CCA policies. Local jurisdictions may obtain permitting authority under the CCA once a local coastal program has been certified by the CCC.

Applicable CCA policies regarding biological resources include:

> **Section 30230.** Marine resources shall be maintained, enhanced, and, where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.
>
> **Section 30231.** The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.
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> **Section 30233.** (a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:
>
> (1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.
> (2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.
(4) Incidental public service purposes, including, but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.
(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.
(6) Restoration purposes.
(7) Nature study, aquaculture, or similar resource-dependent activities.

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for these purposes to appropriate beaches or into suitable longshore current systems.

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division. For the purposes of this section, "commercial fishing facilities in Bodega Bay" means that not less than 80 percent of all boating facilities proposed to be developed or improved, where the improvement would create additional berths in Bodega Bay, shall be designed and used for commercial fishing activities.

(d) Erosion control and flood control facilities constructed on watercourses can impede the movement of sediment and nutrients that would otherwise be carried by storm runoff into coastal waters. To facilitate the continued delivery of these sediments to the littoral zone, whenever feasible, the material removed from these facilities may be placed at appropriate points on the shoreline in accordance with other applicable provisions of this division, where feasible mitigation measures have been provided to minimize adverse environmental effects. Aspects that shall be considered before issuing a coastal development permit for these purposes are the method of placement, time of year of placement, and sensitivity of the placement area.

Section 30240. (a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas and shall be compatible with the continuance of those habitat and recreation areas.

1.3.3 Local Regulations

City of Seal Beach Municipal Code (Section 9.40)

The City of Seal Beach Public Works Department is responsible for administering Seal Beach Municipal Code (Tree Maintenance Policy), which is to preserve and protect the community's urban forest and to promote the health and safety of City trees, from the time they are planted through maturity.

The City's Tree Maintenance Policy stipulates guidelines for planting, maintenance and removal of street trees located in the public rights-of-way. A permit must be obtained from the Director of Public Works prior to removal of trees from City property.

City of Seal Beach General Plan

Hellman Ranch Specific Plan

Project goals have been established for the development of the Hellman Ranch Specific Plan that essential to achieving balance and sustainable development. These goals that are applicable to the project include:

- Maintain significant acreage for restoration/creation of wetlands and plan for long-term retention of viable wildlife habitat and biodiversity on the site.
- Create/restore a wetlands and environmental ecosystem that provides a meaningful contribution to the regional system of coastal wetlands and open space along the Pacific Flyway.

Open Space/Recreation/Conservation Element

A 100-acre portion of the Hellman Ranch Specific Plan area has been deed restricted for 25 years for sale at fair market value to a public agency for the purposes of wetlands restoration, open space, and environmental education purposes. The adjacent oil production property (approximately 50 acres) has been similarly restricted, although the 25-year deed-restricted time period does not commence until cessation of the oil production activities. It is the intent and goal of the City to address future uses for these areas and cooperate with the property owner, state, local, and private agencies, as well as the community, to provide the means to accomplish this goal.

2.0 Methodology

Ecological surveys were performed within and surrounding the 103.54-acre Project Area by coastal wetland ecologists from Tidal Influence. Surveys included vegetation mapping, special status plant and animal surveys, burrowing owl habitat assessment, nesting bird and raptor surveys, bat roosting habitat assessment, and general wildlife surveys. A survey was also performed for potential waters and wetlands subject to the jurisdiction of the United States Army Corps of Engineers (ACOE), the California Coastal Commission (CCC), and the California Department of Fish and Wildlife (CDFW).

2.1 Literature and Database Searches

A comprehensive literature and database search was performed for the PEIR and utilized for this report. The PEIR literature and database search included a search of the California Natural Diversity Database (CNDDB) to identify all potential special status species that could occur within the nine surrounding quadrangles that include Anaheim, La Habra, Long Beach, Los Alamitos, Newport Beach, Seal Beach, South Gate, and Whittier Quadrangles and (2) records of special-status species that are known to occur within the vicinity of the proposed program (CNDDB, 2020). For the project-level Jurisdictional wetland delineation, site soil data was gathered from the United States Department of Agriculture's Web Soil Survey interactive online soil data explorer (USDA 2021) and a search of the National Wetlands Inventory was performed to determine potential wetland types present on site (NWI, 2020). Lastly, previously completed biological surveys and reports performed for previous Los Cerritos Wetland projects were referenced in the PEIR. These reports from 2012 to 2019 were utilized for this report as they include site specific investigations conducted for the South Area as well as the other areas that make up the Los Cerritos Wetlands Complex.

2.2 Field Surveys

Specific focused flora and fauna surveys were completed in February through August of 2021 to perform project-level documentation of the existing biological resources within the Project Area (Table 1). These surveys were done in accordance with the PEIR's Mitigation Monitoring and Reporting Plan (MMRP).

Table 1. Surveys Performed During Each Site Visit

Date	Activities Performed	Personnel*
2/3/2021	Special Status Bird & Raptor Survey, Nesting Bird & Raptor Survey, Special Status Herpetofauna Survey	EZ, MC, WJ, JA
2/19/2021	Jurisdictional Wetlands Mapping, Special Status Invertebrate Survey, Special Status Bird & Raptor Survey, Nesting Bird & Raptor Survey, Special Status Plant Survey, Roosting Bat Survey	EZ, MC, HC, JB, WJ, JA, MH
2/22/2021	Tidewater goby eDNA Survey (Special Status Fish Survey)	EZ, BZ

Date	Activities Performed	Personnel*
2/23/2021	Special Status Bird & Raptor Survey, Nesting Bird & Raptor Survey, Special Status Herpetofauna Survey, Belding's Savannah Sparrow Habitat Mapping Survey, Burrowing Owl Survey	HC, JB, WJ, JA
2/26/2021	Jurisdictional Wetlands Mapping, Jurisdictional Waters Mapping, Special Status Plant Survey, Special Status Invertebrate Survey	EZ, MC, HC, WJ, JA, MH
3/5/2021	Jurisdictional Wetlands Mapping, Special Status Plant Survey, Special Status Invertebrate Survey	MC, HC, WJ, JA
3/8/2021	Special Status Herpetofauna Survey, Belding's Savannah Sparrow Habitat Mapping Survey, Burrowing Owl Survey	HC, JB, WJ
3/12/2021	Jurisdictional Wetlands Mapping, Special Status Plant Survey, Special Status Invertebrate Survey	MC, HC
3/22/2021	Belding's Savannah Sparrow Habitat Mapping Survey, Specials Status Bird & Raptor Survey	HC, JB, WJ
4/5/2021	Belding's Savannah Sparrow Habitat Mapping Survey, Specials Status Bird & Raptor Survey	HC, JB, WJ
4/19/2021	Belding's Savannah Sparrow Habitat Mapping Survey, Special Status Herpetofauna Survey	HC, WJ, DB
4/22/201	Special Status Herpetofauna Survey	JA
4/23/2021	Special Status Vegetation Mapping	EZ, HC, MH, JA
4/29/2021	Specials Status Bird & Raptor Survey, Special Status Herpetofauna Survey	JA
5/12/2021	Special Status Bird & Raptor Survey, Special Status Herpetofauna Survey	JA
6/23/2021	Special Status Herpetofauna Survey, Special Status Vegetation Mapping	HC, WJ, JA
8/11/2021	Special Status Invertebrate Survey	EZ
*Personnel: EZ=Eric Zahn, MC=Marcelo Ceballos, HC=Hannah Craddock, MH=Mark Hannaford, JB=Jayde Bahrami, JA=Jesse Aragon, WJ=Wanisa Jaikwang, DB=David Boehmer, BZ=Brian Zitt (ECORP)		

Mitigation Measure BIO-1: Avoidance of Special-Status Plants.

This mitigation measure requires that prior to LCWA's approval of project plans or publication of subsequent CEQA documents, a qualified botanist/biologist shall conduct a habitat assessment to determine the presence or absence of suitable habitat for special-status plant species. If suitable habitat is determined to be present, focused plant surveys should be conducted in accordance with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural

Communities (CDFW, March 20, 2018). Consistent with the CDFW protocol, such focused special-status plant surveys will be conducted during the appropriate blooming period for these species, with May and June likely having the highest number of species in flower. The results of focused special-status plant species will be incorporated into restoration design plans.

Focused surveys for special status plant species were performed starting in February as part of the jurisdictional wetland delineation and continued throughout the flowering periods of the four special status plant species that have been documented previously within the Project Area. Focused surveys were performed for all species determined by the PEIR to be moderate-high potential for occurrence or to be present in Los Cerritos Wetlands. Any special status plant species that were documented were flagged until all occurrences had been found. Once all the occurrences had been found, the geographic location of each occurrence was collected using a Trimble Geo 7X handheld Global Positioning System (GPS) device with sub-meter accuracy. Those data were then post-processed and converted into shapefiles that were analyzed in ArcMap 10.7.1.

Mitigation Measure BIO-3: Belding's Savannah Sparrow Breeding Habitat.
This mitigation measure requires that prior to LCWA's approval of project plans or publication of subsequent CEQA documents, a qualified biologist shall map suitable Belding's savannah sparrow breeding habitat as the location and amount of suitable habitat is anticipated to change over time. The results of habitat mapping will be incorporated into restoration design plans.

A total of five focused surveys for the special status Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) were performed on February 23rd, March 8th, March 22nd, April 5th, and April 19th, 2021 as part of this investigation. Additionally, Belding's savannah sparrow breeding territory data from the previous four years was also included to determine suitable habitat area for this species. Data from these previous years included mating territory data and behavior over the course of a normal breeding season. All surveys were conducted by biologists with multiple years of experience surveying the species and followed the protocol developed by Zembal et al. (2015) for this species 5-year range-wide surveys. Surveys were conducted on a biweekly basis across the breeding season until the five focus surveys had been completed. Each survey started just after sunrise and followed the exact same walking path each time. At least two but not exceeding three biologists conducted the surveys by traversing the upland edges of typical Belding's savannah sparrow habitat, generally pickleweed mats and other similar mid- to high-marsh plant communities. The biologists listened for the breeding call of this species and used binoculars to determine which specific plant was being used as a perch. The datasheet consisted of a map of the site, and Belding's savannah sparrows were denoted only when a perching individual is spotted. This is done as the surveys are only intended to determine location and number of breeding territories and not the total number of individuals present on site. Different markings on the datasheet are present to display several different phenomena that may be observed during any given survey which included: perching males, perching and singing males, potential breeding pairs, and any fights or chases between rival males. The specific perching substrate is also denoted on the datasheet in order to determine the most popular plants that this species uses to perch.

Mitigation Measure BIO-4: Nesting Bird and Raptor Avoidance.
This mitigation measure requires that a qualified biologist shall identify areas where nesting habitat for birds and raptors is present prior to LCWA's approval of project plans or publication of subsequent CEQA documents.

General surveys for bird behaviors were conducted on site in tandem with all other surveys performed in and around the Project Area. These surveys were conducted predominately in the morning and any observations of breeding behavior was noted documenting the location and species. Data from monthly surveys performed by members of Sea and Sage Audubon representatives was used to develop the bird species list for the Project Area (Appendix A).

Mitigation Measure BIO-5: Habitat Assessment and Pre-Construction Surveys for Burrowing Owl.
This mitigation measure requires that a qualified biologist shall conduct a pre-construction burrowing owl survey of each restoration area (including required survey buffer areas) prior to LCWA's approval of project plans or publication of subsequent CEQA documents.

Focused burrowing owl surveys were conducted on February 23rd and March 8th of 2021. These surveys were focused around portions of the Project Area that were characterized by ground squirrel burrow systems or areas that contained construction debris in which burrows could be developed. These areas were inspected for the presence of burrowing owls, as well as any indicators of their activity including pellets and recent displacement of sediment. The locations of these potential burrowing owl habitat areas were documented (Exhibit C).

Mitigation Measure BIO-7: Pre-Construction Bat Surveys.
This mitigation measure requires that a qualified biologist shall conduct a pre-construction bat survey of each restoration area prior to final approval of the area's restoration plan. This survey was performed on February 19, 2021 starting 1 hour before dusk and lasting another hour after twilight was complete. This survey was focused on areas containing stands of Mexican fan palms (*Washingtonia robusta*) which have been known to be potential roosting locations for bats. These trees were surveyed visually using both binoculars and the naked eye for any flushing of bats. The sky in and around the tree was continuously scanned for any bat activity.

Mitigation Measure BIO-8: Focused Surveys for Special-Status Wildlife Species.
This mitigation measure requires that should suitable habitat occur for terrestrial or aquatic special-status species, a qualified biologist shall conduct focused habitat assessments and focused surveys to determine presence, absence and/or abundance for special-status wildlife species listed in Table 3.3-5 of the PEIR. Both habitat assessments and focused surveys shall occur prior to LCWA's approval of the project plans or the publication of subsequent CEQA documents for any project site that potentially contains special-status species.

Focused wildlife surveys were conducted for presence of special status invertebrates, fish, birds, and herpetofauna that are known to be present on site or have a high or moderate potential to be found within the existing habitat of the Project Area. If non-target species were encountered during these focused surveys, the species were documented and included in the results. The methodology for each of the special status wildlife species surveys are provided below:

Invertebrate Surveys: Invertebrate surveys were generally conducted in conjunction with all other surveys and site visits, with special attention being provided when surveying portions of the property that was suitable habitat to special status invertebrate species. A focused survey was performed for tiger beetles (*Cicindela* spp.) and the wander skipper (*Panoquina errans*) in August in order to capture the season when these insects are active. Tiger beetle surveys were focused on the tidal flats and wandering skipper surveys focused on salt grass patches. Signs of invertebrate activity were noted and investigated further when possible, to determine the species present.

Fish Surveys: A focused survey to detect the presence of tidewater goby (*Eucyclogobius newberryi*) was conducted on February 22, 2021 via an environmental DNA (eDNA) analysis conducted by ECORP Consulting Inc. This survey was conducted by collecting water samples from three general locations (lower, middle, and upper) along the tidal channel that runs through the property with each location being composite sampled independently. Water was filtered through three 0.45 µm Sterivex™ filters to capture the DNA from each of the composite samples (i.e. 9 filters in total). In addition to the sampling filters, one field blank was filtered during the sampling event as a control. All samples were collected according to standard methods established in Bergman et al. (2016), Blankenship and Schumer (2017), and Schumer et al. (2019). Sampling of all three locations constituted one sampling event for eDNA analysis. Once the water samples were collected, they were sent to the eDNA laboratory, Genidaqs to be processed via DNA extraction and quantitative polymerase chain reaction (qPCR) analysis to detect tidewater goby.

Herpetofauna Surveys: Herpetofauna surveys were conducted to target both amphibians and reptiles that may be on the property. Targeted species included the coast horned lizard *(Phrynosoma blainvilli),* coastal whiptail *(Aspidoscelis tigris stejnegeri*), southern California legless lizard (*Anniella stebbinsi),* and the western spadefoot toad (*Spea hammondi*). Non-target species were also recorded whenever encountered. Surveys were conducted by implementing herpetofauna cover board boards throughout the Project Area and periodically checking them over time. Herpetofauna cover boards used were made of plywood measuring approximately 18” x 18” and were placed at multiple locations within the Project Area in spots that showed signs of potential reptile habitat on February 3, 2021. Sandy deposits at the base of the bluffs were specifically targeted for legless lizard. The cover boards imitate naturally occurring hiding spots for reptiles such as rocks and logs. The herpetofauna cover boards were checked periodically, typically once per month, for any reptiles or amphibians hiding underneath. Any species observed were recorded and documented when possible.

Bird & Raptor Surveys: Bird and raptor surveys were conducted in conjunction with other surveys and site visits in which a qualified biologist was present. Any species flying over or actively using the site was denoted and added to a matrix consisting of all avian species observed on site. Special attention was paid to any breeding behavior.

Mammal Surveys: Small mammal surveys were initiated on July 15, 2021 and will continue through April 2022. Small mammal surveys are being conducted by Dr. Ted Stankowich's Mammal Lab at California State University, Long Beach. The survey is taking place within the project boundaries at three separate locations on the property. The survey includes two components at each of the sampling areas. (1) A wildlife camera trap is placed on-site for a 30-day period along trails and wildlife corridors. The wildlife camera captures photos of any medium to larger sized mammals such as skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), or coyotes (*Canis latrans*) that may be present on site. (2) Standard sized Sherman live traps (LFA-TDG, 7.5 x 9 x 23 cm) baited with rolled oats will be utilized over 3 nights to capture small mammals such as California deermouse (*Peromyscus californicus*), brush mouse (*Peromyscus boylii*), Byrant's woodrat (*Neotoma bryanti*), big-eared woodrat (*Neotoma macrotis*), and brown rats (*Rattus norvegicus*). Beginning on night 1, traps are baited and set out in the evening around dusk and checked on and removed the following morning. The traps are removed during the day to avoid trapping any captured small mammals that may be exposed to high temperatures that may be present during the day. Traps are then reset at dusk and the process begins again.

During the initial check of the trigged traps, any captured species will be identified immediately. Any non-target special status mammals will be identified by species and released at the point of capture. Any non-special status small mammal species that are caught in the traps have basic data and measurements recorded such as species, body weight, length, sex, and are given an ear tag identifier before being released back at the point of capture. Once three nights of trapping have occurred, the traps are removed from the site while the wildlife camera stays in place. This four-night trapping cycle is set to occur once per season over the course of a year (July 2021, October 2021, January 2022, and April 2022).

Mitigation Measure BIO-9: Revegetation of Sensitive Natural Communities.
Prior to LCWA's approval of project plans or publication of subsequent CEQA documents, the area(s) that will be impacted shall be delineated and quantified using current Global Information System (ArcGIS) mapping software.

Potential vegetation communities were identified during a previous investigation as part of the PEIR (ESA, 2020). The vegetation mapping characterized the site's vegetative alliances and determined their geographic locations. Determination of vegetation alliances was performed in accordance with the *A Manual of California Vegetation*, *Second Edition* (MCVII) (Sawyer, Keeler-Wolf & Evens, 2009). These vegetation alliances describe the patterns of plants across different landscapes and reflect the effects of local climate, soil, water, disturbance, as well as other ecological factors. Land-cover types not included in the MCVII were added in order to describe disturbed or developed areas as well as certain aquatic habitat types.

As part of the project level surveys, the geographic vegetation data was verified in the field as part of the jurisdictional delineation. In instances where inconsistencies were found, the shapefile vertices were edited in ArcMap 10.7.1 to refine the boundaries for this report. Acreages of each vegetation community and alliance were calculated, and cartographical maps were produced for the entire 103.54-acre Project Area.

Mitigation Measure BIO-10: Jurisdictional Resources Permitting.

This mitigation measure requires that prior to LCWA's approval of project plans or publication of subsequent CEQA documents, a jurisdictional delineation report shall be prepared that describes these jurisdictional resources and the extent of jurisdiction under the USACE, RWQCB, CDFW, and CCC.

Potential jurisdictional wetlands were delineated during multiple site visits throughout the survey period. Potential sampling locations were initially determined remotely using literature, aerial map and previous site investigations. Sampling point locations were further refined in the field by the delineation team. The delineation field work was performed on February 19th, February 26th, March 5th, and March 12th, 2021. The detailed methodology for this investigation are provided in a stand-alone report entitled *Southern Los Cerritos Wetlands Area: Jurisdictional Wetlands Delineation* (Appendix B).

3.0 Results

Mitigation Measure BIO-1: Avoidance of Special-Status Plants.
Special status plant species include all federal- and state-listed endangered and/or threatened species and those that have been identified by the CNPS as having a limited distribution in California and throughout their range.

Of the 41 special status plant species listed and analyzed in the potential to occur table of the PEIR, only 11 of those species had a moderate, high, or present potential to occur status. These 11 special status plant species are listed below in Table 2. Of these 11 species, only three were documented on site and included California boxthorn (*Lycium californicum*), Lewis' evening primrose (*Camissoniopsis lewisii*), and southern tarplant (*Centromadia parryi ssp. australis*). A Special Status Plants map showing the location of these special status plant species populations is attached (Exhibit D). Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*) was documented by the 2012 Habitat Assessment Report (Tidal Influence, 2012) as part of the Conceptual Restoration Plan and this annual species should be considered to have a high potential to occur during years with higher than normal rainfall.

The "Potential for Occurrence" category indicated in Table 2 is defined as follows:

- *Moderate Potential:* The project area and/or immediate vicinity provides marginal habitat for a particular species. For example, proper substrate may be present, but the desired vegetation assemblage or density is less than ideal, or substrate and vegetation are suitable, but the site is outside of the known elevation range of the species.
- *High Potential:* The project area and/or immediate vicinity provides high-quality or ideal habitat (i.e., soils, vegetation assemblage, and topography) for a particular species and/or there are known occurrences in the general vicinity of the project area.
- *Present:* Species observed on the site during project-level focused surveys or during the PEIR surveys.

Table 2. Special status floral species indicated in the PEIR to have a moderate-high potential for occurrence or were determined to be present within the Program Area.

Species Name	Status	Habitat Requirements	Potential to Occur In Project Area
California boxthorn *Lycium californicum*	CRPR: 4.2 Fed: None State: None	Perennial succulent shrub. Occurs along coastal salt marsh margins, coastal sage scrub, and coastal bluffs up to 500 feet in elevation.	Present: This species was documented within the project boundary by the project-level surveys and all previous surveys.
Coulter's goldfields *Lasthenia glabrata* ssp. *coulteri*	CRPR: 1B.1 Fed: None State: None	Annual herb. Occurs in playas, vernal pools, marshes and swamps (coastal salt).	High: Several occurrences of this species were identified in spring 2011 by Tidal Influence botanists within the project boundary. Occurrences were not documented in 2018 during the PEIR surveys. Additionally, no individuals were found during the project-level focused surveys.
estuary seablite *Suaeda esteroa*	CRPR: 1B.2 Fed: None State: None	Perennial herb. Occurs in coastal salt marshes and swamps up to 15 feet in elevation.	High: This species has a high potential to occur on site due the proximity of other populations to the site including Steamshovel Slough, Zedler Marsh. Additionally suitable habitat exists within

Species Name	Status	Habitat Requirements	Potential to Occur In Project Area
			the Project Area. However, this species has not been historically documented within the project boundary and was not identified during project-level surveys.
Lewis' evening primrose *Camissoniopsis lewisii*	CRPR: 3 Fed: None State: None	Annual herb. Occurs in coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland in sandy or clay soil up to 985 feet in elevation.	Present**:** This species was documented within the project boundary.
red sand-verbena *Abronia maritima*	Federal: None State: None CRPR: 4.2	Perennial herb. Occurs in marshes, swamps, and coastal dunes. Limited to the higher zones of salt marsh habitat.	Moderate: Not documented on site, suitable habitat is not present within the project boundary.
salt marsh bird's beak *Chloropyron maritimum* ssp. *maritimum*	CRPR: 1B.2 Fed: FE State: SE	Annual herb. Occurs in coastal salt marshes and coastal dunes up to 33 feet in elevation.	Moderate: No regional source populations exist but low quality suitable habitat is present within the project boundary.
southern tarplant *Centromadia parryi* ssp. *australis*	CRPR: 1B.1 Fed: None State: None	Annual herb. Occurs in disturbed areas near coastal salt marshes, grasslands, vernal pools and coastal sage scrub up to 1400 feet in elevation.	Present: This species was documented within the project boundary.
southwestern spiny rush *Juncus acutus* ssp. *leopoldii*	CRPR: 4.2 Fed: None State: None	Perennial herb. Occurs in coastal salt marshes, alkali seeps, and coastal strand habitats up to 1000 feet in elevation.	Moderate: This species has a moderate potential to occur as it is found naturally in the Isthmus Area, but this Project Area lacks the freshwater input that this species requires.
Ventura marsh milk-vetch *Astrasgalus pycnostachyus* var. *lanosissimus*	CRPR: 1B.1 Federal: FE State: SE	Perennial herb. Occurs in open, sand to gravel, disturbed areas below 100 meters in elevation.	Moderate: Suitable habitat present on site; however, not documented within the project boundary.
woolly seablite *Suaeda taxifolia*	CRPR: 4.2 Fed: None State: None	Perennial succulent shrub. Occurs along coastal salt marsh margins and coastal bluffs up to 45 feet in elevation.	Moderate: Documented in North and Isthmus Areas but not documented within the project boundary despite the existence of suitable habitat.

Special Status Plant Species Present on Site:

California boxthorn (*Lycium californicum*): California boxthorn is a perennial shrub designated as a CRPR 4.2 that is known from Los Angeles, Orange, and San Diego counties, as well as Santa Catalina Island. California boxthorn occur in coastal sage scrub, coastal bluff scrub, maritime scrub, and along the fringes of coastal salt marsh. The flowering period occurs from May to August. Two individuals of this species were documented within the Project Area (Exhibit D).

Lewis' evening primrose (*Camissoniopsis lewisii*): Lewis' evening primrose is an annual herb designated as CRPR 3 that is known from San Diego to San Luis Obispo counties as well as Baja California. This species occurs in coastal sandy habitats within coastal strand, woodland, sage scrub, and grassland plant communities. The flowering period is from March to June. Three occurrences of this species were documented within the project boundary, covering a total of 3.76 acres (Exhibit D).

southern tarplant (*Centromadia parryi* ssp. *australis*): Southern tarplant is an annual herb designated as a CRPR 1B.1 that is known from Los Angeles, Orange, Santa Barbara, San Diego, and Ventura counties, as well as Santa Catalina Island and Baja California. Southern tarplant occurs at the margins of marshes and swamps, valley and foothill grasslands, and disturbed areas. The flowering period occurs from May to November. This species was observed in approximately seven locations throughout the Project Area generally in disturbed area along the edges of roads and paths, covering a total of 1.06 acres (Exhibit D).

Special Status Plant Species Not Present on Site:

Coulter's goldfield (*Lasthenia glabrata ssp. coulteri*): Coulter's goldfields are an annual herb designated as a CRPR 1B.1 that is known from Kern, Santa Barbara, Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties. Coulter's goldfields occur in coastal salt marshes and freshwater marshes, playas, and vernal pools. The flowering period occurs from February to June. This species was detected within the Project Area in 2011, although its presences was not observed during the project-level focused surveys or during the surveys for the PEIR. Suitable habitat does exist within the project boundary and germination is usually triggered in February during years with above average amounts of winter precipitation. While the PEIR list this species as present in its potential for occurrence table, it is categorized here as not present due to species not being documented within the Project Area during these focused surveys. Surveys for this species should occur again before ground disturbance occurs and the historic locations of this species should be protected when feasible.

estuary seablite (*Suaeda esteroa*): Estuary seablite is a perennial shrub designated as a CRPR 1B.2 that is known from Santa Barbara, Ventura, Los Angeles, Orange, and San Diego counties as well as from Baja California. Estuary seablite occurs in mid- to upper zones of coastal salt marshes. The flowering period occurs from May to October. This species has been documented in other areas of the Los Cerritos Wetlands Complex, but no occurrences have been found within the project boundary. Although suitable habitat does exist on site, the tidal flushing and fragmentation of the salt marsh within the Project Area has not allowed this species to recruit.

red sand-verbena (*Abronia maritima*): Red sand-verbena is a perennial herb designated as a CRPR 4.2 that is known from Los Angeles, Monterey, Orange, Santa Barbara, San Bernardino, Santa Cruz, Sand Diego, San Luis Obispo, Sonoma, and Ventura counties. Red sand-verbena occur in marshes, swamps, and coastal dunes. The flowering period occurs from February to December. While suitable habitat for the species occurs within the Project Area, the species was not observed during the focused surveys throughout the survey period.

salt marsh bird's beak (*Chloropyron maritimum* ssp. *maritimum*): Salt marsh bird's beak is a hemiparasitic annual herb listed as federally- and state-endangered and designated as a CRPR 1B.2. It is known to exist in just 8 locations in the United States and can be found in San Luis Obispo, Santa Barbara, Ventura, Orange, and San Diego counties as well as from Baja California. Bird's beak occurs in the upper-marsh zone of coastal salt marsh and often is associated with coastal dunes and freshwater seeps. Plants will germinate from February to June and the flowering period occurs from May to September. While suitable habitat exists within the Project Area the poor tidal flushing and poor soil conditions are not hospitable for this sensitive species and therefore it was not observed during focused surveys. Additionally, the closest potential source population exists at the Huntington Beach Wetlands located approximately 12 miles south of the Project Area.

southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*): Southwestern spiny rush is a perennial grasslike herb designated as CRPR 4.2 that is known from San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, and San Diego counties as well as from Baja California, the Channel Islands, and other portions of California. Southwestern spiny rush has limited salt tolerance and occurs in freshwater seeps, brackish marsh and coastal strand habitats that border coastal salt marsh. The flowering period occurs in May and June. While this species is present in other areas of the LCW Complex and suitable habitat exists within the project boundary, there is not enough freshwater input to support this species establishment. This species was not observed within the project boundary during the focused surveys.

Ventura marsh milk-vetch (*Astrasgalus pycnostachyus var. lanosissimus*): Ventura marsh milk-vetch is a perennial herb designated as a CRPR 1B.1 that is known from Los Angeles, Marin, and Ventura counties. Ventura marsh milk-vetch occur in coastal salt marsh. The flowering period occurs from June to October. Suitable habitat for the species does occur within the project boundary. The species was not documented during focused surveys of the Project Area. Additionally, the closest potential source population exists in Ventura County.

woolly seablite (*Suaeda taxifolia*)*:* Woolly seablite is a perennial shrub designated as a CRPR 4.2 that is known from San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, and San Diego counties as well as from Baja California, the Channel Islands, and the Central Valley. Woolly seablite occurs in upper zones of coastal salt marshes as well as on coastal bluffs, coastal sage scrub, and at the edge of alkali marshes. The flowering period occurs year-round. While this species was documented in other areas of the LCW Complex and suitable habitat for the species occurs within the Project Area, the species was not documented within the Project Area.

Mitigation Measure BIO-3: Belding's savannah sparrow Breeding Habitat.

The project-level focused Belding's savannah sparrow (BSS) breeding habitat surveys indicate that the number of breeding pairs has increased from 12 pairs in 2017 up to 25 pairs in 2021. When the previous four years of focused BSS survey data is overlain with the data collected in 2021 for this project, it provides a comprehensive picture for the locations of BSS breeding habitat within the Project Area. These data show which areas are consistently used by this species and which areas have been sporadically used and how the habitat use shifts temporally. With this robust BSS breeding habitat data set a Belding's savannah sparrow breeding habitat map was created which shows the core 4.73 acres of breeding habitat that has continually been used over the years as well as an additional 16.37 acres of habitat area that has potential to be utilized by BSS (Exhibit E). These data and map shall be used to inform the restoration design plans moving forward.

Mitigation Measure BIO-4: Nesting Bird and Raptor Avoidance.

No bird nesting activity, aside from BSS was observed within the project boundary throughout the survey period. However, red-tailed hawks (*Buteo Jamaicensis*) were observed performing breeding behaviors in the eucalyptus trees located in the adjacent Gum Grove Park. This location is commonly known as a raptor breeding area and therefore this project should avoid impact to any of the trees found in or adjacent to that park. Furthermore, focused surveys for raptor breeding should be performed in all eucalyptus trees found within the Project Area during the breeding season that precedes construction. Overall, the same approach should be taken for all nesting birds.

Mitigation Measure BIO-5: Habitat Assessment and Pre-Construction Surveys for Burrowing Owl.

While potential habitat with active ground squirrel burrows were identified, no burrowing owls or indicators of burrowing owl use were found within the Project Area (Exhibit B). This species has been found to over-winter in Los Cerritos Wetlands and was documented doing so in the Isthmus Area. Historically, there are no records of burrowing owls ever nesting in Los Cerritos Wetlands.

Mitigation Measure BIO-7: Pre-Construction Bat Surveys.

No bat or roosting bat activity was documented during the focused bat surveys. Furthermore, the Mexican fan palms (*Washingtonia robusta*) and the areas around them were inspected for possible indications of bat activity (e.g. guano droppings) but none were found.

Mitigation Measure BIO-8: Focused Surveys for Special-Status Wildlife Species.

Special status wildlife species include all those federal- and state-listed endangered and/or threatened species and those that have been identified as Species of Special Concern (CSC) by CDFW.

Special status wildlife species with a moderate, high, or present rating based on the PEIR analysis are included in Table 3 below. Of these 33 listed, 7 species were present on site, 8 species have a high potential, 9 species have a moderate potential, and 9 species have a low potential to occur within the Project Area. Detailed descriptions of all special status species that had moderate or high potentials for occurrence as well as species that were present on site are provided in the section below, organized by those determined to be "present on site" and "not present on site".

Table 3. Special Status Faunal Species indicated in the PEIR to have a moderate-high potential for occurrence or were determined to be present within the Program Area.

Species Name	Status	Habitat Requirements	Potential for Occurrence in Project Area
Invertebrates			
mimic tryonia (California brackish water snail) *Tryonia imitator*	Federal: None State: None CDFW: None CNDDB: S2	Coastal areas with brackish waters. Moderate. Suitable habitat	Low: Suitable habitat present on site; however, this species was not documented in the Project Area.

Species Name	Status	Habitat Requirements	Potential for Occurrence in Project Area
monarch—California overwintering population *Danaus plexippus pop. 1*	Federal: None State: None CDFW: None CNDDB: S2S3	Roosts in winter in wind-protected tree groves along the California coast from northern Mendocino to Baja California, Mexico.	Moderate: This species has a moderate potential to occur due to presence of non-native Eucalyptus trees within and adjacent to the Project Area.
mudflat tiger beetle *Cicindela trifasciata sigmoidea*	Federal: None State: None CDFW: None CNDDB: N/A	This predatory beetle inhabits salt marshes, mudflats and salt pannes where they make burrows in the intertidal zone.	High: This species has been documented on tidal mudflats in Steamshovel Slough. Potential suitable habitat occurs within the Project Area.
salt marsh tiger beetle *Cicindela hemorrhagica*	Federal: None State: None CDFW: N/A CNDDB: N/A	Salt marshes, mudflats and salt pannes where they make burrows in the intertidal zone	High: This species has been documented on tidal mudflats in the North Area (Steamshovel Slough) and Isthmus Area (Zedler Marsh). Potential suitable habitat exists within the Project Area.
salt marsh wandering skipper *Panoquina errans*	Federal: None State: None CDFW: None CNDDB: S2	Coastal salt marsh and coastal strand areas dominated by salt grass.	High: This species has been documented in salt marsh vegetation in the North Area (Steamshovel Slough) and Isthmus Area (Zedler Marsh). Potential suitable habitat exists within the Project Area.
sandy beach tiger beetle *Cicindela hirticollis gravida*	Federal: None State: None CDFW: None CNDDB: S2	Forages in open unvegetated areas such as marsh pannes and levees. Larvae burrow in moist unvegetated substrates.	Moderate: This species has not been documented within the program area, but suitable habitat does exist within the Project Area.
senile tiger beetle *Cicindela senilis frosti*	Federal: None State: None CDFW: None CNDDB: S1	Known to inhabit tidal salt marshes and salt flats. Now very rare to find. Previously found in Bolsa Chica, Ventura, and Riverside County.	Moderate. This species has not been documented in the program area, but suitable habitat does exist within tidal areas of the Project Area.
western beach tiger beetle *Cicindela latesignata latesignata*	Federal: None State: None CDFW: None CNDDB: S1	Forages in open unvegetated areas such as marsh pannes and levees. Larvae burrow in moist unvegetated substrates.	Moderate: This species has a moderate potential to occur on the unvegetated flats found throughout the Project Area.
western tidal-flat tiger beetle *Cicindela gabbii*	Federal: None State: None CDFW: None CNDDB: S1	Open, unvegetated areas in or near salt marshes.	Moderate: This species has not been documented in the program area, but suitable habitat does exist within tidal areas of the Project Area.
Fish			
tidewater goby *Eucyclobobius newberryi*	Federal: FE State: None CDFW: CSC CNDDB: S3	Inhabits benthic zone of shallow coastal lagoons and estuaries where brackish conditions occur.	Low: This species has not been documented in the program area. The Project Area's habitat is suboptimal due to a lack of brackish conditions.
Reptiles			
Pacific green sea turtle *Chelonia mydas*	Federal: FT State: None CDFW: None CNDDB: S1	Green turtles are generally found in fairly shallow waters (except when migrating) inside reefs, bays, and inlets. The turtles are attracted to lagoons and shoals with an abundance of marine grass and algae.	Low: This migratory reptile is a resident in the Central Area (San Gabriel River) and has also been documented throughout Alamitos Bay. The current tidal connection to the Project Area does not allow for this species to gain access.

Species Name	Status	Habitat Requirements	Potential for Occurrence in Project Area
red diamond rattlesnake *Crotalus ruber*	Federal: None State: None CDFW: CSC CNDDB: S3	Chaparral, woodland, grassland, & desert areas from coastal San Diego County to the eastern slopes of the mountains. Occurs in rocky areas & dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	Low: Observed historically in the Isthmus Area, which was suspected to have been an individual released to the area. Suitable habitat is not present within the Project Area.
western pond turtle *Emys marmorata*	Federal: None State: None CDFW: CSC CNDDB: S3	Slow-moving permanent or intermittent streams, small ponds and lakes, reservoirs, abandoned gravel pits, permanent and ephemeral shallow wetlands, stock ponds, and treatment lagoons. Abundant basking sites and cover necessary, including logs, rocks, submerged vegetation, and undercut banks.	Low: Not documented in the program area; Suitable freshwater habitat is not present within the Project Area.
Birds			
American peregrine falcon *Falco peregrinus anatum*	Federal: Delisted State: Delisted CDFW: CFP CNDDB: S3S4	Near wetlands, lakes, rivers or other water, on cliffs, banks, dunes, mounds, also human-made structures.	Present: Observed on site. Suitable foraging habitat in Project Area; Suitable breeding sites are not present within the Project Area.
bank swallow *Riparia riparia*	Federal: None State: ST CDFW: None CNDDB: S2	Colonial nester; nests primarily in riparian and other lowland habitats west or the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	High: This species has a been previously unofficially observed in the Southern Los Cerritos Wetlands area and could occur within the Project Area.
Belding's savannah sparrow *Passerculus sandwichensis beldingi*	Federal: None State: SE CDFW: None SNDDB: S3	Found in Coastal salt marshes. Nests in *Salicornia* sp. and about margins of tidal flats.	Present: This species has been documented using the site as breeding and foraging habitat.
black skimmer *Rhynchops niger*	Federal: None State: None CDFW: CSC CNDDB: S2	Nests on gravel bars, low islets and sandy beaches, in unvegetated sites.	High: Observed in other areas of the LCW Complex but not in the Project Area. Suitable foraging habitat exists within the Project Area. Suitable breeding habitat is not present within the Project Area.
burrowing owl *Athene cunicularia*	Federal: None State: None CDFW: CSC CNDDB: S3	Open, dry annual or perennial grasslands, deserts & scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Low: Individuals were historically observed in Isthmus Area. Occurs as a migratory winter visitor but is not expected as a breeding species.
California brown pelican *Pelecanus occidentalis californicus*	Federal: Delisted State: Delisted CDFW: CFP CNDDB: S3	Coastal, salt bays, ocean, beaches. Nests on coastal islands of small to moderate size that afford immunity from attack by ground-dwelling predators.	Present: Observed on site. Suitable foraging habitat present in tidal areas within the Project Area. Breeding habitat absent.

Species Name	Status	Habitat Requirements	Potential for Occurrence in Project Area
California least tern *Sternula antillarum browni*	Federal: FE State: SE CDFW: CFP CNDDB: S2	Flat, vegetated substrates near the coast. Occurs near estuaries, bays, or harbors where fish is abundant.	Present: Has been historically observed foraging in tidal channel within the Project Area.
least Bell's vireo *Vireo belii pusilus*	Federal: FE State: SE CDFW: None CNDDB: S2	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	Moderate: Was observed within the Isthmus Area in 2018. Suitable habitat is limited within the Project Area, but very active breeding habitat exists in the adjacent Heron Pointe bioswale east of the Project Area.
merlin *Falco columbarius*	Federal: None State: None CDFW: WL CNDDB: S3S4	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches. Clumps of trees or windbreaks are required for roosting in open country.	High: Not observed in the Project Area. The PEIR stated the species was documented on within the LCW Complex, but specific locations were not given; Suitable foraging habitat present in Project Area. Suitable breeding habitat absent from site.
loggerhead shrike *Lanius ludovicianus*	Federal: None State: None CDFW: CSC CNDDB: S4	Broken woodlands, savannah, pinyon-juniper, Joshua tree & riparian woodlands, desert oases, scrub & washes. Prefers open country for hunting with perches for scanning and fairly dense shrubs and brush for nesting.	Present: Observed within the Project Area.
northern harrier (nesting) *Circus cyaneus*	Federal: None State: None CDFW: CSC CNDDB: S3	A variety of habitats, including open wetlands, grasslands, wet pasture, old fields, dry uplands, and croplands.	High: Northern harrier (non-nesting) have been observed foraging within the Project Area. There are no records of northern harrier nesting in the vicinity of the Project Area. Suitable foraging habitat is present throughout the Project Area. Limited potential for breeding in the Project Area.
osprey *Pandion haliaetus*	Federal: None State: None CDFW: WL CNDDB: S4	Found near rivers, lakes, coastal areas. Most common around major coastal estuaries and salt marshes, but can be found around large lakes, reservoirs, and rivers.	Present: Observed within the Project Area.
Ridgway's rail *Rallus obsoletus*	Federal: FE State: SE CDFW: CFP CNDDB: S1	Found in salt marshes where cordgrass and pickleweed are the dominant vegetation. Requires dense growth of either pickleweed or cordgrass for nesting or escape cover, feeds on mollusks and crustaceans.	Moderate: Limited foraging habitat exists within the Project Area and breeding habitat is not present within the Project Area.
short-eared owl *Asio flammeus*	Federal: None State: None CDFW: CSC CNDDB: S3	Found in swamplands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	High: Not observed within the Project Area but observed in the PEIR investigation with no specific areas indicated. Suitable foraging habitat occurs during winter in tidal marsh areas in Project Area. Suitable breeding habitat absent.
tricolored blackbird *Agelaius tricolor*	Federal: None State: ST CDFW: CSC CNDDB: S1S2	Requires open water, protected nesting and foraging area with insect prey within a few km of the colony.	Low: This species was recorded on eBird in 2015 for an occurrence within the Central Area at the Marketplace Marsh. However, suitable foraging habitat is not present within Project Area.
western snowy plover *Charadrius alexandrinus nivosus*	Federal: FT State: None CDFW: CSC CNDDB: S2S3	Sandy or gravelly beaches along the coast, estuarine salt ponds, alkali lakes, and the Salton Sea. Foraging in wet sand within the intertidal zone in dry, sandy areas above the high tide, along edges of salt marshes, salt ponds, and lagoons. Nesting in open, flat, and sparsely vegetated beaches and sand spits.	Moderate: Not previously documented on site; however, suitable foraging and loafing habitat present within tidal marsh areas of Project Area. No potential nesting habitat exists within the Project Area.

Species Name	Status	Habitat Requirements	Potential for Occurrence in Project Area
Yellow-breasted chat *Icteria virens*	Federal: None State: None CDFW: CSC CNDDB: S3	Summer resident; inhabits riparian thickets of willow & other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 feet of ground.	Present: Observed foraging within Project Area. Suitable breeding habitat is not present within the Project Area.
Mammals			
Pacific pocket mouse *Perognathus longimembris pacificus*	Federal: FE State: None CDFW: CSC CNDDB: S1	Requires sparse vegetation coverage for maneuverability and sandy soils for burrowing.	Low: Not historically documented in the Project Area by focused surveys conducted in the 1990s; While suitable habitat is present in tidal marsh areas of the Project, this habitat is in poor condition. Furthermore, no local populations are known to occur.
south coast marsh vole *Microtus californicus stephensi*	Federal: None State: None CDFW: CSC CNDDB: S1S2	Tidal marshes in Los Angeles, Orange and southern Ventura Counties.	Low: Not historically documented in the Project Area; While suitable habitat is present in tidal marsh areas of the Project, this habitat is in poor condition. Furthermore, no local populations are known to occur.
southern California salt marsh shrew *Sorex ornatus salicornicus*	Federal: None State: None CDFW: CSC CNDDB: S1	Coastal marshes in Los Angeles, Orange and southern Ventura Counties. Requires dense vegetation and woody debris for cover.	Moderate: Not historically documented in the Project Area; however, suitable habitat present in tidal marsh areas of the site and a local population exists nearby in Anaheim Bay.

STATUS CODES:

Federal
FE = Federally Endangered
FT = Federally Threatened
FSC = Federal Species of Special Concern

State
SE = State Endangered
ST = State Threatened

CDFW
CSC = California Species of Special Concern
CFP = California Fully Protected Species
WL = Watch List

CNDDB Element Ranking

S1 = Critically Imperiled—Critically imperiled in the state because of extreme rarity (often 5 or few populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.

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.

S3 = Vulnerable—Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer).

S4 = Apparently Secure—Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.

A question mark (?) denotes an inexact numeric rank due to insufficient samples over the full expected range of the type, but existing information points to this rank.

Special Status Faunal Species Present On Site:

Birds

American peregrine falcon (*Falco peregrinus anatum*):

The American peregrine falcon is a CDFW Fully Protected species and was federally delisted in 1999. Northwestern populations are year-round residents from central Mexico to Alaska. American peregrine falcons forage in a variety of habitats including grasslands, meadows, coastlines and wetlands where they hunt waterfowl and shorebirds. Organochlorine pesticides were a primary cause for decline before they were banned in the 1970s, but habitat loss due to development and human disturbance is also responsible for this raptor's decline. Habitat for prey occurs over much of the area. An individual was observed within the Project Area on February 25, 2021; additionally, residents in the vicinity and/or migrants are expected to forage occasionally on site but breeding habitat is not present.

Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*):
The Belding's savannah sparrow is a state endangered bird, and a candidate species for federal protection. This species is a non-migratory subspecies that occurs in coastal salt marshes between Goleta Slough, Santa Barbara County, and Bahia de San Quentin in Mexico. The Belding's savannah sparrow is entirely dependent on salt marshes for nesting and foraging. As such, the Belding's savannah sparrow thus resides year-round in this habitat and is resident and common on the site. The highest concentrations of the Belding's savannah sparrow are within the salt marsh areas of the Project Area. Based on focused breeding season surveys conducted since 2017, the current capacity of the Project Area is estimated to be 25 breeding territories. This species nests preferentially in common pickleweed, shore grass, and/or Parish's glasswort.

California brown pelican (*Pelecanus occidentalis californicus*):
The California brown pelican is a California Fully Protected species. The California brown pelican breeds on the Channel Islands and occurs in estuarine, marine subtidal, and marine pelagic waters along California coast. California brown pelicans forage almost entirely on fish. The California brown pelican has been observed on site and foraging near the Project Area (Haynes Cooling Channel); however, there are no potential breeding areas within the Project Area. Additional bird species observed on site can be found in the faunal species list (Appendix A).

loggerhead shrike (*Lanius ludovicianus*)
The loggerhead shrike is a California Species of Special Concern. Loggerhead shrike is a common resident and winter visitor in lowlands and foothills throughout California. It prefers open habitats with scattered perches and us shrubs, trees, posts, fences, and utility lines where it forages mostly large insects. Loggerhead shrike builds nests in shrubs or trees with dense foliage. Limited quality foraging habitat currently occurs in the Project Area due to the dominance of black mustard. Nonetheless, foraging habitat is present and loggerhead shrike have been observed within the Project Area.

California least tern (*Sternula antillarum browni*): This bird species has been historically observed foraging in the tidal creek that runs through the Project Area. This federal and state endangered species nests on sparsely vegetated sandy beaches and dunes which are not found within the Project Area. The nearest known nesting site for this species is located in Anaheim Bay. There is ample foraging habitat for this species to use in the surrounding areas; therefore, the project activities will not have a significant impact on this species.

osprey (*Pandion haliaetus*): This bird species has been observed throughout the Los Cerritos Wetlands and is included on the CDFW watch list. While this species was observed using the site for foraging, it commonly nests on snags of tall trees or artificial platforms which are not found with the Project Area. There is ample foraging habitat for this species to use in the surrounding areas; therefore, the project activities will not have a significant impact on this species.

yellow-breasted chat (*Icteria virens*)

The yellow-breasted chat is a California Species of Special Concern. The yellow-breasted chat is an uncommon summer resident and migrant in coastal California and in foothills of the Sierra Nevada. Yellow-breasted chat nests and forages in willows and other low, dense riparian habitat feeding on insects. Foraging habitat occurs in the Isthmus Area. Yellow-breasted chat have been observed throughout the site during surveys and may forage within mulefat scrub habitats, however, breeding habitat is absent due to the lack of contiguous riparian habitat within the Project Boundary.

Special Status Faunal Species Not Present On Site:

Invertebrates

mimic tryonia - California brackishwater snail (*Tryonia imitator*): The mimic tryonia is a small brackish water snail that is listed on the International Union for the Conservation of Nature (IUCN) Red List as DD (data deficient), which means there is inadequate data to make a direct or indirect assessment. The mimic tryonia's known range is not well documented. However, it likely extends along the entirety of the California coast, but only in suitable localities within this range that include areas with brackish waters. Suitable habitat for this species does not occur within the Project Area due to the lack of brackish wetlands.

monarch (*Danaus plexippus*): The monarch butterfly is a candidate for listing under FESA. It is a large orange and black butterfly; whose flight season extends from late February to mid-September. The monarch butterfly's known range extends along the California coast from the cape region of Baja California to Mendocino County. In the spring, they move inland in search of areas containing their primary host plant, milkweed. The species roosts in tree groves along the coast of California during the winter. Suitable overwintering habitat for this species occurs adjacent to the Project Area within Eucalyptus tree groves. Focused project-level surveys did not detect this species; however, it has been known to occur in the adjacent Gum Grove Park where suitable roosting habitat is present.

salt marsh wandering skipper (*Panoquina errans*): This species of butterfly is not listed on the state or federal level, but it is rare throughout its range, mainly due to loss of habitat due to human development. This species inhabits salt marshes, utilizing salt grass (*Distichlis spicata*) as a larvae then nectar on other salt marsh plants as adults. Extensive patches of *Distchlis spicata* are not found within the Project Area. Instead, the marsh tends to be dominated by *Salicornia pacifica*, *Frankenia salina*, and *Arthrocnemum subterminale*. Focused project-level surveys did not detect this species.

mudflat tiger beetle (*Cicindela trifasciata sigmoidea*), salt marsh tiger beetle (*Cicindela hemorrhagica*), sandy beach tiger beetle (*Cicindela hirticollis gravida*), senile tiger beetle (*Cicindela senilis frosti*), western beach tiger beetle (Cicindela latesignata latesignata), and western tidal-flat tiger beetle (Cicindela gabbii): Tiger beetles are generally known as indicators of high-quality intact habitats and they do not generally inhabit disturbed habitats. While several tiger beetle species have been documented at Steam Shovel Slough in the North Area of the Los Cerritos Wetlands Complex, no tiger beetles were documented during focused surveys within the Project Area. These predatory beetles inhabit mudflats and salt pannes where they make burrows in the intertidal zone. Unfortunately, the tidal flats within the Project Area are composed of fill material that is often laden with gravel and other non-natural debris. Moreover, the tidal prism is severely muted which further degrades the conditions of the tidal flats. These species were not detected during focused project-level surveys.

Fish

tidewater goby (*Eucyclobobius newberryi*): The tidewater goby is listed under CESA and FESA as endangered. This species is generally found in fairly shallow waters (except when migrating) in coastal lagoons and estuaries where brackish conditions occur. Known occurrences for the species are very limited within the region and tend to consist of old records. The nearest known records for the species occur in 1996 in Aliso Creek (Orange County) and 1995 in Malibu Creek (Los Angeles County) respectively (ESA, 2020). The results of project-level focused eDNA surveys did not detect evidence of this species being present within the tidal channel that traverses the Project Area.

Reptiles

Pacific green sea turtle (*Chelonia mydas*): The Pacific green sea turtle is a federal threatened species and listed on the IUCN Red List as 4, which means "endangered." This species is generally found in fairly shallow waters (except when migrating) inside reefs, bays, and inlets. The turtles are attracted to lagoons and shoals with an abundance of marine grass and algae. They have been documented in several locations with the Program Area, however, it is infeasible for them to occur within the Project Area since the current tidal connection is only a small gap in the flap gate on the San Gabriel River which is not large enough to allow for this species to gain access. Moreover, the tidal areas are too shallow to accommodate this relatively large marine reptile.

red diamond rattlesnake (*Crotalus ruber*): The red diamond rattlesnake is a California Species of Special Concern. The red diamond rattlesnake occurs throughout much of San Diego and Orange Counties as well as in western Riverside County and southwestern San Bernardino County in chaparral, woodland, grassland, and desert habitats. Red diamond rattlesnakes forage primarily on small mammals but will consume lizards, birds, and other snakes. Red diamond rattlesnake was not documented as part of the focused reptile surveys and suitable habitat does not exist within the Project Area.

western pond turtle (*Emys marmorata*): The western pond turtle is a California Species of Special Concern. The western pond turtle is uncommon to common in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest and absent from desert regions, except along the Mojave River and its tributaries in the Mojave Desert. It can be found within riparian and freshwater marsh habitats where it consumes both plant and wildlife including pond lilies, beetles, and other aquatic invertebrates. Western pond turtle were not documented as part of the focused reptile surveys and suitable habitat does not exist within the Project Area.

Birds

black skimmer (*Rhynchops niger*)

The black skimmer is a California Species of Special Concern. The black skimmer breeds on gravel bars, low islets, and sandy beaches on the coast from San Francisco Bay south to San Diego Bay and in the interior at the Salton Sea. Black skimmers forage along calm, shallow water. Habitat for prey occurs in the aquatic environments located within the project boundary. The black skimmer was not observed within the Project Area and has not historically been documented using the tidal channel.

least Bell's vireo (*Vireo belii pusilus*): The least Bell's vireo is listed as endangered in accordance with CESA and FESA. The least Bell's vireo is a rare, local summer resident in San Benito and Monterey Counties, Southern California from Santa Barbara County south to San Diego County and along the western edge of the deserts and nests and forages in willows and other low, dense riparian habitat feeding on insects. Foraging habitat is limited for this species within the Project Area; however, it was observed in Isthmus Area in 2018 and has been well documented to breed in the Heron Point bioswale just east of the Project Area. Restoration of willow and mulefat scrub as part of this project should create habitat for this species.

merlin *(Falco columbarius)*

The merlin is a California Watch List species. Merlin is an uncommon winter migrant and occurs in most of the western half of the state along coastlines, open grasslands, savannahs, woodlands, lakes, wetlands, edges, and early successional stages. Merlin primarily feed on small birds but also, small mammals and insects. Merlin breed in Canada and Alaska and are not known to breed in California. Foraging habitat occurs in the South Area, Isthmus Area, Central Area, and North Area. Breeding habitat is absent. Merlin were observed within the program area during surveys conducted for the Conceptual Restoration Plan (Tidal Influence, 2012). There is a high probability of merlin being present on site during pre-construction surveys.

short-eared owl (Asio flammeus)

The short-eared owl is a California Species of Special Concern. It prefers open habitats such as grasslands, prairie, agricultural fields, salt marshes, estuaries, and mountain meadows. Breeding habitat must have sufficient ground cover to conceal nests and nearby sources of small mammals for food. This species roosts in disturbed areas such as thick hedgerows, overgrown rubble and abandoned fields. The tidal marshes in the Project Area may provide potentially suitable wintering habitat. This species has been documented within the proposed program area during the various surveys and habitat assessments that have been conducted. There is a high probability of short-eared owl being present on site during pre-construction surveys.

northern harrier (nesting) (*Circus cyaneus*)

The northern harrier is a California Species of Special Concern. This species range is across all of North America, wintering across most of the southern United States and into Mexico. It has been documented that the northern harrier is now one of the rarest nesting raptors in southwestern California. Characteristically, this raptor inhabits marshlands, both coastal salt and freshwater, but often forages over grasslands and fields, requiring open habitats for foraging. Northern harrier have been observed foraging within the Project Area, however, there are no records of nesting in the vicinity.

tricolored blackbird (*Agelaius tricolor*)

The tri-colored blackbird is listed under CESA as threatened and is a California Species of Special Concern. The tri-colored blackbird is a permanent resident of California and ranges from the Central Valley and from Sonoma County to San Diego County along the coast. Tri-colored blackbird nests in freshwater marshes typically dominated by cattails (*Typha* ssp.) or tules (*Scirpus* spp.) and forages in freshwater marshes and surrounding upland habitats habitat feeding on insects. Foraging habitat occurs in the proposed program area; however, there is no suitable breeding habitat present. This species was not observed within the Project Area which lacks the freshwater marsh habitat that this species requires.

Special Status Faunal Species Presence To Be Determined:

These species will continue to be studied in order to make an official determination. An addendum to this report will be provided once the results of ongoing small mammal surveys are known.

Pacific Pocket Mouse (*Perognathus longimembris pacificus*)

The Pacific pocket mouse is a federal endangered species and California Species of Special Concern. Pacific pocket mouse is a rare resident and is associated with fine grain, sandy substrates in coastal strand, coastal dunes, river alluvium and coastal sage scrub habitats within approximately 2.5 miles of the ocean in Southern California. The species primarily feeds on seeds. Suitable habitat occurs in the South, Isthmus, and Central Area, as well as in the North Areas within Steamshovel Slough (and other tidal areas). Pacific pocket mouse has not been observed within the Project Area, and has a low potential to be present, since there are no records of the species in Los Angeles County since 1938 and the closest population occurs in the Dana Point headlands located approximately 30 miles to the southeast (USFWS 2010).

south coast marsh vole (*Microtus californicus stephensi*)

The south coast marsh vole is a California Species of Special Concern, and ranges from southwestern Oregon through much of California. This species prefers grassy meadow habitats and feeds on grasses and other green vegetation when available; piles of cuttings are found along its runways. It breeds from September to December. In winter, it eats mostly roots and other underground parts of plants. Major threats are non-native plants that have replaced the plants it needs to survive and introduced non-native animals such as the common house mouse and other non-natives that have displaced it through competition. The salt marsh areas within the project boundary habitat for this species that is in poor condition.

southern California salt marsh shrew (*Sorex ornatus salicornicus*)

The Southern California salt marsh shrew is a California Species of Special Concern that is endemic to Southern California's coastal marshes from Point Mugu, Ventura County to salt marshes around Anaheim Bay and Newport Beach in Orange County. This species appears to prefer coastal marshes. Based on studies of other similar shrews, the Southern California salt marsh shrew like requires fairly dense ground cover, nesting sites above mean high tide free from inundation, and fairly moist surroundings. Major threats are loss of habitat due to development along the coast, and lack of refuge sites above the marshes to escape from flooding during seasonal high tides and periodic storms. The salt marsh Project Area provide potential suitable habitat for this species.

Mitigation Measure BIO-9: Revegetation of Sensitive Natural Communities.

The plant species occurring within the Project Area compose the 15 unique vegetation alliances and 5 land cover types summarized in Table 4 and Exhibit F. Descriptions of these vegetation alliances and land cover types are provided below. Of these, 5 are considered to have a rarity ranking of S3 or higher:

Table 4. Acreages of Vegetation Alliances and Land Cover Types (* = sensitive natural community)

Vegetation Alliance	Acres
Cressa truxillensis - Distichlis spicata Herbaceous Alliance*	1.43
Distichlis spicata Herbaceous Alliance	0.44
Salicornia pacifica Herbaceous Alliance*	20.62
Frankenia salina Herbaceous Alliance*	2.77
Ulva lactuca Algal Mat	1.54
Arthrocnemum subterminale Herbaceous Alliance*	0.31
Heterotheca grandiflora Herbaceous Stand	5.48
Isomeris arborea (*Peritoma arborea*) Shrub Stand	0.04
Isocoma menziesii Shrubland Alliance*	1.52
Baccharis salicifolia Shrubland Alliance*	0.58
Bassia hyssopifolia Semi-Natural Herbaceous Stand	0.96
Brassica nigra and other mustards Herbaceous Semi-Natural Alliance	45.34
Bromus diandrus – Bromus rubens Semi-Natural Herbaceous Stand	4.67
Conium maculatum – Foeniculum vulgare Herbaceous Semi-Natural Alliance	2.91
Mesembryanthemum spp. – *Carpobrotus* spp. Herbaceous Semi-Natural Alliance	4.49
Ornamental	0.35
Disturbed – mowed/disked fire break	0.06
Unvegetated Salt Flat	2.93
Unvegetated Tidal Flat	3.40
Developed	3.70
TOTAL	**103.54**

Cressa truxillensis - Distichlis spicata Herbaceous Alliance (G2S2): A total of 1.43 acres of this alliance was identified within the project boundary (Table 4). Alkali weed (*Cressa truxillensis*, FACW) and salt grass (*Distichlis spicata*, FACW) are characteristically present in this alliance with a variety of species that include alkali heath (*Frankenia Salina,* FACW) and species similar to alkali mallow (*Malvella leprosa,* FACU) which can be found within the Los Cerritos Wetlands however is not present in this portion of the wetlands. This alliance is found on the edges of *Salicornia pacifica* stands within the property but above the high tide line and was observed in areas where hydric soils and wetland hydrology indicators were not present on site. Therefore, areas where this alliance are present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Distichlis spicata Herbaceous Alliance (Salt grass flats): A total of 0.44 acres of this alliance was identified within the project boundary (Table 4). This alliance is dominated by salt grass (*Distichlis spicata*, FAC) with a co-dominance of alkali heath (*Frankenia salina*, FACW), saltwort (*Batis maritima*, OBL), common pickleweed (*Salicornia pacifica*, OBL), alkali weed (*Cressa truxillensis*, FACW), and may also support non-native upland grasses and forbs. This species often forms monotypic stands when it is found above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, in some instances locations where this alliance is present will not meet the ACOE's three criteria threshold for wetland waters of the U.S.

Salicornia pacifica Herbaceous Alliance (Pickleweed mats) (G4S3): A total of 20.62 acres of this alliance was identified within the project boundary (Table 4). This alliance is dominated by Common Pickleweed (*Salicornia pacifica*, OBL) that mixes with other co-dominant species including salt grass (*Distichlis spicata*, FAC), fleshy jaumea (*Jaumea carnosa*, FACW), alkali heath (*Frankenia salina*, FACW), saltwort (*Batis maritima*, OBL) and sea lavender (*Limonium californicum*, FACW). Intermixing with the co-dominant species commonly occurs within the tidal reaches of the site, meanwhile, this species often forms monotypic stands when it is found above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, in some instances locations where this alliance is present will not meet the ACOE's three criteria threshold for wetland waters of the U.S.

Frankenia salina Herbaceous Alliance (G4S3): A total of 2.77 acres of this alliance was identified within the project boundary (Table 4). While alkali heath (*Frankenia salina*, FACW) is common in a variety of alliances, there are numerous locations throughout site where it is found in predominantly monotypic stands. Co-dominant plant species for this alliance commonly include salt grass (*Distichlis spicata*, FAC), alkali heath (*Frankenia salina,* FACW), saltwort (*Batis maritima,* OBL), common pickleweed (*Salicornia pacifica,* OBL), and alkali weed (*Cressa truxillensis,* FACW). This alliance is found above the tidal reaches of the site where hydric soil and wetland hydrology indicators are not present, typically adjacent to pickleweed mats and in upland areas. Therefore, areas where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Ulva lactuca Algal Mat: A total of 1.54 acres of this alliance was identified within the project boundary (Table 4). This alliance is dominated by the non-vascular algae species sea lettuce (*Ulva lactuca*) and is found exclusively within the tidal channel that allows for tidal flow through the culvert connection. This alliance is found below the high tide line where hydric soil and wetland hydrology indicators are present. Therefore, where this alliance is present will meet the ACOE's criteria threshold for waters of the U.S.

Arthrocnemum subterminale Herbaceous Alliance (G4S2): A total of 0.31 acres of this alliance was identified within the project boundary (Table 4). This alliance is dominated by Parish's glasswort (*Arthrocnemum subterminale*, FACW) or co-dominant in the herbaceous and subshrub layers with alkali weed (*Cressa truxillensis,* FACW*),* salt grass (*Distichlis spicata,* FAC)*,* alkali heath (*Frankenia salina,* FACW) *and Common Pickleweed* (*Salicornia pacifica,* OBL). While *Arthrocnemum subterminale* can be found in numerous locations throughout the site the largest and most dominant population occurs near an access road toward the northern end of the project site. This alliance is often found outside of the tidal reaches of the site so its presence does not always meet the minimum threshold as waters of the U.S.

Heterotheca grandiflora Herbaceous Stand: A total of 5.48 acres of this alliance was identified within the project boundary (Table 4). This alliance is dominated by telegraph weed (*Heterotheca grandiflora*, UPL) or co-dominate in the shrub canopy with California sagebrush (*Artemisia californica*, FACU) and coyote brush (*Baccharis pilularis*, FACU). This alliance is found above the tidal reaches of the site in areas where sandy fill material is present and hydric soil and wetland hydrology indicators are typically not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Isomeris arborea (*Peritoma arborea*) Shrub Stand: A total of 0.04 acres of this alliance was identified within the project boundary (Table 4). This alliance is dominated by bladderpod (*Peritoma arborea*, UPL). This alliance is only found in a single patch on the property outside of the tidal reach where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Isocoma menziesii Shrubland Alliance (G3S3): A total of 1.52 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by Menzies's golden bush (*Isocoma menziesii*, FAC) or commonly co-dominated in the shrub canopy by California sagebrush (Artemisia californica, FACU), coyote brush (*Baccharis pilularis*, FACU), and Virginia glasswort (*Salicornia depressa*, FACW). This alliance is found in areas above the high tide line where hydric soil and wetland hydrology indicators are typically not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Baccharis salicifolia Shrubland Alliance (S4G4): A total of 0.58 acres of this alliance was identified within the project boundary (Table 4). In this alliance mulefat (*Baccharis salicifolia, FAC*) is dominant or co-dominant in the shrub canopy with California sagebrush (*Artemisia californica, FACU*)*,* coyote brush (*Baccharis pilularis, FACU*)*,* and arroyo willow (*Salix lasiolepis, FACW*). This alliance is found in a few patches on the property above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Bassia hyssopifolia Semi-Natural Herbaceous Stand: A total of 0.96 acres of this alliance was identified within the project boundary (Table 4). This alliance is dominated by five horn bassia (*Bassia hyssopifolia*, FACU) with other California non-native herbaceous species. On the property these stands occur above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Brassica nigra and other mustards Herbaceous Semi-Natural Alliance: A total of 45.34 acres of this alliance was identified within the project boundary (Table 4). This alliance is dominated by black mustard (*Brassica nigra*, FACU) occurring with other ruderal forbs such as maltese star thistle (*Centaurea melitensis*, FACU) and short podded mustard (*Hirschfeldia incana*, FACU). This alliance occurs above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Bromus diandrus – Bromus rubens Semi-Natural Herbaceous Stand: A total of 4.67 acres of this alliance was identified within the project boundary (Table 4). This alliance is dominated by ripgut brome (*Bromus diandrus*, FACU) occurring with other non-natives in the herbaceous layer. There is a large single occurrence of this alliance on site that is above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Conium maculatum – Foeniculum vulgare Herbaceous Semi-Natural Alliance: A total of 2.91 acres of this alliance was identified within the project boundary (Table 4). This alliance is dominated by poison hemlock (*Conium maculatum*, FACW) and occurs with other non-native plant species in the herbaceous layer. This alliance occurs above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Mesembryanthemum spp. – *Carpobrotus* spp. Herbaceous Semi-Natural Alliance: A total of 4.49 acres of this alliance was identified within the project boundary (Table 4). This alliance is dominant in the herbaceous layer and can contain iceplant (*Carpobrotus edulis, FACU*), crystalline iceplant (*Mesembryanthemum crystallinum,* FACU), or other ice plant taxa. Emergent trees and shrubs may also be present at low cover within this alliance. This alliance occurs above the high tide line where hydric soils and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Ornamental: A total of 0.35 acres of this land cover type was identified within the project boundary (Table 4). This land cover type includes non-native species such as Mexican fan palm (*Washingtonia robusta*, FACW), Brazilian pepper tree (*Schinus terebinthifolia*, FACU), and other various non-native plant species in the shrub and tree stratum. This land cover type occurs primarily around developed areas on the property that are above the high tide line where hydric soils and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Disturbed – mowed/disked fire break: A total of 0.06 acres of this alliance was identified within the project boundary (Table 4). This land cover type consists of a small area adjacent to a perimeter fence line in the upland areas that was disked to reduce the fire risk in the area. This land cover type is above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Unvegetated Salt Flat: A total of 2.93 acres of this land cover type was identified within the project boundary (Table 4). This land cover type consists of areas absent of any vegetation and is above the high tide line but may contain hydric soil indicates such as a salty crust on the soil surface. Given that unvegetated salt flats lack the vegetative cover required to be considered wetland waters, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Unvegetated Tidal Flat: A total of 3.40 acres of this land cover type was identified within the project boundary (Table 4). This land cover type is absent of vegetation but occurs below the high tide line. These areas can show hydric soil and wetland hydrology indicators. Therefore, due a lack of vegetation, where this alliance is present will likely not meet the ACOE's criteria threshold for wetland waters of the U.S. but could qualify as waters of the U.S.

Developed: A total of 3.70 acres of this land cover type was identified within the project boundary (Table 4). This land cover type consists of asphalt roads, concrete pads, established dirt roads and other areas developed prior to acquisition by the LCWA. This land cover type occurs above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Mitigation Measure BIO-10: Jurisdictional Resources Permitting.

The jurisdictional wetland delineation study determined the amount of potential jurisdictional waters of the United States within the Project Area to be 10.69 acres. Within the jurisdictional waters of the United States, 2.44 acres are potentially wetland waters of the United States under section 404 and 8.25 acres are considered potential waters of the United States under section 10. The potential jurisdictional wetlands of the State based on the California Coastal Commission's jurisdiction extends beyond the federal jurisdictional and totals 27.19 acres within the Project Area. California Department of Fish and Wildlife potential jurisdictional area covers 1.42 acres within the CCC jurisdictional boundary. A summary of the jurisdictional waters and wetlands of the U.S. and State, with the corresponding regulatory authority, occurring within the survey area, is provided in Table 5. Additional discussion on the results of the jurisdictional delineation investigation results can be found in the stand-alone report entitled Southern Los Cerritos Wetlands Area: Jurisdictional Wetlands Delineation (Appendix B).

Table 5. Summary of potential jurisdictional waters of the U.S. & State (*= 0.05 acres extend outside of the Project Area; **= 0.02 acres extend outside of the Project Area).

Type of Potential Jurisdictional Waters of the U.S. and State	Regulatory Authority	Acres
Potential Jurisdictional Waters of the U.S.		
Wetland Waters Section 404	ACOE, USFWS, and RWQCB	2.44*
Waters of the U.S. Section 10	ACOE, USFWS, and RWQCB	8.25**
	Subtotal Potential Jurisdictional Waters of the U.S.	10.69
Potential Jurisdictional Wetlands of the State		
Wetland Waters	CCC	27.19
	CDFW	1.42

4.0 Impact Analysis

The construction designs will consider the findings of these surveys in order to avoid and minimize impacts to the existing biological resources. This section provides insight into the potential impacts to special status species, vegetation communities, jurisdictional waters/wetlands, and nesting birds. The mitigation ratios required by the Program EIR are reemphasized.

Impacts to Special Status Species:

<u>**Floral Species**</u>

California boxthorn

California boxthorn is the one perennial species that would require protection. One large individual is present along the small heavily muted portion of the tidal channel in the eastern portion of the Project Area. Efforts should be made to start propagating container stock from this individual since it is located directly next to an asphalt road that will be removed as part of this project. During construction, attempts should be made to salvage this individual and relocate it to existing transition zone habitat within the Project Area. The other California boxthorn occurrence is found in a location that is unlikely to be graded, however, improvements to the tidal prism could lead to higher tides which may possibly inundate the occurrence. Overall, this species will be planted heavily as part of the restoration effort and the potential 7:1 mitigation ratio will be easily met.

southern tarplant

Southern tarplant is found in and around disturbed areas like dirt roadways and in asphalt cracks. It is anticipated that the existing occurrences will be impacted by this project and a Tarplant Mitigation Program should be developed once the extent of the impacts are better understood. This program should include seed collection over at least 2 years in advance of any disturbances. This species will be easily reestablished throughout the restored tidal habitat fringes and the potential 3:1 mitigation ratio will be easily met.

Lewis' evening primrose

Lewis' evening primrose is well established in two relatively large occurrences on sandy deposits, with another smaller occurrence growing in the cracks of an asphalt road. This makes it more challenging to meet the potential 3:1 mitigation ratio. Moreover, the availability of low salinity sandy sediment is limited. Therefore, opportunities to minimize grading or filling of the areas where this plant is established should be explored. Impacts to easternmost occurrence should be avoided if possible since the easternmost occurrence is likely to be impacted by the removal of the road and placement of fill material. Similar to southern tarplant, a Lewis' Evening Primrose Mitigation Program should be developed, and seed collection should be initiated immediately since seed sources for this species are extremely limited.

Faunal Species

Belding's savannah sparrow

The restoration design should make all attempts to minimize impacts to the core breeding habitat area indicated in Exhibit E by incorporation of the geographic data from this report into the design plans. Additionally, potential impacts to this species can be avoided through implementation of the project and associated construction activities outside of the breeding season which is generally accepted to be February 15th-July 15th. Furthermore, any impacts to suitable breeding habitat will be mitigated at a 1:1 ratio, which will be achievable since maximizing tidal salt marsh habitat is one of the project goals. In accordance with Mitigation Measure BIO-3, a Mitigation, Maintenance, and Monitoring Program shall be prepared and approved by CDFW prior to implementation of the restoration project. The proposed program shall be implemented by a qualified restoration ecologist, and at a minimum, shall include success criteria and performance standards for measuring the establishment of Belding's savannah sparrow breeding habitat, responsible parties, maintenance techniques and schedule, 5-year monitoring and reporting schedule, adaptive management strategies, and contingencies. Moreover, in accordance the CESA, an Incidental Take Permit shall be obtained from CDFW if any Belding's savannah sparrow may be impacted during construction or operations of the program.

California least tern

Potential impacts to this species foraging habitat can be avoided through implementation of the project and associated construction activities outside of the breeding season which is generally accepted to be April – August. While breeding is not taking place within the LCW Complex, a colony exists at the Seal Beach National Wildlife Refuge that forages within the Project Area during the breeding season.

American peregrine falcon, osprey, loggerhead shrike, yellow-breasted chat, California brown pelican

Potential impacts to these species are easily avoided since none of them have been documented nesting within the Project Area. The peregrine falcon, osprey and brown pelican are most of observed flying through the site and will not be impacted by construction activity on the ground. Pre-construction surveys focused on loggerhead shrike and yellow-breasted chat should be performed in order to avoid impacts to any area that the species may be actively using for foraging at that time.

Impacts to Nesting Birds

Habitat within the project site has the potential to support a variety of nesting bird species although none were observed (besides BSS) during the project level surveys. Impacts to migratory and resident nesting avian species are prohibited under the MBTA as well as provisions of the California Fish and Wildlife Code. A qualified wetland biologist will be on site during all construction activities to ensure avoidance of nesting birds during all construction activities. Furthermore, the project must strictly adhere to the requirements of Mitigation Measure BIO-4 from the Program EIR.

Impacts to Jurisdictional Wetlands

The extent of impacts from restoration grading activities is not yet determined. Regardless, the jurisdictions for waters and wetlands of the US and State are clearly indicated in the project-level JDR. The project must adhere to the conditions set forth in the Program EIR's Mitigation Measure BIO-10. Essentially, the LCWA must pursue the requisite permits from jurisdictional agencies to ensure that the project is self-mitigating and creates no-net-loss of jurisdiction features.

Impacts to Vegetation Communities

This project will likely result in impacts to sensitive natural communities as part of the restoration process. The exact acreage should be identified before the grading plans for the project are finalized. Per Mitigation Measure BIO-9, Sensitive Natural Communities that will be impacted by the proposed project shall be created within the Project Area at a minimum ratio of 1:1 (area created:area impacted). A mitigation ratio of a minimum 2:1 for natural communities with a rarity ranking of S3 or higher will be incorporated into the restoration designs. Restored Sensitive Natural Communities shall consist of a minimum 60 percent absolute vegetation cover and shall include community-specific growing conditions, such as, similar slope, aspect, elevation, soil, and salinity. This mitigation measure should be easily met since the project aims to restore these sensitive communities in areas that currently are dominated by non-native vegetation alliances.

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Exhibit A

Project Vicinity Map

Datum: NAD 1983

Produced by Hannah Craddock May 4, 2021

Project Vicinity

Southern Los Cerritos Wetlands Restoration Project - Seal Beach, CA

1 inch = 2,000 feet

0 900 1,800 3,600 5,400 7,200 Feet

Project Boundary

Tidal Influence

Exhibit B

Project Site Map

Produced by Hannah Craddock May 13, 2021 Datum: NAD 1983

Project Site

Southern Los Cerritos Wetlands Restoration Project - Seal Beach, CA

1 inch = 458 feet

0 210 420 840 1,260 1,680 Feet

Project Boundary

Tidal Influence

Exhibit C

Burrowing Owl Survey Area Map

Burrowing Owl Survey Area

Southern Los Cerritos Wetlands Restoration Project - Seal Beach, CA

Tidal Influence

Project Area (103.54 acres)

Burrowing Owl Survey Area (6.55 acres)

0 190 380 760 1,140 1,520 Feet

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
August 6, 2021
1 inch = 458 feet

Exhibit D

Special Status Plants Map

Special Status Plants

Southern Los Cerritos Wetlands Restoration Project - Seal Beach, CA

Tidal Influence

Project Area (103.54 acres)

California boxthorn *(Lycium californicum,* 2 Individuals*)*

Southern tarplant *(Centromadia parryi australis,* 1.06 acres*)*

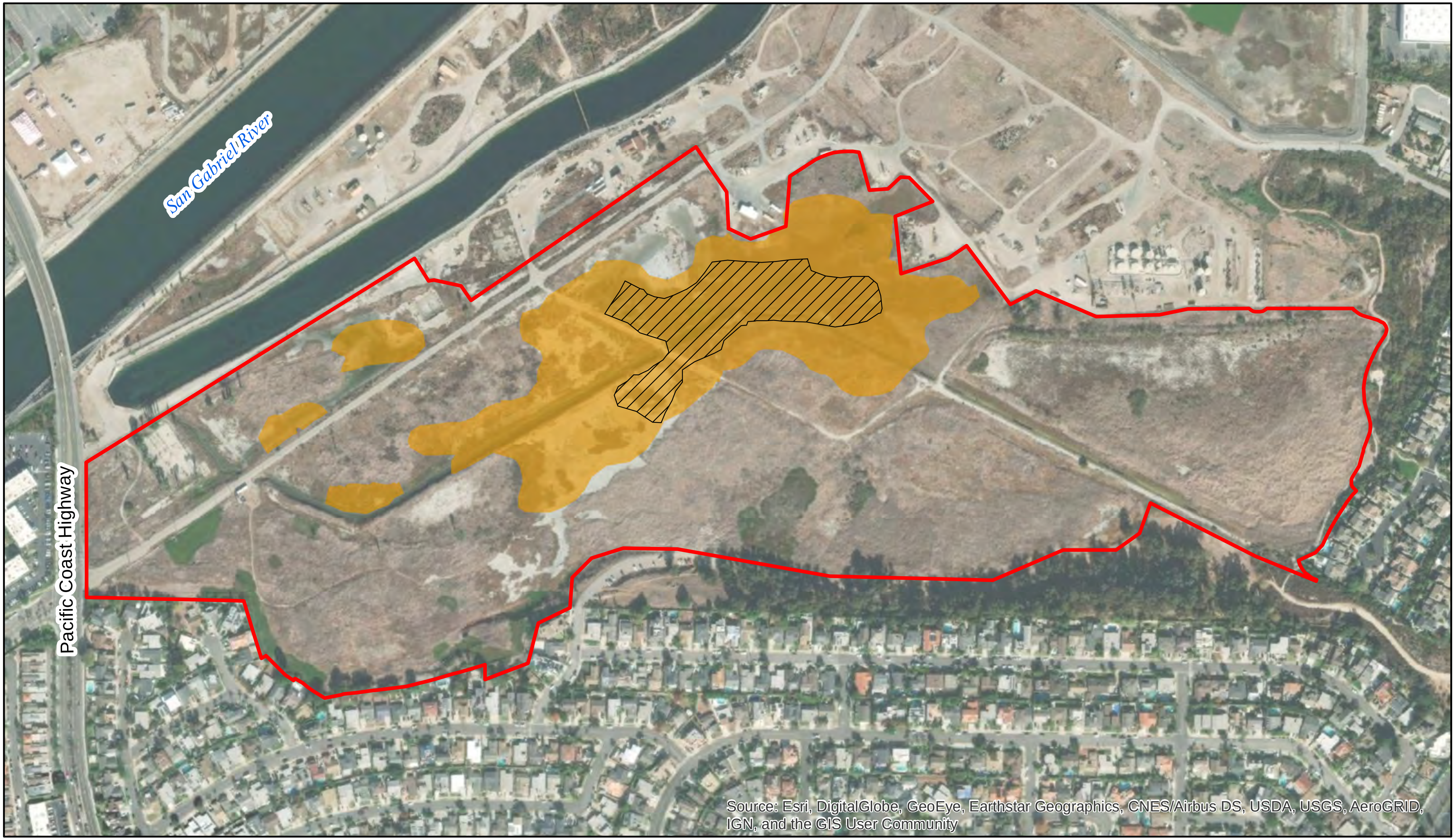
Lewis' evening primrose *(Camissoniopsis lewisii,* 3.76 acres*)*

0 190 380 760 1,140 1,520 Feet

Coordinate System: NAD 1983 2011 StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
July 13, 2021
1 inch = 458 feet

Exhibit E

Belding's Savannah Sparrow Breeding Habitat Map



Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*) Breeding Habitat

Southern Los Cerritos Wetlands Restoration Project - Seal Beach, CA

Project Area (103.54 acres)
Observed Habitat Extent (21.10 acres)
Core Breeding Habitat (4.73 acres)

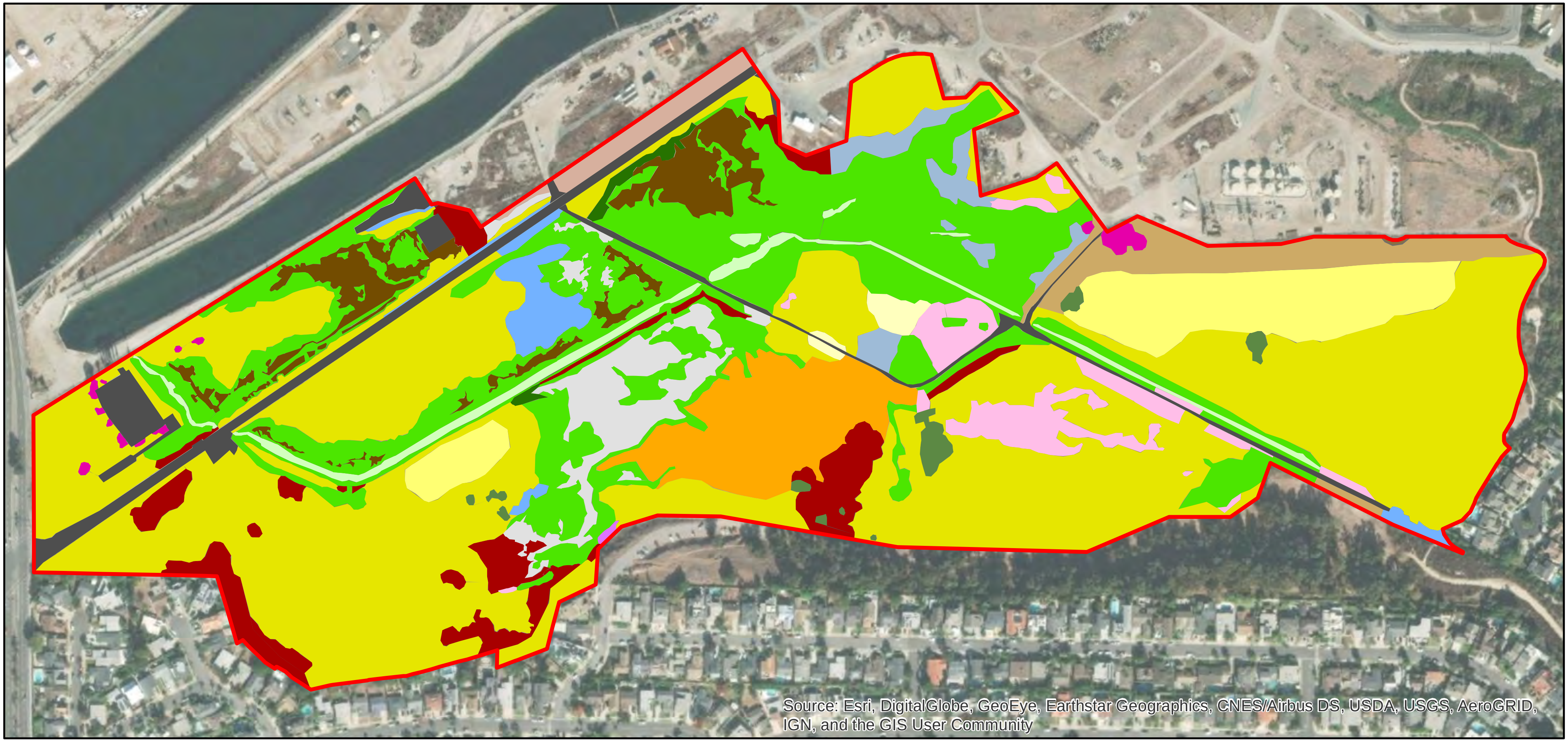
Tidal Influence

0 187.5 375 750 1,125 1,500 Feet

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
August 18, 2021
1 inch = 458 feet

Exhibit F

Vegetation Alliances Map



Vegetation Alliances

Southern Los Cerritos Wetlands Restoration Project - Seal Beach, CA

- Project Area (103.54 acres)
- Cressa truxillensis - Distichlis spicata Herbaceous Alliance*
- Distichlis spicata Herbaceous Alliance
- Salicornia pacifica Herbaceous Alliance*
- Frankenia salina Herbaceous Alliance*
- Ulva lactuca algal mat
- Arthrocnemum subterminale Herbaceous Alliance*
- Heterotheca grandiflora herbaceous stand
- Isomeris arborea shrub stand
- Isocoma menziesii Shrubland Alliance*
- Baccharis salicifolia Shrubland Alliance*
- Bassia hyssopifolia Semi-Natural Herbaceous Stand
- Brassica nigra and other mustards Herbaceous Semi-Natural Alliance
- Bromus diandrus,rubens Semi-Natural Herbaceous Stand
- Conium maculatum - Foeniculum vulgare Herbaceous Semi-Natural Alliance
- Mesembryanthemum spp. - Carpobrotus spp. Herbaceous Semi-Natural Alliance
- Ornamental
- Disturbed - mowed/disked fire break
- Unvegetated salt flat
- Unvegetated tidal flat
- Developed

Asterisks (*) denote sensitive natural communities

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
May 13, 2021
1 inch = 458 feet

0 185 370 740 1,110 1,480 Feet

Appendix A

Faunal Species List

Faunal Species List		
Avifauna		
Common Name	**Genus**	**Species**
Cooper’s hawk	*Accipiter*	*cooperii*
sharp-shinned hawk	*Accipiter*	*striatus*
white-throated swift	*Aeronautes*	*saxatalis*
red-winged blackbird	*Agelaius*	*phoeniceus*
mallard	*Anas*	*platyrhynchos*
green-winged teal	*Anas*	*crecca*
northern pintail	*Anas*	*acuta*
snow goose	*Anser*	*caerulescens*
greater white-fronted goose	*Anser*	*albifrons*
American pipit	*Anthus*	*rubescens*
California scrub-jay	*Aphelocoma*	*californica*
great egret	*Ardea*	*alba*
great blue heron	*Ardea*	*herodias*
Canada goose	*Branta*	*canadensis*
great horned owl	*Bubo*	*virginianus*
bufflehead	*Bucephala*	*albeola*
red-shouldered hawk	*Buteo*	*lineatus*
red-tailed hawk	*Buteo*	*jamaicensis*
green heron	*Butorides*	*virescens*
least sandpiper	*Calidris*	*minutilla*
western sandpiper	*Calidris*	*mauri*
Anna’s hummingbird	*Calypte*	*anna*
Wilson’s warbler	*Cardellina*	*pusilla*
turkey vulture	*Cathartes*	*aura*
hermit thrush	*Catharus*	*guttatus*
Vaux’s swift	*Chaetura*	*vauxi*
killdeer	*Charadrius*	*vociferus*
semipalmated plover	*Charadrius*	*semipalmatus*
northern harrier	*Circus*	*hudsonius*
marsh wren	*Cistothorus*	*palustris*
rock pigeon	*Columba*	*livia*
American crow	*Corvus*	*brachyrhynchos*
common raven	*Corvus*	*corax*
Nuttall’s woodpecker	*Dryobates*	*nuttallii*
downy woodpecker	*Dryobates*	*pubescens*

Common Name	Genus	Species
snowy egret	*Egretta*	*thula*
white-tailed kite	*Elanus*	*leucurus*
northern red bishop	*Euplectes*	*franciscanus*
American kestrel	*Falco*	*sparverius*
peregrine falcon	*Falco*	*peregrinus*
American coot	*Fulica*	*americana*
common loon	*Gavia*	*immer*
common yellowthroat	*Geothlypis*	*trichas*
house finch	*Haemorhous*	*mexicanus*
barn swallow	*Hirundo*	*rustica*
yellow-breasted chat	*Icteria*	*virens*
hooded oriole	*Icterus*	*cucullatus*
bullock's oriole	*Icterus*	*bullockii*
Dark-eyed junco	*Junco*	*hyemalis*
loggerhead shrike	*Lanius*	*ludovicianus*
Western gull	*Larus*	*occidentalis*
California gull	*Larus*	*californicus*
ring-billed gull	*Larus*	*delawarensis*
orange-crowned warbler	*Leiothlypis*	*celata*
long-billed dowitcher	*Limnodromus*	*scolopaceus*
scaly-breasted munia	*Lonchura*	*punctulata*
American wigeon	*Mareca*	*americana*
gadwall	*Mareca*	*strepera*
belted kingfisher	*Megaceryle*	*alcyon*
song sparrow	*Melospiza*	*melodia*
Lincoln's sparrow	*Melospiza*	*lincolnii*
California towhee	*Melozone*	*crissalis*
northern mockingbird	*Mimus*	*polyglottos*
brown-headed cowbird	*Molothrus*	*ater*
ash-throated flycatcher	*Myiarchus*	*cinerascens*
long-billed curlew	*Numenius*	*americanus*
black-crowned night-heron	*Nycticorax*	*nycticorax*
ruddy duck	*Oxyura*	*jamaicensis*
osprey	*Pandion*	*haliaetus*
house sparrow	*Passer*	*domesticus*
Belding's savannah sparrow	*Passerculus*	*sandwichensis beldingii*
brown pelican	*Pelecanus*	*occidentalis*

Common Name	Genus	Species
cliff swallow	*Petrochelidon*	*pyrrhonota*
double-crested cormorant	*Phalacrocorax*	*auritus*
black-headed grosbeak	*Pheucticus*	*melanocephalus*
western tanager	*Piranga*	*ludoviciana*
white-faced ibis	*Plegadis*	*chihi*
black-bellied plover	*Pluvialis*	*squatarola*
eared grebe	*Podiceps*	*nigricollis*
horned grebe	*Podiceps*	*auritus*
pied-billed grebe	*Podilymbus*	*podiceps*
blue-gray gnatcatcher	*Polioptila*	*caerulea*
bushtit	*Psaltriparus*	*minimus*
American avocet	*Recurvirostra*	*americana*
ruby-crowned kinglet	*Regulus*	*calendula*
Say's phoebe	*Sayornis*	*saya*
black phoebe	*Sayornis*	*nigricans*
Allen's hummingbird	*Selasphorus*	*sasin*
rufous hummingbird	*Selasphorus*	*rufus*
yellow-rumped warbler	*Setophaga*	*coronata*
western bluebird	*Sialia*	*mexicana*
northern shoveler	*Spatula*	*clypeata*
lesser goldfinch	*Spinus*	*psaltria*
American goldfinch	*Spinus*	*tristis*
northern rough-winged swallow	*Stelgidopteryx*	*serripennis*
Forster's tern	*Sterna*	*forsteri*
Eurasian collared-dove	*Streptopelia*	*decaocto*
western meadowlark	*Sturnella*	*neglecta*
European starling	*Sturnus*	*vulgaris*
tree swallow	*Tachycineta*	*bicolor*
elegant tern	*Thalasseus*	*elegans*
Bewick's wren	*Thryomanes*	*bewickii*
greater yellowlegs	*Tringa*	*melanoleuca*
willet	*Tringa*	*semipalmata*
house wren	*Troglodytes*	*aedon*
Cassin's kingbird	*Tyrannus*	*vociferans*
western kingbird	*Tyrannus*	*verticalis*
warbling vireo	*Vireo*	*gilvus*
mourning dove	*Zenaida*	*macroura*

Common Name	Genus	Species
white-crowned sparrow	*Zonotrichia*	*leucophrys*
golden-crowned sparrow	*Zonotrichia*	*atricapilla*
Swinhoe's white-eye	*Zosterops*	*simplex*
Herpetofauna		
Common Name	**Genus**	**Species**
California kingsnake	*Lampropeltis*	*californiae*
common side-blotched lizard	*Uta*	*stansburiana*
garden slender salamander	*Batrachoseps*	*major*
southern alligator lizard	*Elgaria*	*multicarinata*
western fence lizard	*Sceloporus*	*occidentalis*
gopher snake	*Pituophis*	*catenifer*
Mammals		
Common Name	**Genus**	**Species**
None Observed		
Fish		
Common Name	**Genus**	**Species**
None Observed		
Invertebrates		
Common Name	**Genus**	**Species**
None Observed		

Appendix B

Southern Los Cerritos Wetlands Area: Jurisdictional Wetlands Delineation

Southern Los Cerritos Wetlands Restoration Project

Jurisdictional Delineation Report

PREPARED FOR:
LOS CERRITOS WETLANDS AUTHORITY
100 Old San Gabriel Canyon Road
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PREPARED BY:

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JULY 2021

Jurisdictional Delineation Report:
Southern Los Cerritos Wetlands Restoration Project

Contents

List of Tables

List of Exhibits

List of Appendices

Acronyms and Abbreviations

ACOE	Army Corps of Engineers
Cal-IPC	California Invasive Plant Council
CCA	California Coastal Act
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CSLC	California State Lands Commission
CPRC	California Public Resource Code
CWA	Clean Water Act
CWC	California Water Code
GPS	Global Positioning System
JDR	Jurisdictional Delineation Report
LCW	Los Cerritos Wetlands
LCWA	Los Cerritos Wetlands Authority
MCVII	*A Manual of California Vegetation, Second Edition*
MHTL	Mean High Tide Line
NWI	National Wetlands Inventory
OHWM	Ordinary High Water Mark
RHA	Rivers and Harbors Act
RWQCB	Regional Water Quality Control Board
SLR	Sea Level Rise
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 Introduction

This report presents the preliminary findings of potential U.S. Army Corps of Engineers (ACOE) and California Coastal Commission (CCC) jurisdiction over the project area associated with the Southern Los Cerritos Wetlands Area. The results of the report will also discuss the potential jurisdictions of California Regional Water Quality Control Board (RWQCB), and California Department of Fish and Wildlife (CDFW).

1.1 Project Location

The project area is primarily located approximately 0.08 miles southeast of the San Gabriel River Pacific Coast Highway Bridge in the City of Seal Beach, California in the County of Orange (Exhibit A). The Project's central geographic location is Latitude 33.751066°; Longitude -118.099411° primarily in section 11 of Township 5 South, and Range 12 West, on the United Stated Geological Survey (USGS) Seal Beach and Los Alamitos 7.5-minute series topographical quadrangles. The project area is bounded by the San Gabriel River to the west, oil extraction operations to the north, and residential neighborhoods and park space to the east and south (Exhibit B). The property is bordered by industrial, open space and residential land uses.

The property is currently accessible from Pacific Coast Highway via 1st street which extends through the property and leads to the neighboring oil operations. This asphalt access road bisects the site and is subject to several easements for other landowners and for the utilities that run parallel to it both above and below ground. The site is currently closed to the public and is only accessible during public programming or with prior approval from the property owner. The main 100-acre parcel is owned by the Los Cerritos Wetlands Authority (LCWA) who controls access to the property's gates that connect to trails and old maintenance roads that traverse the site. A small 5-acre parcel that the project area partially covers is owned by the California State Lands Commission who the LCWA has a long-term access agreement with to manage that property.

1.2 Project Description

The Los Cerritos Wetlands Authority (LCWA) is a governmental entity developed in 2006 by a joint powers agreement between the State Coastal Conservancy, the Rivers and Mountains Conservancy, and the cities of Seal Beach and Long Beach. It was created with the purpose "to provide for a comprehensive program of acquisition, protection, conservation, restoration, maintenance and operation, and environmental enhancement of the Los Cerritos Wetlands area consistent with the goals of flood protection, habitat protection and restoration, and improved water supply, water quality, groundwater recharge, and water conservation." The LCWA has acquired 165 acres of coastal habitat since its inception. This acreage includes the 100-acre South LCWA Site (AKA Hellman Ranch Lowlands) which falls completely within the proposed project boundary. A majority of the site is comprised of native coastal salt marsh habitat as well as areas occupied by non-native plant species alliances. Mixed in with this are features such as a tidal creek, salt flats, tidal flats, utilities, a developed asphalt roadway, dirt maintenance roadways, dumped fill, and various manmade remnants that have accumulated over time. The 103.54 acre project area also includes 3.5 acres of the 5 acre parcel of land owned by the California State Lands Commission with whom the LCWA holds manages a non-exclusive lease agreement to manage the property. The State Lands Parcel Site is comprised of a mix of tidal wetland in the northern portion of the property where the culvert connects to the San Gabriel River. The majority of this parcel is comprised of a concrete pad that is approximately 0.83 acres. The remaining portion to the southern end of the property was also developed and currently occupied by degrading asphalt that is being covered in various non-native plant species as well as patches of the special status plant species Southern Tarplant (*Centromadia parryi* ssp.*australis*).

The Southern Los Cerritos Wetlands Area is part of the first phase of restoration of the overall Los Cerritos Wetlands Complex that encompasses approximately 503 acres of coastal habitat, both land and water. This restoration project area has been subject to historical degradation and fragmentation and is in need of improved tidal connection as well as other restorative measures in order to improve the site's ecological function and protect the local area from sea level rise due to climate change (Coastal Restoration Consultants, 2021).

The purpose of the proposed project is to restore and enhance the ecological and biological function of historic wetland and transitional habitats as well as provide opportunities for public access. This project will design a tidal wetland restoration plan that takes into consideration sea level rise, cultural resources, the local community, and other private and public entities. Dredging, moving of fill, and removal of contaminated material will likely need to take place throughout the site in order to achieve the goal of maximizing contiguous tidal salt marsh habitat. Currently tidal waters enter the project area through an approximately 48-inch-wide culvert connected to the San Gabriel River. While this culvert does provide some tidal prism, it is heavily muted due to the size and position of this culvert. Therefore, the project will be aiming to create improved tidal connections and is targeting the adjacent Haynes Cooling Channel to achieve this objective. Additionally, there are possible opportunities to work with local surrounding landowners to create a more optimal tidal connection that would allow for higher rates of hydrologic exchange between the marsh and the ocean.

2.0 Methodology

2.1 Presurvey Investigations

A distinct project boundary was determined prior to conducting formal investigations in the field for this Jurisdictional Delineation Report (JDR). The extent of the project boundary was designed to encompass all the areas with potential for overlap with the project activities. Once the boundary was finalized, Tidal Influence wetland ecologists closely reviewed former reports, aerial photographs, and topographic maps of the site to determine areas that were critical to investigate in the field. A grid was overlain on the project area and potential sampling points were chosen where the grid intersected areas that were potential waters of the U.S. and State (including wetlands).The National Wetland Inventory (NWI) was also utilized to create a map of potential wetlands (Exhibit C). While the NWI map was helpful to project potential sampling points it was limited in its accuracy and did not fully capture tidal wetlands within the project boundary. Due to this limitation, previous reports investigating the property were used in conjunction with the NWI map to gain a better understanding of where the current wetland areas potentially occurred. Specifically, a Jurisdictional Delineation of Wetlands and Waters of the United States conducted by Chambers Group, Inc in June 1996 was used in conjunction with other literature from the Los Cerritos Wetlands Restoration Project Program EIR (PEIR) to understand and verify locations of jurisdictional areas throughout the project area.

2.2 Field Survey

The fieldwork for this investigation was conducted by Tidal Influence ecologists Eric Zahn, Marcelo Ceballos, Hannah Craddock, Mark Hannaford, Wanisa Jaikwang, and Jesse Aragon on February 19th, February 26th, March 5th, March 12th, and May 24th, 2021. Previous wetland delineation and biological assessment reports were utilized prior to field visits to select initial survey points. The remotely selected points were shifted based on field conditions and the exact locations were documented with a handheld Trimble Geo 7X handheld Global Positioning System (GPS) device with sub-meter accuracy and marked with a flag. All ecological observations were documented during these field surveys.

Vegetation and land cover data collected for the PEIR in 2018 by Coastal Restoration Consultants were used as reference to delineate jurisdictional waters (including wetlands) occurring within the project area on March 12th, 2021. The Jurisdictional Wetlands Determination Report by Chambers Group from 1996 was also referenced during the preliminary literature investigation. This vegetation data was expanded upon during additional biological surveys when newly encountered plant species and/or communities were observed. A total of 18 soil sampling points were analyzed for potential jurisdictional waters/wetlands (Exhibit D). Each of these 18 points were evaluated according to routine wetland delineation procedures described in the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual (Wetland Manual) and the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0.

At each sample point, the existence of significantly disturbed conditions, naturally problematic conditions, and “normal circumstances” were considered and recorded on the Wetlands Determination Data Form for the Arid West Region. All notable site conditions were recorded including observations of recent restoration activity or management of that area as wetlands.

Within an approximately 2-meter squared area around the sample point, the dominant and subdominant plant species were identified, and the wetland indicator status was noted for each plant species. A sampling location was determined to support hydrophytic vegetation if more than 50% of the dominant species were listed as Obligate (OBL), Facultative Wetland (FACW), or Facultative (FAC) species on the Army Corps of Engineers' National Wetland Plant List (Lichvar et al., 2016) or if the hydrophytic plant prevalence index was less than or equal to 3.0.

A soil pit was dug at each of the points to investigate soil characteristics and the potential for hydric soil indicators. All soil pits (field data points for soil inspection and observation) were dug to a depth of 20 inches below natural grade or to the point of obstruction (e.g., compaction or debris) if a 20-inch-deep soil pit was not possible. Soil pits were located in obvious wetland and non-wetland areas to determine the wetland/non-wetland boundary and the presence or absence of hydric soils. Each pit was examined for changes in texture with depth. The depth of each soil texture type was indicated, and soil matrix colors were determined and recorded for each soil texture type according to the Munsell Soil Color Charts (2009). Subsurface soil taken from soil pits was also analyzed visually for redoximorphic features and other hydric soil indicators using *Field Indicators of Hydric Soils in the United States: A guide for Identifying and Delineating Hydric Soils* (USDA, 2006). A sampling location was determined to support hydric soils if at least one hydric soil indicator was present in the soil pit or if problematic hydric soils indicators were observed.

Finally, each sample point was surveyed for the presence of wetland hydrology indicators, including primary indicators like surface water, saturation, biotic crust, salt crust, aquatic invertebrates, and/or other primary wetland hydrology indicators; and secondary indicators like drainage patterns, saturation visible on aerial imagery, and/or other secondary wetland hydrology indicators. Soil pits were utilized to determine the presence or absence of many of these indicators. A sampling location was determined to support wetland hydrology if at least one primary indicator or at least two secondary indicators were observed.

Field data collected by hand on the wetland determination data forms were transcribed to electronic copies during which any existing data gaps were filled and all data was processed to ensure data quality assurance and quality control.

3.0 Regulatory Jurisdictions

The Southern Los Cerritos Wetlands Restoration Project area is located within the city of Seal Beach, California and it contains potential wetland and other aquatic features, environments, and habitats. These waters and wetland features are regulated under federal and state laws. Each of the laws are administered independently and in coordination by the following federal and state agencies: ACOE, United States Fish and Wildlife Service (USFWS), the United States Environmental Protection Agency (USEPA), CCC, CDFW and RWQCB.

If determined applicable by the respective agencies, this JDR provides information for the LCWA to apply for the following authorizations, permits, and policy compliance:

3.1 Federal Regulations

- Section 404 of the Clean Water Act (CWA) (as regulated by ACOE and USEPA)
- Section 401 of the CWA (as regulated by RWQCB)
- Section 10 of the Rivers and Harbors Act (RHA) (as regulated by ACOE)
- Executive Order 11990 (federal protection of wetlands; regulated by relevant federal agencies)

3.2 State of California Regulations

- California Public Resource Code (CPRC) Division 20 Section 30000 et seq. (California Coastal Act; as regulated by the CCC)
- Section 13000 et seq. of the California Water Code (CWC) (the 1969 Porter-Cologne Water Quality Act; as regulated by RWQCB)
- California Fish and Wildlife Code (CFWC) Chapter 6 Section 1600 et seq. (as regulated by CDFW)
- CPRC Division 5 Chapter 7 Section 5810 et seq. (preservation of wetlands; as administered by CDFW and other relevant state resource agencies)
- Executive Order W-59-93 (state policy guidelines for wetlands conservation)

3.3 Description of Federal Regulations

3.3.1 Clean Water Act (CWA)

Pursuant to Section 404 of the CWA, ACOE regulatory jurisdiction is built upon a connection or nexus between the water body and interstate commerce. The connection may be direct, through a tributary system linking a stream channel with navigable waters used in interstate or foreign commerce, or indirect, through a nexus identified in the ACOE regulation. ACOE regulates any activity that would result in the discharge of dredged or fill material into jurisdictional waters of the U.S., which include those waters listed in 33 Code of Federal Regulations 328. ACOE has the principal authority to issue CWA Section 404 Permits with review by the USEPA. The RWQCB certifies that any discharge into jurisdictional waters of the U.S. will comply with state water quality standards, pursuant to Section 401 of the CWA. RWQCB is the lead authority to determine a CWA Section 401 Water Quality Certification or Waiver according to the USEPA.

3.3.2 Rivers and Harbors Act (RHA)

The ACOE regulates discharges of dredged or fill material into waters of the United States. These waters include wetland and non-wetland bodies of water that meet specific criteria. Pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 US Code [u.s.c.] 403), ACOE regulatory jurisdiction, regulates almost all work in, over, and under waters listed as "navigable waters of the U.S." The ACOE regulates activity that results in the alteration of a navigable water of the United States, including the excavation or filling of any such water.

3.3.3 Executive Order 11990

Each federal agency is responsible for preparing the implementing procedures for carrying out the provisions of the Executive Order (EO) 11990. The EO's purpose is to "minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands." Each agency must avoid undertaking, or providing assistance, for any destructive or degrading activity located in wetlands unless the head of the agency finds that there is no "practical alternative" to such activity to the extent permitted by law. Additionally, public review of any plans or proposals for new construction in wetlands must be provided.

3.4 Description of State Regulations

3.4.1 California Coastal Act (CCA)

The California Coastal Commission regulates for coastal resources within the Coastal Zone under jurisdiction of the California Coastal Act of 1976 (CCA), pursuant to Section 30000 et seq. of the CPRC. Of important note for Jurisdictional Delineations of California projects, the CCC retains authorization, permitting, and policy compliance jurisdiction over any portion of a project that is in state waters, on land up to the mean high tide line (MHTL), lands subject to the public trust, or at the discretion of CCC.

3.4.2 Lake and Streambed Alteration Program

The California Department of Fish and Wildlife is authorized to regulate activity that would alter the flow, bed, channel, or bank of streams and lakes, pursuant to Section 1600 et seq. of the CDFW. The channel, bed, or bank of a lake, river, or stream comprises the jurisdictional waters of the state. The CDFW extends its jurisdictional limit to the top of the bank of a stream or lake, or to the continuous outer edge of its riparian extent, whichever is wider.

3.4.3 Porter-Cologne Water Quality Control Act

In addition to the federal CWA regulatory jurisdiction of the RWQCB mentioned above, the RWQCB is authorized to regulate activity that would result in discharge of waste and fill material to waters of California (including saline waters), "isolated" waters and/or wetlands (e.g., vernal pools and seeps), and groundwater within the boundaries of the state (CWC § 13050[e]), pursuant to Section 13000 et seq. of the CWC (the 1969 Porter-Cologne Water Quality Control Act [Porter-Cologne]). RWQCB also adopts and implements water quality control plans that are designed to maintain each region within the state's "unique characteristics" with regard to natural water quality, actual and potential beneficial uses, maintaining water quality, and addressing the water quality problems of that region. Beneficial uses of state waters are identified within the Porter-Cologne Act that may be protected against degradation and include preservation and enhancement of fish, wildlife, designated biological habitats of special significance, and other aquatic resources or preserves.

3.5 Definition of Wetlands

The jurisdictional regulations of the various federal and state agencies are further utilized to establish the appropriate definition of "wetlands" of a particular study site. The project area is subject to the wetland definitions identified by various characteristics as outlined by the United States Army Corps of Engineers, United States Fish and Wildlife Service, the California Coastal Commission and the California Department of Fish and Wildlife. Each agency, working in accordance to their legislative authority, defines "wetlands" differently and each definition is referenced to identify jurisdictional authority.

3.5.1 Federal Wetlands Definitions

The term "waters of the United States" most often encompasses all federal wetlands and is defined in Corps regulations at 33 CFR Part 328.3(a) as:

"(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect foreign commerce including any such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purpose by industries in interstate commerce...

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs (a) (1)-(4) of this section;

(6) The territorial seas;

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1)-(6) of this section."

In the absence of wetlands, the limits of Corps jurisdiction in non-tidal waters, such as intermittent streams, extend to the OHWM which is defined at 33 CFR 328.3(e) as:

> *"...that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."*

Federal definitions of what constitutes "wetlands" are primarily derived from two Federal Agencies: the United States Army Corps of Engineers and the United States Fish and Wildlife Service. The USFWS wetland definition and classification system is based on Classification of Wetland and Deepwater Habitats of the United States (Cowardin et al. 1979); however, the ACOE definition is used for regulatory purposes. Wetland delineations for Section 404 purposes as regulated by the ACOE must be conducted according to the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Regional Supplement ACOE 2006) and the Corps of Engineers 1987 Wetland Delineation Manual. Where there are differences between the two documents, the Regional Supplement takes precedence over the 1987 Manual.

The ACOE defines wetlands as:

> *"Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions."*

A federal jurisdictional wetland delineation states that an area must possess three wetland characteristics: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology. The wetland characteristics have mandatory criteria that must be satisfied for that particular characteristic to be met. The indicators may be analyzed to determine whether the criteria are satisfied and are listed below.

<u>Hydrophytic Vegetation</u>

Hydrophytic vegetation is plant life that is adapted for life in permanently or periodically saturated soil identified according to a wetland indictor category as included on the Army Corps of Engineers' National Wetland Plant List (Lichvar et al., 2016). The different indicator categories are based on the probability of occurrence in wetlands: Obligate Wetlands (OBL), Facultative Wetlands (FACW), Facultative (FAC), Facultative Upland (FACU), and Obligate Upland (UPL). The Obligate Wetlands, Facultative Wetlands and Facultative categories are considered hydrophytic and the delineation of the hydrophytic vegetation is based on more than 50 percent of the plant species identified in these three categories.

If the plant community passes the dominance test or prevalence index, the vegetation is considered hydrophytic. The dominance test uses the "50/20" rule from the Regional Supplement for determining dominant species. The most abundant species that exceed 50 percent of the total sample survey, plus additional species that comprise 20 percent of the total dominance measure, indicate dominance. The prevalence index is a weighted-average wetland indicator status of all plant species in the sampling plot, where each indicator status category is given a numeric code (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5) and weighting is by abundance (percent cover). It is a more comprehensive analysis of the hydrophytic status of the community than one based on just a few dominant species

Vegetation alliances identified on the site follows *A Manual of California Vegetation, Second Edition* (MCV II; Sawyer et al., 2009). The MCV II was also used for the Biological Resources Report prepared for the Project and its use in this report ensures consistency.

Hydric Soils

Soils defined as hydric soils form under conditions of "saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part." Hydric soils are defined when one or more of the following criteria are met: all histels except folistels and histosels except folists; or soils that frequently ponded for long duration or very long duration during the growing season; or soils that are frequently flooded for long duration or very long duration during the growing season. Hydric soils are developed when microbial activity causes oxygen depletion with conditions of saturation and hydrologic inundation. Microbial activity is limited to the growing season and when the soil temperature is above biological zero. The Regional Supplement is used to identify hydric soils under a variety of field indicators that include: hydrogen sulfide generation; accumulation of organic matter; and reduction, translocation, and/or accumulation of iron and other reducible elements.

Wetland Hydrology

Wetland hydrology can be a challenging criterion to measure in the field due to variations in water availability seasonally and annually. Visual observation of inundation or saturation, watermarks, recent sediment deposits, surface scour, and oxidized root channels are some of the indicators used to identify wetland hydrology. Wetland hydrology is satisfied if the area is seasonally inundated or saturated to the surface for a minimum of 14 consecutive days during the growing season.

3.5.2 State of California Definition of Wetlands

The State of California applies a broader definition of what constitutes a "wetland" than the Federal government. Two primary State agencies are responsible for defining "wetlands", the California Coastal Commission and the California Department of Fish and Wildlife. The CDFW essentially relies on the USFWS wetland definition and classification system based on Classification of Wetland and Deepwater Habitats of the United States (Cowardin et al. 1979). The CDFW acts as a primary consultant to the CCC and the CCC regulates wetland delineation within what is identified as the Coastal Zone along the coast of California. Through provisions of the California Coastal Act, jurisdictional wetland delineations within the Coastal Zone are conducted based on the "one-parameter method" to define the presence and jurisdictional extent of state wetlands. Under the CCA, wetlands are defined as follows:

"land within the Coastal Zone [that] may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens".

Additionally, wetlands are further defined as:

"land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats (14 CCR Section 13577)."

Both the Federal and State definitions focus on the three fundamental wetland characteristics: hydrology, soils, and vegetation. While the ACOE definition requires the existence of all three wetland characteristics for an area to be considered a wetland, the CCC's definition of wetlands is based on the existence of only two characteristics: wetland hydrology sufficient to either support a prevalence of hydrophytic vegetation or promote the formation of hydric soils.

It is noted that, under circumstances, reliable indicators of all required characteristics are not necessarily apparent, and areas may be delineated as wetlands by the ACOE on the basis of indicators of only two of the three characteristics. The CCC routinely makes jurisdictional wetlands determinations based on the presence of one characteristic indicator (i.e., wetland soils or vegetation) under the assumption that wetland hydrology must be present in order for the indicator to be present. Nevertheless, the presence of wetland hydrology during some portion of most years is fundamental to the existence of any wetland, and the CCC will sometimes disregard vegetation or soil indicators when there is sufficient evidence to conclusively refute the presence of wetland hydrology.

4.0 Results

Potential jurisdictional waters (including wetlands) occurring within the project area were delineated and mapped based on federal and state delineation guidance, methodology, and regulatory framework and code, as described above. For the purposes of this site, the jurisdictions for ACOE and CCC were determined for the federal and state jurisdictions, respectively. CDFW jurisdictions were also determined for this site due to its proximity and connection to the San Gabriel River. Jurisdiction areas can be seen graphically on the attached aerial maps (Exhibits E, F, G, H, I).

All federal waters and wetlands (including final acreages and types) delineated within this survey area are considered potential waters of the U.S. prior to a formal jurisdictional determination performed by ACOE. The final determination issued by ACOE may remove or include portions of delineated waters documented in this JDR.

The total area of potential waters of the U.S. and State (including wetlands) within the survey area and a general discussion of the policy governing these regulated areas is provided below. Per ACOE mapping guidelines, the results were mapped on a current color aerial photograph at a scale of 1 inch = 200 feet (Exhibit E), however, an overview map of the entire survey area is shown in Exhibit B. Refer to the attached Wetlands Determination Data Forms (Appendix A) for a full description of sample point results.

4.1 Vegetation

A list of hydrophytic plant species identified within the project area is provided in Table 1. A total of 15 vegetation alliances or communities equaling 92.83 acres were identified within the project area that have potential to be defined as containing hydrophytic plant species that when prevalent could potentially meet the criterion for ACOE or CCC jurisdictional wetlands (Table 2, Exhibit J).

Table 1. Hydrophytic plant species identified with the project boundary.

Scientific Name	Common Name	Wetland Indicator Status	Non-Native	Cal-IPC rating
Tree Species Growth Habit				
Eucalyptus globulus	Tasmanian Bluegum	FACU*	X	limited
Myoporum laetum	Ngaio Tree	FACU	X	moderate
Nicotiana glauca	Tree Tobacco	FAC	X	moderate
Phoenix canariensis	Canary Island Palm	FACU*	X	limited
Schinus terebinthifolius	Brazilian Pepper Tree	FAC	X	moderate
Washingtonia robusta	Mexican Fan Palm	FACW	X	moderate
Shrub Species Growth Habit				
Artemisia californica	California Sagebrush	FACU*		
Atriplex lentiformis	Big Saltbush	FAC		
Baccharis pilularis	Coyote Brush	FAC		
Baccharis salicifolia	Mulefat	FAC		
Isocoma menziesii	Menzies' Goldenbush	FAC		
Peritoma arborea	Bladderpod	FACU*		
Ricinus communis	Castor Bean	FACU	X	limited
Herbaceous Species Growth Habit				
Ambrosia psilostachya	Western Ragweed	FACU		
Anemopsis californica	Yerba Mansa	OBL		
Arthrocnemum subterminale	Parish's Glasswort	OBL		
Atriplex semibaccata	Australian Saltbush	FAC	X	moderate
Bassia hyssopifolia	Five Horn Bassia	FACU	X	limited
Batis maritima	Saltwort	OBL		
Brassica nigra	Black Mustard	FACU*	X	
Bromus diandrus	Ripgut Brome	UPL*	X	moderate
Bromus madritensis	Foxtail Brome	FACU*	X	N/A
Camissoniopsis lewisii	Lewis' Evening Primrose	FACU*		
Carpobrotus edulis	Hottentot-fig	FACU*	X	high
Centaurea melitensis	Tocalote	UPL	X	moderate
Centromadia parryi australis	Southern Tarplant	FACW		
Cirsium vulgare	Bull Thistle	FACU	X	moderate
Conium maculatum	Poison Hemlock	FACW	X	moderate
Cressa truxillensis	Alkali Weed	FACW		
Cuscuta salina	Saltmarsh Dodder	FACW		
Distichilis littoralis	Shoregrass	OBL		
Distichlis spicata	Salt Grass	FAC		
Dittrichia graveolens	Stinkwort	UPL	X	moderate
Eleocharis macrostachya	Common Spikerush	FACW		

Scientific Name	Common Name	Wetland Indicator Status	Non-Native	Cal-IPC rating
Herbaceous Species Growth Habit				
Erodium cicutarium	Coastal Heron's Bill	FACU*	X	limited
Frankenia salina	Alkali Heath	FACW		
Foeniculum vulgare	Sweet Fennel	UPL*	X	moderate
Galium angustifolium	Narrowleaf Bedstraw	FACU*		
Glebionis coronaria	Crown Daisy	UPL*	X	limited
Heliotropium curassavicum	Seaside Heliotrope	FACU		
Heterotheca grandiflora	Telegraph Weed	FACU*		
Hirschfeldia incana	Short Podded Mustard	UPL*	X	moderate
Lactuca serriola	Prickly Lettuce	FACU	X	N/A
Laennecia coulteri	Coulter's Horseweed	FAC		
Limonium californicum	California Sealavender	FACW		
Lysimachia arvensis	Scarlet Pimpernel	FAC	X	??
Lycium californicum	California Boxthorn	FAC*		
Marrubium vulgare	White horehound	FACU	X	limited
Malephora crocea	Coppery Mesembryanthemum	FACU	X	watch
Malva parviflora	Cheeseweed Mallow	FACU*	X	N/A
Melilotus albus	White Sweetclover	FACU*	X	N/A
Melilotus indicus	Annual Yellow Sweetclover	FACU	X	N/A
Mesembryanthemum crystallinum	Crystalline Iceplant	FACU	X	moderate
Mesembryanthemum nodiflorum	Slender Leaved Ice Plant	FACU	X	limited
Oxalis pes-caprae	Bermuda Buttercup	FACU*	X	moderate
Polypogon monspeliensis	Rabbit's Foot	FACW	X	limited
Pseudognaphalium luteoalbum	Jersey Cudweed	FACW	X	N/A
Pulicaria paludosa	Spanish False Fleabane	FAC	X	N/A
Raphanus sativus	Wild Radish	FACU*	X	limited
Rumex crispus	Curly Dock	FAC	X	limited
Salicornia bigelovii	Bigelow's Pickleweed	OBL		
Salicornia pacifica	Common Pickleweed	OBL		
Salsola tragus	Russian Thistle	FACU	X	limited
Sonchus oleraceus	Common Sowthistle	UPL	X	N/A
Spergularia marina	Salt Marsh Sand Spurry	OBL		
Symphyotrichum subulatum	Saltmarsh Aster	OBL		
Triglochin concinna	Slender Arrow-Grass	OBL		
Urtica dioica	Stinging nettle	FAC		
Xanthium strumarium	Cocklebur	FAC		

Wetland Indicator Status Abbreviations and Meanings:

OBL – Obligate Wetlands Species. Occur almost always in wetlands.
FACW – Facultative Wetland Species. Usually occur in wetlands, but occasionally found in non-wetlands.
FAC – Facultative Species. Equally likely to occur in wetlands and non-wetlands.
FACU – Facultative Upland Species. Usually occur in non-wetlands but occasionally found in wetlands.
UPL – Obligate Upland Species. Almost always occur under natural conditions in non-wetlands.

** Not listed on National Wetlands List*

Table 2. Total acreages of vegetation alliances and land cover types observed within the project boundary.

Vegetation Alliance	Acres
Cressa truxillensis - Distichlis spicata Herbaceous Alliance	1.43
Distichlis spicata Herbaceous Alliance	0.44
Salicornia pacifica Herbaceous Alliance	20.62
Frankenia salina Herbaceous Alliance	2.77
Ulva lactuca Algal Mat	1.54
Arthrocnemum subterminale Herbaceous Alliance	0.31
Heterotheca grandiflora Herbaceous Stand	5.48
Isomeris arborea (*Peritoma arborea*) Shrub Stand	0.04
Isocoma menziesii Shrubland Alliance	1.52
Baccharis salicifolia Shrubland Alliance	0.58
Bassia hyssopifolia Semi-Natural Herbaceous Stand	0.96
Brassica nigra and other mustards Herbaceous Semi-Natural Alliance	45.34
Bromus diandrus – Bromus rubens Semi-Natural Herbaceous Stand	4.67
Conium maculatum – Foeniculum vulgare Herbaceous Semi-Natural Alliance	2.91
Mesembryanthemum spp. – *Carpobrotus* spp. Herbaceous Semi-Natural Alliance	4.49
Ornamental	0.35
Disturbed – mowed/disked fire break	0.06
Unvegetated Salt Flat	2.93
Unvegetated Tidal Flat	3.40
Developed	3.70
TOTAL	**103.54**

Vegetation Alliance and Land Cover Type Descriptions

Cressa truxillensis - Distichlis spicata Herbaceous Alliance: A total of 1.43 acres of this alliance was identified within the project boundary (Table 2). Alkali weed (*Cressa truxillensis*, FACW) and salt grass (*Distichlis spicata*, FACW) are characteristically present in this alliance with a variety of species that include alkali heath (*Frankenia Salina,* FACW) and species similar to alkali mallow (*Malvella leprosa,* FACU) which can be found within the Los Cerritos Wetlands however is not present in this portion of the wetlands. This alliance is found on the edges of *Salicornia pacifica* stands within the property but above the high tide line and was observed in areas where hydric soils and wetland hydrology indicators were not present on site. Therefore, areas where this alliance are present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Distichlis spicata Herbaceous Alliance (Salt grass flats): A total of 0.44 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by salt grass (*Distichlis spicata*, FAC) with a co-dominance of alkali heath (*Frankenia salina*, FACW), saltwort (*Batis maritima*, OBL), common pickleweed (*Salicornia pacifica*, OBL), alkali weed (*Cressa truxillensis*, FACW), and may also support non-native upland grasses and forbs. This species often forms monotypic stands when it is found above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, in some instances locations where this alliance is present will not meet the ACOE's three criteria threshold for wetland waters of the U.S.

Salicornia pacifica Herbaceous Alliance (Pickleweed mats): A total of 20.62 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by Common Pickleweed (*Salicornia pacifica*, OBL) that mixes with other co-dominant species including salt grass (*Distichlis spicata*, FAC), fleshy jaumea (*Jaumea carnosa*, FACW), alkali heath (*Frankenia salina*, FACW), saltwort (*Batis maritima*, OBL) and sea lavender (*Limonium californicum*, FACW). Intermixing with the co-dominant species commonly occurs within the tidal reaches of the site, meanwhile, this species often forms monotypic stands when it is found above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, in some instances locations where this alliance is present will not meet the ACOE's three criteria threshold for wetland waters of the U.S.

Frankenia salina Herbaceous Alliance: A total of 2.77 acres of this alliance was identified within the project boundary (Table 2). While alkali heath (*Frankenia salina*, FACW) is common in a variety of alliances, there are numerous locations throughout site where it is found in predominantly monotypic stands. Co-dominant plant species for this alliance commonly include salt grass (*Distichlis spicata*, FAC), alkali heath (*Frankenia salina,* FACW), saltwort (*Batis maritima,* OBL), common pickleweed (*Salicornia pacifica,* OBL), and alkali weed (*Cressa truxillensis,* FACW). This alliance is found above the tidal reaches of the site where hydric soil and wetland hydrology indicators are not present, typically adjacent to pickleweed mats and in upland areas. Therefore, areas where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Ulva lactuca Algal Mat: A total of 1.54 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by the non-vascular algae species sea lettuce (*Ulva lactuca*) and is found exclusively within the tidal channel that allows for tidal flow through the culvert connection. This alliance is found below the high tide line where hydric soil and wetland hydrology indicators are present. Therefore, where this alliance is present will meet the ACOE's criteria threshold for waters of the U.S.

Arthrocnemum subterminale Herbaceous Alliance: A total of 0.31 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by Parish's glasswort (*Arthrocnemum subterminale*, FACW) or co-dominant in the herbaceous and subshrub layers with alkali weed (*Cressa truxillensis,* FACW*),* salt grass (*Distichlis spicata,* FAC)*,* alkali heath (*Frankenia salina,* FACW) *and Common Pickleweed* (*Salicornia pacifica,* OBL). While *Arthrocnemum subterminale* can be found in numerous locations throughout the site the largest and most dominant population occurs near an access road toward the northern end of the project site. This alliance is often found outside of the tidal reaches of the site so its presence does not always meet the minimum threshold as waters of the U.S.

Heterotheca grandiflora Herbaceous Stand: A total of 5.48 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by telegraph weed (*Heterotheca grandiflora*, UPL) or co-dominate in the shrub canopy with California sagebrush (*Artemisia californica*, FACU) and coyote brush (*Baccharis pilularis*, FACU). This alliance is found above the tidal reaches of the site in areas where sandy fill material is present and hydric soil and wetland hydrology indicators are typically not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Isomeris arborea (*Peritoma arborea*) Shrub Stand: A total of 0.04 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by bladderpod (*Peritoma arborea*, UPL). This alliance is only found in a single patch on the property outside of the tidal reach where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Isocoma menziesii Shrubland Alliance: A total of 1.52 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by Menzies's golden bush (*Isocoma menziesii*, FAC) or commonly co-dominated in the shrub canopy by California sagebrush (Artemisia californica, FACU), coyote brush (*Baccharis pilularis*, FACU), and Virginia glasswort (*Salicornia depressa*, FACW). This alliance is found in areas above the high tide line where hydric soil and wetland hydrology indicators are typically not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Baccharis salicifolia Shrubland Alliance: A total of 0.58 acres of this alliance was identified within the project boundary (Table 2). In this alliance mulefat (*Baccharis salicifolia, FAC*) is dominant or co-dominant in the shrub canopy with California sagebrush (*Artemisia californica, FACU*), coyote brush (*Baccharis pilularis, FACU*), and arroyo willow (*Salix lasiolepis, FACW*). This alliance is found in a few patches on the property above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Bassia hyssopifolia Semi-Natural Herbaceous Stand: A total of 0.96 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by five horn bassia (*Bassia hyssopifolia*, FACU) with other California non-native herbaceous species. On the property these stands occur above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Brassica nigra and other mustards Herbaceous Semi-Natural Alliance: A total of 45.34 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by black mustard (*Brassica nigra*, FACU) occurring with other ruderal forbs such as maltese star thistle (*Centaurea melitensis*, FACU) and short podded mustard (*Hirschfeldia incana*, FACU). This alliance occurs above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Bromus diandrus – Bromus rubens Semi-Natural Herbaceous Stand: A total of 4.67 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by ripgut brome (*Bromus diandrus*, FACU) occurring with other non-natives in the herbaceous layer. There is a large single occurrence of this alliance on site that is above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Conium maculatum – Foeniculum vulgare Herbaceous Semi-Natural Alliance: A total of 2.91 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by poison hemlock (*Conium maculatum*, FACW) and occurs with other non-native plant species in the herbaceous layer. This alliance occurs above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Mesembryanthemum spp. – *Carpobrotus* spp. Herbaceous Semi-Natural Alliance: A total of 4.49 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominant in the herbaceous layer and can contain iceplant (*Carpobrotus edulis, FACU*), crystalline iceplant (*Mesembryanthemum crystallinum, FACU*), or other ice plant taxa. Emergent trees and shrubs may also be present at low cover within this alliance. This alliance occurs above the high tide line where hydric soils and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Ornamental: A total of 0.35 acres of this land cover type was identified within the project boundary (Table 2). This land cover type includes non-native species such as Mexican fan palm (*Washingtonia robusta*, FACW), Brazilian pepper tree (*Schinus terebinthifolia*, FACU), and other various non-native plant species in the shrub and tree stratum. This land cover type occurs primarily around developed areas on the property that are above the high tide line where hydric soils and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Disturbed – mowed/disked fire break: A total of 0.06 acres of this alliance was identified within the project boundary (Table 2). This land cover type consists of a small area adjacent to a perimeter fence line in the upland areas that was disked to reduce the fire risk in the area. This land cover type is above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Unvegetated Salt Flat: A total of 2.93 acres of this land cover type was identified within the project boundary (Table 2). This land cover type consists of areas absent of any vegetation and is above the high tide line but may contain hydric soil indicates such as a salty crust on the soil surface. Given that unvegetated salt flats lack the vegetative cover required to be considered wetland waters, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Unvegetated Tidal Flat: A total of 3.40 acres of this land cover type was identified within the project boundary (Table 2). This land cover type is absent of vegetation but occurs below the high tide line. These areas can show hydric soil and wetland hydrology indicators. Therefore, due a lack of vegetation, where this alliance is present will likely not meet the ACOE's criteria threshold for wetland waters of the U.S. but could qualify as waters of the U.S.

Developed: A total of 3.70 acres of this land cover type was identified within the project boundary (Table 2). This land cover type consists of asphalt roads, concrete pads, established dirt roads and other areas developed prior to acquisition by the LCWA. This land cover type occurs above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

4.2 Soils

The project site is composed of five types of soils that include: Balcom clay loam, Bolsa silty clay loam, Bolsa drained-Typic Xerorthents, Myford loamy sand, and Urban land of dredged fill substratum (USDA, 2021; Appendix B). Most of the project site is covered by Bolsa drained-Typic Xerorthents and Bolsa silty clay loam. These determinations are also consistent with previous investigation that have taken place on site.

Bolsa drained-Typic Xerorthent soils consist typically of dredge spoils and are somewhat poorly draining, typically occur in filled marshland and tidal marshes and consist of coarse to loamy grain sizes. The average slope in areas with Bolsa drained-Typic Xerorthent soils range from 0 to 2 percent. Bolsa silty clay loam soils consist of fine to silty grain sizes, are somewhat poorly drained and occur in coastal plain areas. Balcom clay loam soils typically exist along hill slopes and drain well. The average slope in areas with Balcom clay loam soils range from 15 to 30 percent. Myford loamy sand soils have moderately well-draining soils, occur in areas with slopes of 2 to 9 percent, and occur along terraces and backslopes. Urban land of dredged fill substratum soils consist of dredged fill and occur in areas with 0 to 2 percent slopes. (USDA, 2021)

The locations of the 18 soil pits used to investigate the presence of hydric soil are depicted in Exhibit D and photographs are displayed in Appendix C. The soil pit locations were chosen to determine if jurisdictional wetlands extended above the Ordinary High Water Mark (OHWM) where indicators of hydrophytic vegetation appeared to be present. Indicators for hydric soils were found in pits 2, 3, 5, 6, 9, 16, and 18. All soil pits were done in Bolsa-type soils, with soil pits 1 and 7 through 18 collected in Bolsa drained-Typic Xerorthents and soil pits 2 through 6 taken in Bolsa silty clay loam. The leading hydric soil indicators were the presence of Redox Dark Surface (F6) and Sandy Redox (S5). Furthermore, no instances of naturally problematic soils were identified, however all 18 locations (sample points 1 through 18) exhibited soils that were identified to be significantly disturbed. This disturbance was indicated by the presence of debris in the form of glass, gravel, debris, and asphalt.

4.3 Hydrology

The presence of wetland hydrology indicators is evident around the entire perimeter of the project area’s tidal reaches and is most notably observed by the presence of high tide line water marks and tidal drainages. Of the 18 locations surveyed for the presence of wetlands hydrology, sample points 2, 3, 5, 6, 9, 11, 12, 13, 14, 16, and 18 contained indicators. Of these points, none were within the reach of the highest high tide. The mean high tide line was not delineated in the field due to the fact that this boundary is encompassed by the limits of Section 404 jurisdiction that extends to the highest high-water line.

A total of 3 land cover types were found to contain wetlands hydrology indicators:

Unvegetated Flats: A total of 6.33 acres of this land cover type is found on the site separated into three distinct locations throughout the project area, some of which is tidally influenced, and the remaining is above high tide lines. This land cover type is predominantly fill consisting of a very high salt content that has resulted in the lack of vegetation establishment with some of it being intertidal and some being non-tidal. Wetland hydrology indicators most common on this land cover type was surface soil cracks and salt crust. Most of this unvegetated land cover type is found above the high-tide line and therefore is seasonally flooded by rainfall or other non-tidal inputs and qualifies as non-wetland waters of the U.S.

Southern Coastal Salt Marsh: A total of 25.57 acres of this land cover type is found on the site adjacent to the tidal channel that flows through the project area. A majority of this land cover type is under both federal and state jurisdiction. Most of this vegetated land cover type is found below the high-tide line and therefore is inundated regularly and qualifies as wetland waters of the U.S.

Subtidal Marine: A total of 1.42 acres of this land cover type is found in the form of a tidal channel that nearly bisects the entire project area. All of this land cover type is found below the high tide line and qualifies as waters of the U.S.

5.0 Jurisdictional Determinations

5.1 Jurisdictional Waters of the U.S. and State

The extent of the potential jurisdictional waters of the United States within the project area is 10.69 acres. Within the jurisdictional waters of the United States, 2.44 acres are potentially wetland waters of the United States. The potential jurisdictional wetlands of the State based on the California Coastal Commission's jurisdiction extends beyond the federal jurisdictional and total 27.19 acres within the project area. California Department of Fish and Wildlife potential jurisdictional wetlands covers 1.42 acres within the CCC jurisdictional boundary. A summary of the jurisdictional waters and wetlands of the U.S. and State, with the corresponding regulatory authority, occurring within the survey area, is provided in Table 3 and mapped in Exhibit E.

Table 3. Summary of potential jurisdictional waters of the U.S. & State (*= 0.05 acres extend outside of the project area; **= 0,02 acres extend outside of the project area).

Type of Potential Jurisdictional Waters of the U.S. and State	Regulatory Authority	Acres
Potential Jurisdictional Waters of the U.S.		
Wetland Waters Section 404	ACOE, USFWS, and RWQCB	2.44*
Waters of the U.S. Section 10	ACOE, USFWS, and RWQCB	8.25**
	Subtotal Potential Jurisdictional Waters of the U.S.	*10.69*
Potential Jurisdictional Wetlands of the State		
Wetland Waters	CCC	27.19
	CDFW	1.42

5.2 ACOE Jurisdiction

5.2.1 ACOE Section 10 Jurisdiction

The project area has a direct connection to the San Gabriel River which is a navigable water of the U.S. that is an extension of the Pacific Ocean (a navigable water of the U.S.). Thus, the marine water within the project area is considered as waters of the U.S. and is subject to ACOE jurisdiction to the mean high-water line under Section 10 of the Rivers and Harbors Act (Exhibit F). This amounts to 8.25 acres of waters of the U.S. on site under the Section 10 definition (Table 3). This amount is lower than previous investigation including the 1995 Chambers Jurisdiction Wetlands Determination which is likely due to habitats shifting overtime due to tidal muting as well as changes in the definitions and determination process of what is considered waters of the U.S.

5.2.2 ACOE Section 404 Jurisdiction

Due to the direct connection with the San Gabriel River, the marine water in the project area is considered as waters of the U.S. and is subject to ACOE jurisdiction at least to the high tide line under Section 404 of the Clean Water Act. There are locations on site where both wetland vegetation and soils are present above the OHWM, so ACOE jurisdiction extends beyond the observed OHWM and are considered as Wetland Waters (Exhibit G). These Wetland Waters account for 2.44 acres on site. This is a decrease compared to previous investigations of the site, but this again is due to habitats shifting over time due to drought conditions as well as changes in the definitions and determination process of what is considered Wetland Waters of the U.S.

Pursuant to the Clean Water Act, ACOE will assert jurisdiction over traditional navigable waters and their adjacent wetlands. This site has a well-documented direct connection to a designated navigable water of the United States. Due to this connection, ACOE will likely verify that a “significant nexus determination” is not required to determine the jurisdictional status of this site. There is a total of 10.69 acres of waters potentially subject to ACOE jurisdiction, of which 8.25 acres is OHWM/Waters of the US and 2.44 acres are wetland waters of the United States. A map of potential ACOE jurisdictional areas is provided in Exhibit E and summarized in Table 3.

5.3 CDFW Jurisdiction

CDFW asserts jurisdiction only over wetland areas that are a part of a river, stream, or lake as defined by CDFW. There is potential that CDFW could determine that this association is present within the survey area due to the connection of the site with the San Gabriel River as well as the overall San Gabriel River Watershed A map showing the potential areas that could be under CDFW jurisdiction is attached as Exhibit H.

5.4 CCC Jurisdiction

Pursuant to the California Coastal Act the CCC will assert jurisdiction over all of the areas satisfying the ACOE jurisdictional criteria for waters and wetlands of the United States. This jurisdictional area usually tends to be more inclusive and extensive than that of ACOE due to the CCC employment of a “one-parameter” approach to delineating jurisdictional wetlands. As described previously CCC wetlands need only contain wetlands hydrology and, hydrophytic vegetation, or hydric soils. Within the project area a total of 27.19 acres are potentially subject to CCC wetland jurisdiction, equaling 16.50 acres more than that of ACOE. This difference is due to areas existing where salt marsh (wetland) vegetation or salt flat habitat extended beyond the limit of the highest high-water line. A map of potential CCC jurisdictional areas is provided in Exhibit I and summarized in Table 3. The 1996 delineation found at total of 23.2 acres of CCC jurisdiction and therefore a larger CCC jurisdiction was identified by this investigation.

6.0 Literature Cited

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Exhibit A

Project Vicinity Map

Produced by Hannah Craddock May 4, 2021 Datum: NAD 1983

Project Vicinity

Southern Los Cerritos Wetlands Area - Seal Beach, CA

1 inch = 2,000 feet

0 900 1,800 3,600 5,400 7,200 Feet

Project Boundary

Tidal Influence

Exhibit B

Project Site Map

Project Site

Southern Los Cerritos Wetlands Area - Seal Beach, CA

1 inch = 458 feet

0 210 420 840 1,260 1,680 Feet

Project Boundary

Tidal Influence

Exhibit C

NWI Potential Wetlands Map

LCWA South Area

May 14, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Exhibit D

Soil Sample Locations Map

Soil Sample Locations

Southern Los Cerritos Wetlands Area - Seal Beach, CA

0 180 360 720 1,080 1,440 Feet

Survey Area (103.54 acres)

Soil Sample Locations

Tidal Influence

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
May 11, 2021
1 inch = 458 feet

Exhibit E

Jurisdictional Wetland Delineation Map

Jurisdictional Wetland Delineation

Southern Los Cerritos Wetlands Area - Seal Beach, CA

0 180 360 720 1,080 1,440 Feet

Survey Area (103.54 acres)

Jurisdictional Waters of the U.S. (8.29 acres)

Jurisdictional Wetland Waters of the U.S. (2.44 acres)

Control Points

Wetland Sampling Point

Upland Sampling Point

Tidal Influence

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
June 17, 2021
1 inch = 458 feet

Exhibit F

Jurisdictional Waters of the U.S. Map

Jurisdictional Waters of the U.S.

Southern Los Cerritos Wetlands Area - Seal Beach, CA

Survey Area (103.54 acres)

Jurisdictional Waters of the U.S. (8.25 acres)

0 185 370 740 1,110 1,480 Feet

Tidal Influence

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
June 17, 2021
1 inch = 458 feet

Exhibit G

Jurisdictional Wetland Waters of the U.S. Map

Jurisdictional Wetland Waters of the U.S.

Southern Los Cerritos Wetlands Area - Seal Beach, CA

Survey Area (103.54 acres)

Jurisdictional Wetland Waters of the U.S. (2.44 acres)

0 185 370 740 1,110 1,480 Feet

Tidal Influence

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
June 17, 2021
1 inch = 458 feet

Exhibit H

Potential CDFW Jurisdictional Wetlands Map

Potential California Department of Fish and Wildlife Jurisdictional Wetlands

Southern Los Cerritos Wetlands Area - Seal Beach, CA

Survey Area (103.54 acres)

Potential CDFW Jurisdictional Wetlands (1.42 acres)

0 185 370 740 1,110 1,480 Feet

Tidal Influence

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
June 17, 2021
1 inch = 458 feet

Exhibit I

CCC Jurisdictional Wetlands Map

California Coastal Commission Jurisdictional Wetlands

Southern Los Cerritos Wetlands Area - Seal Beach, CA

Survey Area (103.54 acres)

CCC Jurisdictional Wetlands (27.19 acres)

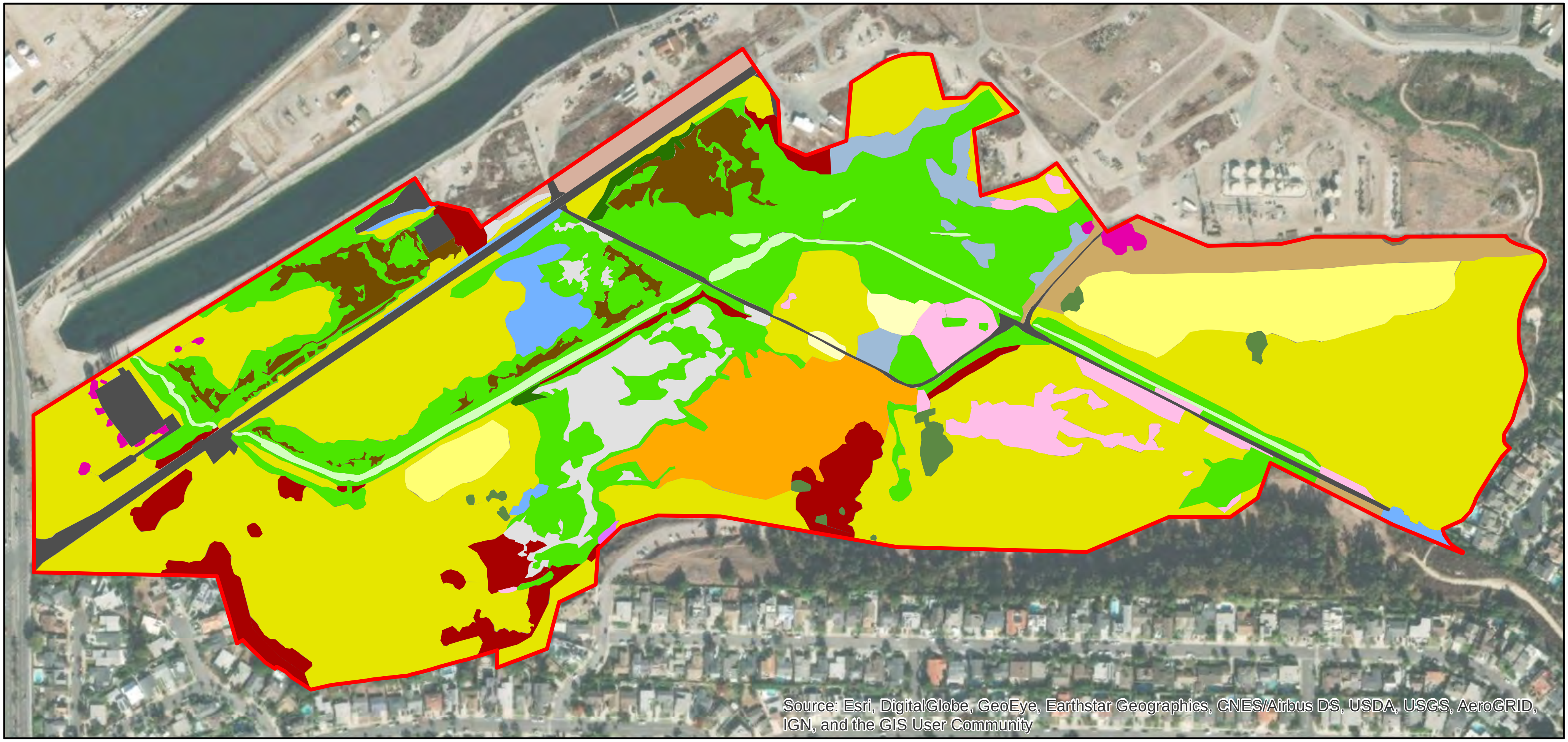
0 185 370 740 1,110 1,480 Feet

Tidal Influence

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
June 17, 2021
1 inch = 458 feet

Exhibit J

Vegetation Alliances Map



Vegetation Alliances

Southern Los Cerritos Wetlands Area - Seal Beach, CA

- Survey Area (103.54 acres)
- Cressa truxillensis - Distichlis spicata Herbaceous Alliance
- Distichlis spicata Herbaceous Alliance
- Sarcocornia pacifica Herbaceous Alliance
- Frankenia salina Herbaceous Alliance
- Ulva lactuca algal mat
- Arthrocnemum subterminale Herbaceous Alliance
- Heterotheca grandiflora herbaceous stand
- Isomeris arborea shrub stand
- Isocoma menziesii Shrubland Alliance
- Baccharis salicifolia Shrubland Alliance
- Bassia hyssopifolia Semi-Natural Herbaceous Stand
- Brassica nigra and other mustards Herbaceous Semi-Natural Alliance
- Bromus diandrus,rubens Semi-Natural Herbaceous Stand
- Conium maculatum - Foeniculum vulgare Herbaceous Semi-Natural Alliance
- Mesembryanthemum spp. - Carpobrotus spp. Herbaceous Semi-Natural Alliance
- Ornamental
- Disturbed - mowed/disked fire break
- Unvegetated salt flat
- Unvegetated tidal flat
- Developed

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
May 13, 2021
1 inch = 458 feet

Tidal Influence

0 185 370 740 1,110 1,480 Feet

Appendix A

Wetland Determination Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 1

Investigator(s): Eric Zahn, Mark Hanneford, Marcelo Ceballos Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): LRRC Lat: 33.751714 N Long: -118.095969 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerothents dredged spoil-Typic Fluvaquents comp NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	✓	
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 2m)			
1. Baccharis salicofolia	60	X	FAC
2.			
3.			
4.			
5.			
	60 = Total Cover		
Herb Stratum (Plot size: 2m)			
1. Melilotus indicus	5		FACU
2. Conium maculata	35		FACW
3.			
4.			
5.			
6.			
7.			
8.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	35	x 2 = 70
FAC species	60	x 3 = 180
FACU species	5	x 4 = 20
UPL species		x 5 =
Column Totals:	100 (A)	270 (B)

Prevalence Index = B/A = 2.7

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-22	2.5Y, 3/2	100	N/A				Sandy	clay balls

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______
Water Table Present? Yes ______ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sandy top layer

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authroity State: CA Sampling Point: 2

Investigator(s): Eric Zahn, Mark Hannaford, Marcelo Ceballos Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR): LRRC Lat: 33.752207 N Long: -118.09361 W Datum: WGS84

Soil Map Unit Name: Bolsa silty clay loam, drained NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ___	Is the Sampled Area within a Wetland? Yes ✓ No ___
Hydric Soil Present?	Yes ✓ No ___	
Wetland Hydrology Present?	Yes ✓ No ___	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Conium maculatum	75	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	75		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	75	x 2 = 150
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	75 (A)	150 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
20	7.5YR, 3/1	98	7.5YR, 5/8	2	D	PL	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 3

Investigator(s): Eric Zahn, Mark Hannaford, Marcelo Ceballos Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): LRRC Lat: 33.752238 N Long: -118.093484 W Datum: WGS84

Soil Map Unit Name: Bolsa silty clay loam, drained NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ___	**Is the Sampled Area within a Wetland?** **Yes** ✓ **No** ___
Hydric Soil Present?	Yes ✓ No ___	
Wetland Hydrology Present?	Yes ✓ No ___	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Frankenia salinas	50	x	FACW
2. Bassia hyssopifolia	50	x	FACU
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	50	x 2 = 100
FAC species		x 3 =
FACU species	50	x 4 = 200
UPL species		x 5 =
Column Totals:	100 (A)	300 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
21	2.5YR, 2.5/1	95	7.5YR, 3/4	5	C	PL	Loamy Cl	Loamy Clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
✓ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
✓ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______
Water Table Present? Yes ______ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 4

Investigator(s): Eric Zahn, Mark Hannaford, Marcelo Ceballos Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): LRRC Lat: 33.751339 N Long: -118.094047 W Datum: WGS84

Soil Map Unit Name: Bolsa silty clay loam, drained NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____ No ✓	
Wetland Hydrology Present?	Yes ____ No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: 2m)			
1. Baccharis salicofolia	35		FAC
2.			
3.			
4.			
5.			
= Total Cover	35		
Herb Stratum (Plot size: 2m)			
1. Brassica nigra	25		UPL
2. Ambrosia psilostachya	5		FACU
3. Melilotus indicus	25		FACU
4.			
5.			
6.			
7.			
8.			
= Total Cover	55		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species	35	x 3 = 105
FACU species	30	x 4 = 120
UPL species	25	x 5 = 125
Column Totals:	90 (A)	350 (B)

Prevalence Index = B/A = 3.89

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
24	2.5Y/3-2	100					sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ____________

Water Table Present? Yes ______ No ✓ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ____________

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area   City/County: Seal Beach/Orange County   Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authority   State: CA   Sampling Point: 5

Investigator(s): Eric Zahn, Mark Hannaford, Marcelo Ceballos   Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): terrace   Local relief (concave, convex, none): none   Slope (%): 1

Subregion (LRR): LRRC   Lat: 33.750882 N   Long: -118.093482 W   Datum: WGS84

Soil Map Unit Name: Bolsa silty clay loam, drained   NWI classification: PEMC1x

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed?   Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?   (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?	✓	
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Mesembryanthemum nodiflorum	63	x	FACU
2. Laennecia coulteri	35		FAC
3. Brassica nigra	2		UPL
4.			
5.			
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0   % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	35	x 3 =	105
FACU species	63	x 4 =	252
UPL species	2	x 5 =	10
Column Totals:	100 (A)		367 (B)

Prevalence Index = B/A = 3.67

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
16	5Y, 4/2	90	5YR, 3/4	10	C	PL	Sandy/Cl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
✓ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
✓ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
✓ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______
Water Table Present? Yes ______ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): 0-16

Wetland Hydrology Present? Yes ✓ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 6

Investigator(s): Eric Zahn, Mark Hanneford, Marcelo Ceballos Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 2

Subregion (LRR): LRRC Lat: 33.750888 N Long: -118.093218 W Datum: WGS84

Soil Map Unit Name: Bolsa silty clay loam, drained NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?	✓	
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Mesembryanthemum nodiflorum	5		FACU
2. Brassica nigra	2		UPL
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	7		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 93 % Cover of Biotic Crust 0

Remarks:

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species	5	x 4 = 20
UPL species	2	x 5 = 10
Column Totals:	7 (A)	30 (B)

Prevalence Index = B/A = 4.29

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	5Y, 3/2	80	7.5YR, 4/6	20	C	PL	Sandy Cla	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ✓ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? **Yes** ✓ **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✓ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): 0-10

Wetland Hydrology Present? **Yes** ✓ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 7

Investigator(s): Eric Zahn, Mark Hanneford, Marcelo Ceballos Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 10

Subregion (LRR): LRRC Lat: 33.750291 N Long: -118.094235 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents con NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Brassica nigra	25		UPL
2. Hirschfeldia incana	25		FACU
3. Frankenia salina	5		FACW
4. Salicornia pacifica	5		OBL
5. Hordeum	40	x	FAC
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	5	x 1 = 5
FACW species	5	x 2 = 10
FAC species	40	x 3 = 120
FACU species	25	x 4 = 100
UPL species	25	x 5 = 125
Column Totals:	100 (A)	360 (B)

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	2.5Y, 3/2	97.5	7.5YR, 5/8	2.5	C	PL	Silt/Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✓

Remarks:

very small occurances dotted throughout

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/26/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 8

Investigator(s): Eric Zahn, Mark Hannaford, Marcelo Ceballos Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace/flatform Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): LRRC Lat: 33.751968 N Long: -118.09983 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents con NWI classification: R2UBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	✓	
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Arthrocnemum subterminale	20		FACW
2. Salicornia pacifica	10		OBL
3. Mesembryanthemum nodiflorum	5		FACU
4. Cressa truxillensis	15		FACW
5.			
6.			
7.			
8.			
= Total Cover	50		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	10	x 1 = 10
FACW species	35	x 2 = 70
FAC species		x 3 =
FACU species	5	x 4 = 20
UPL species		x 5 =
Column Totals:	50 (A)	100 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ✓ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y, 3/2	100					Clay	Silty clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
✓ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______
Water Table Present? Yes ___ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/26/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 9

Investigator(s): Eric Zahn, Mark Hanneford, Marcelo Ceballos Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Flat land Local relief (concave, convex, none): none Slope (%): 2

Subregion (LRR): LRRC Lat: 33.751895 N Long: -118.099862 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents con NWI classification: R2UBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ___	Is the Sampled Area within a Wetland? Yes ✓ No ___
Hydric Soil Present?	Yes ✓	No ___	
Wetland Hydrology Present?	Yes ✓	No ___	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Arthrocnemum subterminale	40	x	FACW
2. Mesembryanthemum nodiflorum	5		FACU
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	45		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 55 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	40	x 2 = 80
FAC species		x 3 =
FACU species	5	x 4 = 20
UPL species		x 5 =
Column Totals:	45 (A)	100 (B)

Prevalence Index = B/A = 2.22

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	2.5Y, 3/2	90	7.5YR, 4/6	10	C	M	Sandy	
10-16	5Y, 3/2	98	10YR, 5/8	2	C	M	Clay	Sandy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ✓ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✓ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): 0-16

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/26/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 10

Investigator(s): Eric Zahn, Mark Hanneford, Marcelo Ceballos Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): convex Slope (%): 2

Subregion (LRR): LRRC Lat: 33.751016 N Long: -118.101627 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents con NWI classification: R2UBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	✓	
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Salicornia pacifica	40	x	OBL
2. Cressa truxillensis	20		FACW
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	60		
Woody Vine Stratum (Plot size:)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	40	x 1 = 40
FACW species	20	x 2 = 40
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	60 (A)	80 (B)

Prevalence Index = B/A = 1.33

Hydrophytic Vegetation Indicators:

- ✓ Dominance Test is >50%
- ✓ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	2.5Y, 3/2	99	2.5YR, 2.5/4	1	C	M	Sandy	Clumps of clay within core

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______

Water Table Present? Yes ___ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0-18

Wetland Hydrology Present? **Yes** ___ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/5/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 11

Investigator(s): Marcelo Ceballos Jr., Hannah Craddock, Wan Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): LRRC Lat: 33.751859 N Long: -118.10031 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents con NWI classification: R2UBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Mesembryanthemum nodiflorum	5		FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	5		
Woody Vine Stratum (Plot size:)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 95 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species	5	x 4 = 20
UPL species		x 5 =
Column Totals:	5 (A)	20 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y, 3/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 12

Hydric Soil Present? Yes ______ No ✓

Remarks:

The area is likely salty fill material

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
✓ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
✓ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
✓ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______
Water Table Present? Yes ______ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): 12

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Drainage patterns likely due to runoff

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/5/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 12

Investigator(s): Marcelo Ceballos Jr., Hannah Craddock, Wan Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): LRRC Lat: 33.752674 N Long: -118.099921 W Datum: WGS84

Soil Map Unit Name: Bolsa silty clay loam, drained NWI classification: PUSCx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	✓	
Hydric Soil Present?		✓
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Arhtrocnemum subterminale	25	x	FACW
2. Mesembryanthemum nodiflorum	5		FACU
3. Salicornia pacifica	5		OBL
4. Symphyotrichum subulatum	5		OBL
5.			
6.			
7.			
8.			
= Total Cover	40		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	10	x 1 = 10
FACW species	25	x 2 = 50
FAC species		x 3 =
FACU species	5	x 4 = 20
UPL species		x 5 =
Column Totals:	40 (A)	80 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y, 3/1	100					clay	
2-9	2.5Y, 3/2	100					sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✓ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		✓	
Water Table Present?		✓	
Saturation Present? (includes capillary fringe)	✓		9

Wetland Hydrology Present? **Yes** ✓ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/5/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 13

Investigator(s): Marcelo Ceballos Jr., Hannah Craddock, Wan Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): LRRC Lat: 33.751863 N Long: -118.098854 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents con NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ___
Hydric Soil Present?	Yes ___	No ✓
Wetland Hydrology Present?	Yes ✓	No ___

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Arthrocnemum subterminale	60	x	FACW
2. Mesembryanthemum nodiflorum	2		FACU
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	62		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 38 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	60	x 2 = 120
FAC species		x 3 =
FACU species	2	x 4 =
UPL species		x 5 = 8
Column Totals:	62 (A)	128 (B)

Prevalence Index = B/A = 2.06

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR, 3/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✓

Remarks:

No redox
No indicators present, so likely not hydric due to these observations

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
✓ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
✓ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
✓ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______
Water Table Present? Yes ______ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): 12

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Salt crust in the immediate surrounding areas
Area moist likely due to recent rain event

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/5/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 14

Investigator(s): Marcelo Ceballos Jr., Hannah Craddock, Wan Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): LRRC Lat: 33.749846 N Long: -118.097925 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents con NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	✓	
Hydric Soil Present?		✓
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Rumex crispus	5		FAC
2. Carpobrotus edulis	20		UPL
3. Eleocharis macrostachya	75	x	OBL
4.			
5.			
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	75	x 1 = 75
FACW species		x 2 =
FAC species	5	x 3 = 15
FACU species		x 4 =
UPL species	20	x 5 = 100
Column Totals:	100 (A)	190 (B)

Prevalence Index = B/A = 1.9

Hydrophytic Vegetation Indicators:

- ✓ Dominance Test is >50%
- ✓ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y, 3/2	100					Silty Sand	very saturated

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** ✓

Remarks:

90% silt, 10% clay

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

✓ Surface Water (A1)
___ High Water Table (A2)
✓ Saturation (A3)
✓ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ______ Depth (inches): 6

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): 14

Wetland Hydrology Present? **Yes** ✓ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/5/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 15

Investigator(s): Marcelo Ceballos Jr., Hannah Craddock, Wan Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): LRRC Lat: 33.750239 N Long: -118.097454 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents con NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	✓	
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓
Is the Sampled Area within a Wetland?		✓

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Salicornia pacifcia	40	x	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	40		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	40	x 1 = 40
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	40 (A)	40 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y, 3/2	100					Sandy	Sandy fill, chunks of clay
12	5Y, 3/2	100					Clay	Chunks of clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes ______ No ✓

Remarks:

Mainly sand, but there are chunks of clay. This clay is likely imported from when fill material from the surrounding area was dumped onto the site. The area has an old history of dumping.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
✓ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Salt crust due to sand fill. No tidal connection.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/5/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 16

Investigator(s): Marceloa Ceballos Jr., Hannah Craddock, Wa Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): LRRC Lat: 33.750224 N Long: -118.103226 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents con NWI classification: R2UBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ___
Hydric Soil Present?	Yes ✓	No ___
Wetland Hydrology Present?	Yes ✓	No ___

Is the Sampled Area within a Wetland? Yes ✓ No ___

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Salicornia pacifica	80	x	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover			
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	80	x 1 = 80
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	80 (A)	80 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y, 3/2	95	5YR, 3/4	5	D	M	Clay	Spotted redox throughout

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soil Present? **Yes** ✓ **No** ____

Remarks:

The redox isn't typical but it is distributed throughout

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✓ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		✓	
Water Table Present?		✓	
Saturation Present? (includes capillary fringe)	✓		12

Wetland Hydrology Present? **Yes** ✓ **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/12/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 17

Investigator(s): Eric Zahn, Marcelo Ceballos Jr., Hannah Crad Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): depression in terrace Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): LRRC Lat: 33.752169 N Long: -118.102477 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents con NWI classification: PUBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓
Is the Sampled Area within a Wetland?		✓

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Bassia hyssopifolia	5		FACU
2. Brassica nigra	20		UPL
3. Atriplex semibaccata	15		FAC
4. Ditrichia graveleons	5		UPL
5. Mesembryanthemum nodiflorum	5		FACU
6. Bromus diandrus	40	x	UPL
7. Galium angustifolium	5		FACU
8. Cressa truxillensis	1		FACW
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	1	x 2 = 2
FAC species	15	x 3 = 45
FACU species	18	x 4 = 72
UPL species	66	x 5 = 330
Column Totals:	100 (A)	449 (B)

Prevalence Index = B/A = 4.49

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

Additional Herb Stratum Species: Melilotus indicus, 3%, FACU. Sonchus oleraceus, 1%, UPL.

SOIL

Sampling Point: 17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	5YR, 2.5/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** ✓

Remarks:

Rocky fill on top layer, loamy bottom layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______
Water Table Present? Yes ______ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? **Yes** ______ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Recent rains may account for saturation

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/12/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 18

Investigator(s): Marcelo Ceballos Jr., Hannah Craddock Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): base of slope Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): LRRC Lat: 33.749934 N Long: -118.100546 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents con NWI classification: R2UBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ___
Hydric Soil Present?	Yes ✓	No ___
Wetland Hydrology Present?	Yes ✓	No ___

Is the Sampled Area within a Wetland? **Yes** ✓ **No** ___

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Salicornia pacifica	95	x	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	95		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	95	x 1 = 95
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	95 (A)	95 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks:

SOIL

Sampling Point: 18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR, 4/2	100					Sandy cla	
4-7	2.5Y, 4/2	95	7.5YR, 4/4	5	D	M	Clay	
7-16	Gley 1 410Y	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ✓ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ✓ No ______

Remarks:

Top layer was sandy clay, lower layer is clay
One layer clearly present due to saturation, hard to discern.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ______ Depth (inches): ____________

Water Table Present? Yes ______ No ✓ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): 6

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Rained last 2 days, soil pit was filled with water.
Normal to see rain in this area each winter.
Saturated soils may be due to recent rain storm.

Appendix B

Soil Resource Report

Soil Map


118° 6' 27" W
118° 5' 11" W
33° 45' 27" N
33° 44' 46" N
397500
397700
397900
398100
398300
398500
398700
398900
399100
399300
3735800
3735600
3735400
3735200
3735000
3734800
3734600
1230
1230
W
W
W
1230
1230LA
1100LA
125
175
112
100
173
162
ESO
San-Gabriel-River
Adolfo Lopez Dr
Seal Beach
Catalina Ave
Marvista Ave
1st
Soil Map may not be valid at this scale.
Map Scale: 1:8,960 if printed on A landscape (11" x 8.5") sheet.
Meters
0
100
200
400
600
Feet
0
400
800
1600
2400
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

Appendix C

Soil Sample Photos

Soil Sample & Location #1

Soil Sample & Location #2

Soil Sample & Location #3

Soil Sample & Location #4

Soil Sample & Location #5

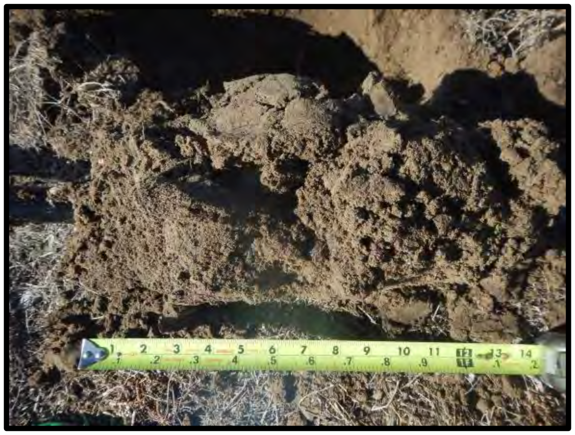
Soil Sample & Location #6

Soil Sample & Location #7

Soil Sample & Location #8

Soil Sample & Location #9

Soil Sample & Location #10



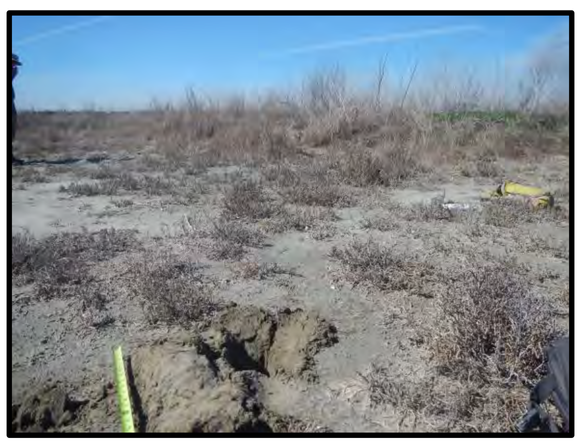
Soil Sample & Location #11

Soil Sample & Location #12

Soil Sample & Location #13

Soil Sample & Location #14

Soil Sample & Location #15



Soil Sample & Location #16

Soil Sample & Location #17

Soil Sample & Location #18

Appendix E: Southern Los Cerritos Wetlands Restoration Project – Jurisdictional Delineation Report

Southern Los Cerritos Wetlands Restoration Project

Jurisdictional Delineation Report

PREPARED FOR:
LOS CERRITOS WETLANDS AUTHORITY
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JULY 2021

Jurisdictional Delineation Report:
Southern Los Cerritos Wetlands Restoration Project

Contents

List of Tables

List of Exhibits

List of Appendices

Acronyms and Abbreviations

ACOE	Army Corps of Engineers
Cal-IPC	California Invasive Plant Council
CCA	California Coastal Act
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CSLC	California State Lands Commission
CPRC	California Public Resource Code
CWA	Clean Water Act
CWC	California Water Code
GPS	Global Positioning System
JDR	Jurisdictional Delineation Report
LCW	Los Cerritos Wetlands
LCWA	Los Cerritos Wetlands Authority
MCVII	*A Manual of California Vegetation, Second Edition*
MHTL	Mean High Tide Line
NWI	National Wetlands Inventory
OHWM	Ordinary High Water Mark
RHA	Rivers and Harbors Act
RWQCB	Regional Water Quality Control Board
SLR	Sea Level Rise
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 Introduction

This report presents the preliminary findings of potential U.S. Army Corps of Engineers (ACOE) and California Coastal Commission (CCC) jurisdiction over the project area associated with the Southern Los Cerritos Wetlands Area. The results of the report will also discuss the potential jurisdictions of California Regional Water Quality Control Board (RWQCB), and California Department of Fish and Wildlife (CDFW).

1.1 Project Location

The project area is primarily located approximately 0.08 miles southeast of the San Gabriel River Pacific Coast Highway Bridge in the City of Seal Beach, California in the County of Orange (Exhibit A). The Project's central geographic location is Latitude 33.751066°; Longitude -118.099411° primarily in section 11 of Township 5 South, and Range 12 West, on the United Stated Geological Survey (USGS) Seal Beach and Los Alamitos 7.5-minute series topographical quadrangles. The project area is bounded by the San Gabriel River to the west, oil extraction operations to the north, and residential neighborhoods and park space to the east and south (Exhibit B). The property is bordered by industrial, open space and residential land uses.

The property is currently accessible from Pacific Coast Highway via 1st street which extends through the property and leads to the neighboring oil operations. This asphalt access road bisects the site and is subject to several easements for other landowners and for the utilities that run parallel to it both above and below ground. The site is currently closed to the public and is only accessible during public programming or with prior approval from the property owner. The main 100-acre parcel is owned by the Los Cerritos Wetlands Authority (LCWA) who controls access to the property's gates that connect to trails and old maintenance roads that traverse the site. A small 5-acre parcel that the project area partially covers is owned by the California State Lands Commission who the LCWA has a long-term access agreement with to manage that property.

1.2 Project Description

The Los Cerritos Wetlands Authority (LCWA) is a governmental entity developed in 2006 by a joint powers agreement between the State Coastal Conservancy, the Rivers and Mountains Conservancy, and the cities of Seal Beach and Long Beach. It was created with the purpose "to provide for a comprehensive program of acquisition, protection, conservation, restoration, maintenance and operation, and environmental enhancement of the Los Cerritos Wetlands area consistent with the goals of flood protection, habitat protection and restoration, and improved water supply, water quality, groundwater recharge, and water conservation." The LCWA has acquired 165 acres of coastal habitat since its inception. This acreage includes the 100-acre South LCWA Site (AKA Hellman Ranch Lowlands) which falls completely within the proposed project boundary. A majority of the site is comprised of native coastal salt marsh habitat as well as areas occupied by non-native plant species alliances. Mixed in with this are features such as a tidal creek, salt flats, tidal flats, utilities, a developed asphalt roadway, dirt maintenance roadways, dumped fill, and various manmade remnants that have accumulated over time. The 103.54 acre project area also includes 3.5 acres of a parcel of land owned by the California State Lands Commission with whom the

LCWA holds a non-exclusive lease agreement to manage the property. The State Lands Parcel Site is comprised of a mix of tidal wetland in the northern portion of the property where the culvert connects to the San Gabriel River. The majority of this parcel is comprised of a concrete pad that is approximately 0.83 acres. The remaining portion to the southern end of the property was also developed and currently occupied by degrading asphalt that is being covered in various non-native plant species as well as patches of the special status plant species Southern Tarplant (*Centromadia parryi* ssp.*australis*).

The Southern Los Cerritos Wetlands Area is part of the first phase of restoration of the overall Los Cerritos Wetlands Complex that encompasses approximately 503 acres of coastal habitat, both land and water. This restoration project area has been subject to historical degradation and fragmentation and is in need of improved tidal connection as well as other restorative measures in order to improve the site's ecological function and protect the local area from sea level rise due to climate change (Coastal Restoration Consultants, 2021).

The purpose of the proposed project is to restore and enhance the ecological and biological function of historic wetland and transitional habitats as well as provide opportunities for public access. This project will design a tidal wetland restoration plan that takes into consideration sea level rise, cultural resources, the local community, and other private and public entities. Dredging, moving of fill, and removal of contaminated material will likely need to take place throughout the site in order to achieve the goal of maximizing contiguous tidal salt marsh habitat. Currently tidal waters enter the project area through an approximately 48-inch-wide culvert connected to the San Gabriel River. While this culvert does provide some tidal prism, it is heavily muted due to the size and position of this culvert. Therefore, the project will be aiming to create improved tidal connections and is targeting the adjacent Haynes Cooling Channel to achieve this objective. Additionally, there are possible opportunities to work with local surrounding landowners to create a more optimal tidal connection that would allow for higher rates of hydrologic exchange between the marsh and the ocean.

2.0 Methodology

2.1 Presurvey Investigations

A distinct project boundary was determined prior to conducting formal investigations in the field for this Jurisdictional Delineation Report (JDR). The extent of the project boundary was designed to encompass all the areas with potential for overlap with the project activities. Once the boundary was finalized, Tidal Influence wetland ecologists closely reviewed former reports, aerial photographs, and topographic maps of the site to determine areas that were critical to investigate in the field. A grid was overlain on the project area and potential sampling points were chosen where the grid intersected areas that were potential waters of the U.S. and State (including wetlands).The National Wetland Inventory (NWI) was also utilized to create a map of potential wetlands (Exhibit C). While the NWI map was helpful to project potential sampling points it was limited in its accuracy and did not fully capture tidal wetlands within the project boundary. Due to this limitation, previous reports investigating the property were used in conjunction with the NWI map to gain a better understanding of where the current wetland areas potentially occurred. Specifically, a Jurisdictional Delineation of Wetlands and Waters of the United States conducted by Chambers Group, Inc in June 1996 was used in conjunction with other literature from the Los Cerritos Wetlands Restoration Project Program EIR (PEIR) to understand and verify locations of jurisdictional areas throughout the project area.

2.2 Field Survey

The fieldwork for this investigation was conducted by Tidal Influence ecologists Eric Zahn, Marcelo Ceballos, Hannah Craddock, Mark Hannaford, Wanisa Jaikwang, and Jesse Aragon on February 19th, February 26th, March 5th, March 12th, and May 24th, 2021. Previous wetland delineation and biological assessment reports were utilized prior to field visits to select initial survey points. The remotely selected points were shifted based on field conditions and the exact locations were documented with a handheld Trimble Geo 7X handheld Global Positioning System (GPS) device with sub-meter accuracy and marked with a flag. All ecological observations were documented during these field surveys.

Vegetation and land cover data collected for the PEIR in 2018 by Coastal Restoration Consultants were used as reference to delineate jurisdictional waters (including wetlands) occurring within the project area on March 12th, 2021. The Jurisdictional Wetlands Determination Report by Chambers Group from 1996 was also referenced during the preliminary literature investigation. This vegetation data was expanded upon during additional biological surveys when newly encountered plant species and/or communities were observed. A total of 18 soil sampling points were analyzed for potential jurisdictional waters/wetlands (Exhibit D). Each of these 18 points were evaluated according to routine wetland delineation procedures described in the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual (Wetland Manual) and the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0.

At each sample point, the existence of significantly disturbed conditions, naturally problematic conditions, and “normal circumstances” were considered and recorded on the Wetlands Determination Data Form for the Arid West Region. All notable site conditions were recorded including observations of recent restoration activity or management of that area as wetlands.

Within an approximately 2-meter squared area around the sample point, the dominant and subdominant plant species were identified, and the wetland indicator status was noted for each plant species. A sampling location was determined to support hydrophytic vegetation if more than 50% of the dominant species were listed as Obligate (OBL), Facultative Wetland (FACW), or Facultative (FAC) species on the Army Corps of Engineers' National Wetland Plant List (Lichvar et al., 2016) or if the hydrophytic plant prevalence index was less than or equal to 3.0.

A soil pit was dug at each of the points to investigate soil characteristics and the potential for hydric soil indicators. All soil pits (field data points for soil inspection and observation) were dug to a depth of 20 inches below natural grade or to the point of obstruction (e.g., compaction or debris) if a 20-inch-deep soil pit was not possible. Soil pits were located in obvious wetland and non-wetland areas to determine the wetland/non-wetland boundary and the presence or absence of hydric soils. Each pit was examined for changes in texture with depth. The depth of each soil texture type was indicated, and soil matrix colors were determined and recorded for each soil texture type according to the Munsell Soil Color Charts (2009). Subsurface soil taken from soil pits was also analyzed visually for redoximorphic features and other hydric soil indicators using *Field Indicators of Hydric Soils in the United States: A guide for Identifying and Delineating Hydric Soils* (USDA, 2006). A sampling location was determined to support hydric soils if at least one hydric soil indicator was present in the soil pit or if problematic hydric soils indicators were observed.

Finally, each sample point was surveyed for the presence of wetland hydrology indicators, including primary indicators like surface water, saturation, biotic crust, salt crust, aquatic invertebrates, and/or other primary wetland hydrology indicators; and secondary indicators like drainage patterns, saturation visible on aerial imagery, and/or other secondary wetland hydrology indicators. Soil pits were utilized to determine the presence or absence of many of these indicators. A sampling location was determined to support wetland hydrology if at least one primary indicator or at least two secondary indicators were observed.

Field data collected by hand on the wetland determination data forms were transcribed to electronic copies during which any existing data gaps were filled and all data was processed to ensure data quality assurance and quality control.

3.0 Regulatory Jurisdictions

The Southern Los Cerritos Wetlands Restoration Project area is located within the city of Seal Beach, California and it contains potential wetland and other aquatic features, environments, and habitats. These waters and wetland features are regulated under federal and state laws. Each of the laws are administered independently and in coordination by the following federal and state agencies: ACOE, United States Fish and Wildlife Service (USFWS), the United States Environmental Protection Agency (USEPA), CCC, CDFW and RWQCB.

If determined applicable by the respective agencies, this JDR provides information for the LCWA to apply for the following authorizations, permits, and policy compliance:

3.1 Federal Regulations

- Section 404 of the Clean Water Act (CWA) (as regulated by ACOE and USEPA)
- Section 401 of the CWA (as regulated by RWQCB)
- Section 10 of the Rivers and Harbors Act (RHA) (as regulated by ACOE)
- Executive Order 11990 (federal protection of wetlands; regulated by relevant federal agencies)

3.2 State of California Regulations

- California Public Resource Code (CPRC) Division 20 Section 30000 et seq. (California Coastal Act; as regulated by the CCC)
- Section 13000 et seq. of the California Water Code (CWC) (the 1969 Porter-Cologne Water Quality Act; as regulated by RWQCB)
- California Fish and Wildlife Code (CFWC) Chapter 6 Section 1600 et seq. (as regulated by CDFW)
- CPRC Division 5 Chapter 7 Section 5810 et seq. (preservation of wetlands; as administered by CDFW and other relevant state resource agencies)
- Executive Order W-59-93 (state policy guidelines for wetlands conservation)

3.3 Description of Federal Regulations

3.3.1 Clean Water Act (CWA)

Pursuant to Section 404 of the CWA, ACOE regulatory jurisdiction is built upon a connection or nexus between the water body and interstate commerce. The connection may be direct, through a tributary system linking a stream channel with navigable waters used in interstate or foreign commerce, or indirect, through a nexus identified in the ACOE regulation. ACOE regulates any activity that would result in the discharge of dredged or fill material into jurisdictional waters of the U.S., which include those waters listed in 33 Code of Federal Regulations 328. ACOE has the principal authority to issue CWA Section 404 Permits with review by the USEPA. The RWQCB certifies that any discharge into jurisdictional waters of the U.S. will comply with state water quality standards, pursuant to Section 401 of the CWA. RWQCB is the lead authority to determine a CWA Section 401 Water Quality Certification or Waiver according to the USEPA.

3.3.2 Rivers and Harbors Act (RHA)

The ACOE regulates discharges of dredged or fill material into waters of the United States. These waters include wetland and non-wetland bodies of water that meet specific criteria. Pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 US Code [u.s.c.] 403), ACOE regulatory jurisdiction, regulates almost all work in, over, and under waters listed as "navigable waters of the U.S." The ACOE regulates activity that results in the alteration of a navigable water of the United States, including the excavation or filling of any such water.

3.3.3 Executive Order 11990

Each federal agency is responsible for preparing the implementing procedures for carrying out the provisions of the Executive Order (EO) 11990. The EO's purpose is to "minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands." Each agency must avoid undertaking, or providing assistance, for any destructive or degrading activity located in wetlands unless the head of the agency finds that there is no "practical alternative" to such activity to the extent permitted by law. Additionally, public review of any plans or proposals for new construction in wetlands must be provided.

3.4 Description of State Regulations

3.4.1 California Coastal Act (CCA)

The California Coastal Commission regulates for coastal resources within the Coastal Zone under jurisdiction of the California Coastal Act of 1976 (CCA), pursuant to Section 30000 et seq. of the CPRC. Of important note for Jurisdictional Delineations of California projects, the CCC retains authorization, permitting, and policy compliance jurisdiction over any portion of a project that is in state waters, on land up to the mean high tide line (MHTL), lands subject to the public trust, or at the discretion of CCC.

3.4.2 Lake and Streambed Alteration Program

The California Department of Fish and Wildlife is authorized to regulate activity that would alter the flow, bed, channel, or bank of streams and lakes, pursuant to Section 1600 et seq. of the CDFW. The channel, bed, or bank of a lake, river, or stream comprises the jurisdictional waters of the state. The CDFW extends its jurisdictional limit to the top of the bank of a stream or lake, or to the continuous outer edge of its riparian extent, whichever is wider.

3.4.3 Porter-Cologne Water Quality Control Act

In addition to the federal CWA regulatory jurisdiction of the RWQCB mentioned above, the RWQCB is authorized to regulate activity that would result in discharge of waste and fill material to waters of California (including saline waters), "isolated" waters and/or wetlands (e.g., vernal pools and seeps), and groundwater within the boundaries of the state (CWC § 13050[e]), pursuant to Section 13000 et seq. of the CWC (the 1969 Porter-Cologne Water Quality Control Act [Porter-Cologne]). RWQCB also adopts and implements water quality control plans that are designed to maintain each region within the state's "unique characteristics" with regard to natural water quality, actual and potential beneficial uses, maintaining water quality, and addressing the water quality problems of that region. Beneficial uses of state waters are identified within the Porter-Cologne Act that may be protected against degradation and include preservation and enhancement of fish, wildlife, designated biological habitats of special significance, and other aquatic resources or preserves.

3.5 Definition of Wetlands

The jurisdictional regulations of the various federal and state agencies are further utilized to establish the appropriate definition of "wetlands" of a particular study site. The project area is subject to the wetland definitions identified by various characteristics as outlined by the United States Army Corps of Engineers, United States Fish and Wildlife Service, the California Coastal Commission and the California Department of Fish and Wildlife. Each agency, working in accordance to their legislative authority, defines "wetlands" differently and each definition is referenced to identify jurisdictional authority.

3.5.1 Federal Wetlands Definitions

The term "waters of the United States" most often encompasses all federal wetlands and is defined in Corps regulations at 33 CFR Part 328.3(a) as:

"(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect foreign commerce including any such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purpose by industries in interstate commerce...

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs (a) (1)-(4) of this section;

(6) The territorial seas;

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1)-(6) of this section."

In the absence of wetlands, the limits of Corps jurisdiction in non-tidal waters, such as intermittent streams, extend to the OHWM which is defined at 33 CFR 328.3(e) as:

> *"...that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."*

Federal definitions of what constitutes "wetlands" are primarily derived from two Federal Agencies: the United States Army Corps of Engineers and the United States Fish and Wildlife Service. The USFWS wetland definition and classification system is based on Classification of Wetland and Deepwater Habitats of the United States (Cowardin et al. 1979); however, the ACOE definition is used for regulatory purposes. Wetland delineations for Section 404 purposes as regulated by the ACOE must be conducted according to the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Regional Supplement ACOE 2006) and the Corps of Engineers 1987 Wetland Delineation Manual. Where there are differences between the two documents, the Regional Supplement takes precedence over the 1987 Manual.

The ACOE defines wetlands as:

> *"Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions."*

A federal jurisdictional wetland delineation states that an area must possess three wetland characteristics: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology. The wetland characteristics have mandatory criteria that must be satisfied for that particular characteristic to be met. The indicators may be analyzed to determine whether the criteria are satisfied and are listed below.

<u>Hydrophytic Vegetation</u>

Hydrophytic vegetation is plant life that is adapted for life in permanently or periodically saturated soil identified according to a wetland indictor category as included on the Army Corps of Engineers' National Wetland Plant List (Lichvar et al., 2016). The different indicator categories are based on the probability of occurrence in wetlands: Obligate Wetlands (OBL), Facultative Wetlands (FACW), Facultative (FAC), Facultative Upland (FACU), and Obligate Upland (UPL). The Obligate Wetlands, Facultative Wetlands and Facultative categories are considered hydrophytic and the delineation of the hydrophytic vegetation is based on more than 50 percent of the plant species identified in these three categories.

If the plant community passes the dominance test or prevalence index, the vegetation is considered hydrophytic. The dominance test uses the "50/20" rule from the Regional Supplement for determining dominant species. The most abundant species that exceed 50 percent of the total sample survey, plus additional species that comprise 20 percent of the total dominance measure, indicate dominance. The prevalence index is a weighted-average wetland indicator status of all plant species in the sampling plot, where each indicator status category is given a numeric code (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5) and weighting is by abundance (percent cover). It is a more comprehensive analysis of the hydrophytic status of the community than one based on just a few dominant species

Vegetation alliances identified on the site follows *A Manual of California Vegetation, Second Edition* (MCV II; Sawyer et al., 2009). The MCV II was also used for the Biological Resources Report prepared for the Project and its use in this report ensures consistency.

Hydric Soils

Soils defined as hydric soils form under conditions of "saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part." Hydric soils are defined when one or more of the following criteria are met: all histels except folistels and histosels except folists; or soils that frequently ponded for long duration or very long duration during the growing season; or soils that are frequently flooded for long duration or very long duration during the growing season. Hydric soils are developed when microbial activity causes oxygen depletion with conditions of saturation and hydrologic inundation. Microbial activity is limited to the growing season and when the soil temperature is above biological zero. The Regional Supplement is used to identify hydric soils under a variety of field indicators that include: hydrogen sulfide generation; accumulation of organic matter; and reduction, translocation, and/or accumulation of iron and other reducible elements.

Wetland Hydrology

Wetland hydrology can be a challenging criterion to measure in the field due to variations in water availability seasonally and annually. Visual observation of inundation or saturation, watermarks, recent sediment deposits, surface scour, and oxidized root channels are some of the indicators used to identify wetland hydrology. Wetland hydrology is satisfied if the area is seasonally inundated or saturated to the surface for a minimum of 14 consecutive days during the growing season.

3.5.2 State of California Definition of Wetlands

The State of California applies a broader definition of what constitutes a "wetland" than the Federal government. Two primary State agencies are responsible for defining "wetlands", the California Coastal Commission and the California Department of Fish and Wildlife. The CDFW essentially relies on the USFWS wetland definition and classification system based on Classification of Wetland and Deepwater Habitats of the United States (Cowardin et al. 1979). The CDFW acts as a primary consultant to the CCC and the CCC regulates wetland delineation within what is identified as the Coastal Zone along the coast of California. Through provisions of the California Coastal Act, jurisdictional wetland delineations within the Coastal Zone are conducted based on the "one-parameter method" to define the presence and jurisdictional extent of state wetlands. Under the CCA, wetlands are defined as follows:

> *"land within the Coastal Zone [that] may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens".*

Additionally, wetlands are further defined as:

> *"land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats (14 CCR Section 13577)."*

Both the Federal and State definitions focus on the three fundamental wetland characteristics: hydrology, soils, and vegetation. While the ACOE definition requires the existence of all three wetland characteristics for an area to be considered a wetland, the CCC's definition of wetlands is based on the existence of only two characteristics: wetland hydrology sufficient to either support a prevalence of hydrophytic vegetation or promote the formation of hydric soils.

It is noted that, under circumstances, reliable indicators of all required characteristics are not necessarily apparent, and areas may be delineated as wetlands by the ACOE on the basis of indicators of only two of the three characteristics. The CCC routinely makes jurisdictional wetlands determinations based on the presence of one characteristic indicator (i.e., wetland soils or vegetation) under the assumption that wetland hydrology must be present in order for the indicator to be present. Nevertheless, the presence of wetland hydrology during some portion of most years is fundamental to the existence of any wetland, and the CCC will sometimes disregard vegetation or soil indicators when there is sufficient evidence to conclusively refute the presence of wetland hydrology.

4.0 Results

Potential jurisdictional waters (including wetlands) occurring within the project area were delineated and mapped based on federal and state delineation guidance, methodology, and regulatory framework and code, as described above. For the purposes of this site, the jurisdictions for ACOE and CCC were determined for the federal and state jurisdictions, respectively. CDFW jurisdictions were also determined for this site due to its proximity and connection to the San Gabriel River. Jurisdiction areas can be seen graphically on the attached aerial maps (Exhibits E, F, G, H, I).

All federal waters and wetlands (including final acreages and types) delineated within this survey area are considered potential waters of the U.S. prior to a formal jurisdictional determination performed by ACOE. The final determination issued by ACOE may remove or include portions of delineated waters documented in this JDR.

The total area of potential waters of the U.S. and State (including wetlands) within the survey area and a general discussion of the policy governing these regulated areas is provided below. Per ACOE mapping guidelines, the results were mapped on a current color aerial photograph at a scale of 1 inch = 200 feet (Exhibit E), however, an overview map of the entire survey area is shown in Exhibit B. Refer to the attached Wetlands Determination Data Forms (Appendix A) for a full description of sample point results.

4.1 Vegetation

A list of hydrophytic plant species identified within the project area is provided in Table 1. A total of 15 vegetation alliances or communities equaling 92.83 acres were identified within the project area that have potential to be defined as containing hydrophytic plant species that when prevalent could potentially meet the criterion for ACOE or CCC jurisdictional wetlands (Table 2, Exhibit J).

Table 1. Hydrophytic plant species identified with the project boundary.

Scientific Name	Common Name	Wetland Indicator Status	Non-Native	Cal-IPC rating
Tree Species Growth Habit				
Eucalyptus globulus	Tasmanian Bluegum	FACU*	X	limited
Myoporum laetum	Ngaio Tree	FACU	X	moderate
Nicotiana glauca	Tree Tobacco	FAC	X	moderate
Phoenix canariensis	Canary Island Palm	FACU*	X	limited
Schinus terebinthifolius	Brazilian Pepper Tree	FAC	X	moderate
Washingtonia robusta	Mexican Fan Palm	FACW	X	moderate
Shrub Species Growth Habit				
Artemisia californica	California Sagebrush	FACU*		
Atriplex lentiformis	Big Saltbush	FAC		
Baccharis pilularis	Coyote Brush	FAC		

Scientific Name	Common Name	Wetland Indicator Status	Non-Native	Cal-IPC rating
Baccharis salicifolia	Mulefat	FAC		
Isocoma menziesii	Menzies' Goldenbush	FAC		
Peritoma arborea	Bladderpod	FACU*		
Ricinus communis	Castor Bean	FACU	X	limited
Herbaceous Species Growth Habit				
Ambrosia psilostachya	Western Ragweed	FACU		
Anemopsis californica	Yerba Mansa	OBL		
Arthrocnemum subterminale	Parish's Glasswort	OBL		
Atriplex semibaccata	Australian Saltbush	FAC	X	moderate
Bassia hyssopifolia	Five Horn Bassia	FACU	X	limited
Batis maritima	Saltwort	OBL		
Brassica nigra	Black Mustard	FACU*	X	
Bromus diandrus	Ripgut Brome	UPL*	X	moderate
Bromus madritensis	Foxtail Brome	FACU*	X	
Camissoniopsis lewisii	Lewis' Evening Primrose	FACU*		
Carpobrotus edulis	Hottentot-fig	FACU*	X	high
Centaurea melitensis	Tocalote	UPL	X	moderate
Centromadia parryi australis	Southern Tarplant	FACW		
Cirsium vulgare	Bull Thistle	FACU	X	moderate
Conium maculatum	Poison Hemlock	FACW	X	moderate
Cressa truxillensis	Alkali Weed	FACW		
Cuscuta salina	Saltmarsh Dodder	FACW		
Distichilis littoralis	Shoregrass	OBL		
Distichlis spicata	Salt Grass	FAC		
Dittrichia graveolens	Stinkwort	UPL	X	moderate
Eleocharis macrostachya	Common Spikerush	FACW		
Erodium cicutarium	Coastal Heron's Bill	FACU*	X	limited
Frankenia salina	Alkali Heath	FACW		
Foeniculum vulgare	Sweet Fennel	UPL*	X	moderate
Galium angustifolium	Narrowleaf Bedstraw	FACU*		
Glebionis coronaria	Crown Daisy	UPL*	X	limited
Heliotropium curassavicum	Seaside Heliotrope	FACU		
Heterotheca grandiflora	Telegraph Weed	FACU*		
Hirschfeldia incana	Short Podded Mustard	UPL*	X	moderate
Lactuca serriola	Prickly Lettuce	FACU	X	
Laennecia coulteri	Coulter's Horseweed	FAC		
Limonium californicum	California Sealavender	FACW		
Lysimachia arvensis	Scarlet Pimpernel	FAC	X	

Scientific Name	Common Name	Wetland Indicator Status	Non-Native	Cal-IPC rating
Herbaceous Species Growth Habit				
Lycium californicum	California Boxthorn	FAC*		
Marrubium vulgare	White horehound	FACU	X	limited
Malephora crocea	Coppery Mesembryanthemum	FACU	X	watch
Malva parviflora	Cheeseweed Mallow	FACU*	X	
Melilotus albus	White Sweetclover	FACU*	X	
Melilotus indicus	Annual Yellow Sweetclover	FACU	X	
Mesembryanthemum crystallinum	Crystalline Iceplant	FACU	X	moderate
Mesembryanthemum nodiflorum	Slender Leaved Ice Plant	FACU	X	limited
Oxalis pes-caprae	Bermuda Buttercup	FACU*	X	moderate
Polypogon monspeliensis	Rabbit's Foot	FACW	X	limited
Pseudognaphalium luteoalbum	Jersey Cudweed	FACW	X	
Pulicaria paludosa	Spanish False Fleabane	FAC	X	
Raphanus sativus	Wild Radish	FACU*	X	limited
Rumex crispus	Curly Dock	FAC	X	limited
Salicornia bigelovii	Bigelow's Pickleweed	OBL		
Salicornia pacifica	Common Pickleweed	OBL		
Salsola tragus	Russian Thistle	FACU	X	limited
Sonchus oleraceus	Common Sowthistle	UPL	X	
Spergularia marina	Salt Marsh Sand Spurry	OBL		
Symphyotrichum subulatum	Saltmarsh Aster	OBL		
Triglochin concinna	Slender Arrow-Grass	OBL		
Urtica dioica	Stinging nettle	FAC		
Xanthium strumarium	Cocklebur	FAC		

Wetland Indicator Status Abbreviations and Meanings:

OBL – Obligate Wetlands Species. Occur almost always in wetlands.
FACW – Facultative Wetland Species. Usually occur in wetlands, but occasionally found in non-wetlands.
FAC – Facultative Species. Equally likely to occur in wetlands and non-wetlands.
FACU – Facultative Upland Species. Usually occur in non-wetlands but occasionally found in wetlands.
UPL – Obligate Upland Species. Almost always occur under natural conditions in non-wetlands.

** Not listed on National Wetlands List*

Table 2. Total acreages of vegetation alliances and land cover types observed within the project boundary.

Vegetation Alliance	Acres
Cressa truxillensis - Distichlis spicata Herbaceous Alliance	1.43
Distichlis spicata Herbaceous Alliance	0.44
Salicornia pacifica Herbaceous Alliance	20.62
Frankenia salina Herbaceous Alliance	2.77
Ulva lactuca Algal Mat	1.54
Arthrocnemum subterminale Herbaceous Alliance	0.31
Heterotheca grandiflora Herbaceous Stand	5.48
Isomeris arborea (*Peritoma arborea*) Shrub Stand	0.04
Isocoma menziesii Shrubland Alliance	1.52
Baccharis salicifolia Shrubland Alliance	0.58
Bassia hyssopifolia Semi-Natural Herbaceous Stand	0.96
Brassica nigra and other mustards Herbaceous Semi-Natural Alliance	45.34
Bromus diandrus – Bromus rubens Semi-Natural Herbaceous Stand	4.67
Conium maculatum – Foeniculum vulgare Herbaceous Semi-Natural Alliance	2.91
Mesembryanthemum spp. – *Carpobrotus* spp. Herbaceous Semi-Natural Alliance	4.49
Ornamental	0.35
Disturbed – mowed/disked fire break	0.06
Unvegetated Salt Flat	2.93
Unvegetated Tidal Flat	3.40
Developed	3.70
TOTAL	**103.54**

Vegetation Alliance and Land Cover Type Descriptions

Cressa truxillensis - Distichlis spicata Herbaceous Alliance: A total of 1.43 acres of this alliance was identified within the project boundary (Table 2). Alkali weed (*Cressa truxillensis*, FACW) and salt grass (*Distichlis spicata*, FACW) are characteristically present in this alliance with a variety of species that include alkali heath (*Frankenia Salina,* FACW) and species similar to alkali mallow (*Malvella leprosa,* FACU) which can be found within the Los Cerritos Wetlands however is not present in this portion of the wetlands. This alliance is found on the edges of *Salicornia pacifica* stands within the property but above the high tide line and was observed in areas where hydric soils and wetland hydrology indicators were not present on site. Therefore, areas where this alliance are present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Distichlis spicata Herbaceous Alliance (Salt grass flats): A total of 0.44 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by salt grass (*Distichlis spicata*, FAC) with a co-dominance of alkali heath (*Frankenia salina*, FACW), saltwort (*Batis maritima*, OBL), common pickleweed (*Salicornia pacifica*, OBL), alkali weed (*Cressa truxillensis*, FACW), and may also support non-native upland grasses and forbs. This species often forms monotypic stands when it is found above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, in some instances locations where this alliance is present will not meet the ACOE's three criteria threshold for wetland waters of the U.S.

Salicornia pacifica Herbaceous Alliance (Pickleweed mats): A total of 20.62 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by Common Pickleweed (*Salicornia pacifica*, OBL) that mixes with other co-dominant species including salt grass (*Distichlis spicata*, FAC), fleshy jaumea (*Jaumea carnosa*, FACW), alkali heath (*Frankenia salina*, FACW), saltwort (*Batis maritima*, OBL) and sea lavender (*Limonium californicum*, FACW). Intermixing with the co-dominant species commonly occurs within the tidal reaches of the site, meanwhile, this species often forms monotypic stands when it is found above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, in some instances locations where this alliance is present will not meet the ACOE's three criteria threshold for wetland waters of the U.S.

Frankenia salina Herbaceous Alliance: A total of 2.77 acres of this alliance was identified within the project boundary (Table 2). While alkali heath (*Frankenia salina*, FACW) is common in a variety of alliances, there are numerous locations throughout site where it is found in predominantly monotypic stands. Co-dominant plant species for this alliance commonly include salt grass (*Distichlis spicata*, FAC), alkali heath (*Frankenia salina,* FACW), saltwort (*Batis maritima,* OBL), common pickleweed (*Salicornia pacifica,* OBL), and alkali weed (*Cressa truxillensis,* FACW). This alliance is found above the tidal reaches of the site where hydric soil and wetland hydrology indicators are not present, typically adjacent to pickleweed mats and in upland areas. Therefore, areas where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Ulva lactuca Algal Mat: A total of 1.54 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by the non-vascular algae species sea lettuce (*Ulva lactuca*) and is found exclusively within the tidal channel that allows for tidal flow through the culvert connection. This alliance is found below the high tide line where hydric soil and wetland hydrology indicators are present. Therefore, where this alliance is present will meet the ACOE's criteria threshold for waters of the U.S.

Arthrocnemum subterminale Herbaceous Alliance: A total of 0.31 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by Parish's glasswort (*Arthrocnemum subterminale*, FACW) or co-dominant in the herbaceous and subshrub layers with alkali weed (*Cressa truxillensis,* FACW), salt grass (*Distichlis spicata,* FAC), alkali heath (*Frankenia salina,* FACW) *and Common Pickleweed* (*Salicornia pacifica,* OBL). While *Arthrocnemum subterminale* can be found in numerous locations throughout the site the largest and most dominant population occurs near an access road toward the northern end of the project site. This alliance is often found outside of the tidal reaches of the site so its presence does not always meet the minimum threshold as waters of the U.S.

Heterotheca grandiflora Herbaceous Stand: A total of 5.48 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by telegraph weed (*Heterotheca grandiflora*, UPL) or co-dominate in the shrub canopy with California sagebrush (*Artemisia californica*, FACU) and coyote brush (*Baccharis pilularis*, FACU). This alliance is found above the tidal reaches of the site in areas where sandy fill material is present and hydric soil and wetland hydrology indicators are typically not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Isomeris arborea (*Peritoma arborea*) Shrub Stand: A total of 0.04 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by bladderpod (*Peritoma arborea*, UPL). This alliance is only found in a single patch on the property outside of the tidal reach where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Isocoma menziesii Shrubland Alliance: A total of 1.52 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by Menzies's golden bush (*Isocoma menziesii*, FAC) or commonly co-dominated in the shrub canopy by California sagebrush (Artemisia californica, FACU), coyote brush (*Baccharis pilularis*, FACU), and Virginia glasswort (*Salicornia depressa*, FACW). This alliance is found in areas above the high tide line where hydric soil and wetland hydrology indicators are typically not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Baccharis salicifolia Shrubland Alliance: A total of 0.58 acres of this alliance was identified within the project boundary (Table 2). In this alliance mulefat (*Baccharis salicifolia, FAC*) is dominant or co-dominant in the shrub canopy with California sagebrush (*Artemisia californica, FACU*), coyote brush (*Baccharis pilularis, FACU*), and arroyo willow (*Salix lasiolepis, FACW*). This alliance is found in a few patches on the property above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Bassia hyssopifolia Semi-Natural Herbaceous Stand: A total of 0.96 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by five horn bassia (*Bassia hyssopifolia*, FACU) with other California non-native herbaceous species. On the property these stands occur above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Brassica nigra and other mustards Herbaceous Semi-Natural Alliance: A total of 45.34 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by black mustard (*Brassica nigra*, FACU) occurring with other ruderal forbs such as maltese star thistle (*Centaurea melitensis*, FACU) and short podded mustard (*Hirschfeldia incana*, FACU). This alliance occurs above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Bromus diandrus – Bromus rubens Semi-Natural Herbaceous Stand: A total of 4.67 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by ripgut brome (*Bromus diandrus*, FACU) occurring with other non-natives in the herbaceous layer. There is a large single occurrence of this alliance on site that is above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Conium maculatum – Foeniculum vulgare Herbaceous Semi-Natural Alliance: A total of 2.91 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominated by poison hemlock (*Conium maculatum*, FACW) and occurs with other non-native plant species in the herbaceous layer. This alliance occurs above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Mesembryanthemum spp. – *Carpobrotus* spp. Herbaceous Semi-Natural Alliance: A total of 4.49 acres of this alliance was identified within the project boundary (Table 2). This alliance is dominant in the herbaceous layer and can contain iceplant (*Carpobrotus edulis, FACU*), crystalline iceplant (*Mesembryanthemum crystallinum, FACU*), or other ice plant taxa. Emergent trees and shrubs may also be present at low cover within this alliance. This alliance occurs above the high tide line where hydric soils and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Ornamental: A total of 0.35 acres of this land cover type was identified within the project boundary (Table 2). This land cover type includes non-native species such as Mexican fan palm (*Washingtonia robusta*, FACW), Brazilian pepper tree (*Schinus terebinthifolia*, FACU), and other various non-native plant species in the shrub and tree stratum. This land cover type occurs primarily around developed areas on the property that are above the high tide line where hydric soils and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Disturbed – mowed/disked fire break: A total of 0.06 acres of this alliance was identified within the project boundary (Table 2). This land cover type consists of a small area adjacent to a perimeter fence line in the upland areas that was disked to reduce the fire risk in the area. This land cover type is above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Unvegetated Salt Flat: A total of 2.93 acres of this land cover type was identified within the project boundary (Table 2). This land cover type consists of areas absent of any vegetation and is above the high tide line but may contain hydric soil indicates such as a salty crust on the soil surface. Given that unvegetated salt flats lack the vegetative cover required to be considered wetland waters, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

Unvegetated Tidal Flat: A total of 3.40 acres of this land cover type was identified within the project boundary (Table 2). This land cover type is absent of vegetation but occurs below the high tide line. These areas can show hydric soil and wetland hydrology indicators. Therefore, due a lack of vegetation, where this alliance is present will likely not meet the ACOE's criteria threshold for wetland waters of the U.S. but could qualify as waters of the U.S.

Developed: A total of 3.70 acres of this land cover type was identified within the project boundary (Table 2). This land cover type consists of asphalt roads, concrete pads, established dirt roads and other areas developed prior to acquisition by the LCWA. This land cover type occurs above the high tide line where hydric soil and wetland hydrology indicators are not present. Therefore, where this alliance is present will not meet the ACOE's criteria threshold for wetland waters of the U.S.

4.2 Soils

The project site is composed of five types of soils that include: Balcom clay loam, Bolsa silty clay loam, Bolsa drained-Typic Xerorthents, Myford loamy sand, and Urban land of dredged fill substratum (USDA, 2021; Appendix B). Most of the project site is covered by Bolsa drained-Typic Xerorthents and Bolsa silty clay loam. These determinations are also consistent with previous investigation that have taken place on site.

Bolsa drained-Typic Xerorthent soils consist typically of dredge spoils and are somewhat poorly draining, typically occur in filled marshland and tidal marshes and consist of coarse to loamy grain sizes. The average slope in areas with Bolsa drained-Typic Xerorthent soils range from 0 to 2 percent. Bolsa silty clay loam soils consist of fine to silty grain sizes, are somewhat poorly drained and occur in coastal plain areas. Balcom clay loam soils typically exist along hill slopes and drain well. The average slope in areas with Balcom clay loam soils range from 15 to 30 percent. Myford loamy sand soils have moderately well-draining soils, occur in areas with slopes of 2 to 9 percent, and occur along terraces and backslopes. Urban land of dredged fill substratum soils consist of dredged fill and occur in areas with 0 to 2 percent slopes. (USDA, 2021)

The locations of the 18 soil pits used to investigate the presence of hydric soil are depicted in Exhibit D and photographs are displayed in Appendix C. The soil pit locations were chosen to determine if jurisdictional wetlands extended above the Ordinary High Water Mark (OHWM) where indicators of hydrophytic vegetation appeared to be present. Indicators for hydric soils were found in pits 2, 3, 5, 6, 9, 16, and 18. All soil pits were done in Bolsa-type soils, with soil pits 1 and 7 through 18 collected in Bolsa drained-Typic Xerorthents and soil pits 2 through 6 taken in Bolsa silty clay loam. The leading hydric soil indicators were the presence of Redox Dark Surface (F6) and Sandy Redox (S5). Furthermore, no instances of naturally problematic soils were identified, however all 18 locations (sample points 1 through 18) exhibited soils that were identified to be significantly disturbed. This disturbance was indicated by the presence of debris in the form of glass, gravel, debris, and asphalt.

4.3 Hydrology

The presence of wetland hydrology indicators is evident around the entire perimeter of the project area's tidal reaches and is most notably observed by the presence of high tide line water marks and tidal drainages. Of the 18 locations surveyed for the presence of wetlands hydrology, sample points 2, 3, 5, 6, 9, 11, 12, 13, 14, 16, and 18 contained indicators. Of these points, none were within the reach of the highest high tide. The mean high tide line was not delineated in the field due to the fact that this boundary is encompassed by the limits of Section 404 jurisdiction that extends to the highest high-water line.

A total of 3 land cover types were found to contain wetlands hydrology indicators:

Unvegetated Flats: A total of 6.33 acres of this land cover type is found on the site separated into three distinct locations throughout the project area, some of which is tidally influenced, and the remaining is above high tide lines. This land cover type is predominantly fill consisting of a very high salt content that has resulted in the lack of vegetation establishment with some of it being intertidal and some being non-tidal. Wetland hydrology indicators most common on this land cover type was surface soil cracks and salt crust. Most of this unvegetated land cover type is found above the high-tide line and therefore is seasonally flooded by rainfall or other non-tidal inputs and qualifies as non-wetland waters of the U.S.

Southern Coastal Salt Marsh: A total of 25.57 acres of this land cover type is found on the site adjacent to the tidal channel that flows through the project area. A majority of this land cover type is under both federal and state jurisdiction. Most of this vegetated land cover type is found below the high-tide line and therefore is inundated regularly and qualifies as wetland waters of the U.S.

Subtidal Marine: A total of 1.42 acres of this land cover type is found in the form of a tidal channel that nearly bisects the entire project area. All of this land cover type is found below the high tide line and qualifies as waters of the U.S.

5.0 Jurisdictional Determinations

5.1 Jurisdictional Waters of the U.S. and State

The extent of the potential jurisdictional waters of the United States within the project area is 10.69 acres. Within the jurisdictional waters of the United States, 2.44 acres are potentially wetland waters of the United States. The potential jurisdictional wetlands of the State based on the California Coastal Commission's jurisdiction extends beyond the federal jurisdictional and total 27.19 acres within the project area. California Department of Fish and Wildlife potential jurisdictional wetlands covers 1.42 acres within the CCC jurisdictional boundary. A summary of the jurisdictional waters and wetlands of the U.S. and State, with the corresponding regulatory authority, occurring within the survey area, is provided in Table 3 and mapped in Exhibit E.

Table 3. Summary of potential jurisdictional waters of the U.S. & State (*= 0.05 acres extend outside of the project area; **= 0,02 acres extend outside of the project area).

Type of Potential Jurisdictional Waters of the U.S. and State	Regulatory Authority	Acres
Potential Jurisdictional Waters of the U.S.		
Wetland Waters Section 404	ACOE, USFWS, and RWQCB	2.44*
Waters of the U.S. Section 10	ACOE, USFWS, and RWQCB	8.25**
	Subtotal Potential Jurisdictional Waters of the U.S.	*10.69*
Potential Jurisdictional Wetlands of the State		
Wetland Waters	CCC	27.19
	CDFW	1.42

5.2 ACOE Jurisdiction

5.2.1 ACOE Section 10 Jurisdiction

The project area has a direct connection to the San Gabriel River which is a navigable water of the U.S. that is an extension of the Pacific Ocean (a navigable water of the U.S.). Thus, the marine water within the project area is considered as waters of the U.S. and is subject to ACOE jurisdiction to the mean high-water line under Section 10 of the Rivers and Harbors Act (Exhibit F). This amounts to 8.25 acres of waters of the U.S. on site under the Section 10 definition (Table 3). This amount is lower than previous investigation including the 1995 Chambers Jurisdiction Wetlands Determination which is likely due to habitats shifting overtime due to tidal muting as well as changes in the definitions and determination process of what is considered waters of the U.S.

5.2.2 ACOE Section 404 Jurisdiction

Due to the direct connection with the San Gabriel River, the marine water in the project area is considered as waters of the U.S. and is subject to ACOE jurisdiction at least to the high tide line under Section 404 of the Clean Water Act. There are locations on site where both wetland vegetation and soils are present above the OHWM, so ACOE jurisdiction extends beyond the observed OHWM and are considered as Wetland Waters (Exhibit G). These Wetland Waters account for 2.44 acres on site. This is a decrease compared to previous investigations of the site, but this again is due to habitats shifting over time due to drought conditions as well as changes in the definitions and determination process of what is considered Wetland Waters of the U.S.

Pursuant to the Clean Water Act, ACOE will assert jurisdiction over traditional navigable waters and their adjacent wetlands. This site has a well-documented direct connection to a designated navigable water of the United States. Due to this connection, ACOE will likely verify that a “significant nexus determination” is not required to determine the jurisdictional status of this site. There is a total of 10.69 acres of waters potentially subject to ACOE jurisdiction, of which 8.25 acres is OHWM/Waters of the US and 2.44 acres are wetland waters of the United States. A map of potential ACOE jurisdictional areas is provided in Exhibit E and summarized in Table 3.

5.3 CDFW Jurisdiction

CDFW asserts jurisdiction only over wetland areas that are a part of a river, stream, or lake as defined by CDFW. There is potential that CDFW could determine that this association is present within the survey area due to the connection of the site with the San Gabriel River as well as the overall San Gabriel River Watershed A map showing the potential areas that could be under CDFW jurisdiction is attached as Exhibit H.

5.4 CCC Jurisdiction

Pursuant to the California Coastal Act the CCC will assert jurisdiction over all of the areas satisfying the ACOE jurisdictional criteria for waters and wetlands of the United States. This jurisdictional area usually tends to be more inclusive and extensive than that of ACOE due to the CCC employment of a “one-parameter” approach to delineating jurisdictional wetlands. As described previously CCC wetlands need only contain wetlands hydrology and, hydrophytic vegetation, or hydric soils. Within the project area a total of 27.19 acres are potentially subject to CCC wetland jurisdiction, equaling 16.50 acres more than that of ACOE. This difference is due to areas existing where salt marsh (wetland) vegetation or salt flat habitat extended beyond the limit of the highest high-water line. A map of potential CCC jurisdictional areas is provided in Exhibit I and summarized in Table 3. The 1996 delineation found at total of 23.2 acres of CCC jurisdiction and therefore a larger CCC jurisdiction was identified by this investigation.

6.0 Literature Cited

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Exhibit A

Project Vicinity Map

Produced by Hannah Craddock May 4, 2021 Datum: NAD 1983

Project Vicinity

Southern Los Cerritos Wetlands Area - Seal Beach, CA

1 inch = 2,000 feet

0 900 1,800 3,600 5,400 7,200 Feet

Project Boundary

Tidal Influence

Exhibit B

Project Site Map

Project Site

Southern Los Cerritos Wetlands Area - Seal Beach, CA

1 inch = 458 feet

0 210 420 840 1,260 1,680 Feet

Project Boundary

Tidal Influence

Exhibit C

NWI Potential Wetlands Map

LCWA South Area

May 14, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

Exhibit D

Soil Sample Locations Map

Soil Sample Locations

Southern Los Cerritos Wetlands Area - Seal Beach, CA

0 180 360 720 1,080 1,440 Feet

Survey Area (103.54 acres)

Soil Sample Locations

Tidal Influence

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
May 11, 2021
1 inch = 458 feet

Exhibit E

Jurisdictional Wetland Delineation Map

Jurisdictional Wetland Delineation

Southern Los Cerritos Wetlands Area - Seal Beach, CA

0 180 360 720 1,080 1,440 Feet

Survey Area (103.54 acres)

Jurisdictional Waters of the U.S. (8.29 acres)

Jurisdictional Wetland Waters of the U.S. (2.44 acres)

Control Points

Wetland Sampling Point

Upland Sampling Point

Tidal Influence

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
June 17, 2021
1 inch = 458 feet

Exhibit F

Jurisdictional Waters of the U.S. Map

Jurisdictional Waters of the U.S.

Southern Los Cerritos Wetlands Area - Seal Beach, CA

Survey Area (103.54 acres)

Jurisdictional Waters of the U.S. (8.25 acres)

0 185 370 740 1,110 1,480 Feet

Tidal Influence

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
June 17, 2021
1 inch = 458 feet

Exhibit G

Jurisdictional Wetland Waters of the U.S. Map

Jurisdictional Wetland Waters of the U.S.

Southern Los Cerritos Wetlands Area - Seal Beach, CA

Survey Area (103.54 acres)

Jurisdictional Wetland Waters of the U.S. (2.44 acres)

0 185 370 740 1,110 1,480 Feet

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
June 17, 2021
1 inch = 458 feet

Exhibit H

Potential CDFW Jurisdictional Wetlands Map

Potential California Department of Fish and Wildlife Jurisdictional Wetlands

Southern Los Cerritos Wetlands Area - Seal Beach, CA

Survey Area (103.54 acres)

Potential CDFW Jurisdictional Wetlands (1.42 acres)

0 185 370 740 1,110 1,480 Feet

Tidal Influence

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
June 17, 2021
1 inch = 458 feet

Exhibit I

CCC Jurisdictional Wetlands Map

California Coastal Commission Jurisdictional Wetlands

Southern Los Cerritos Wetlands Area - Seal Beach, CA

Survey Area (103.54 acres)

CCC Jurisdictional Wetlands (27.19 acres)

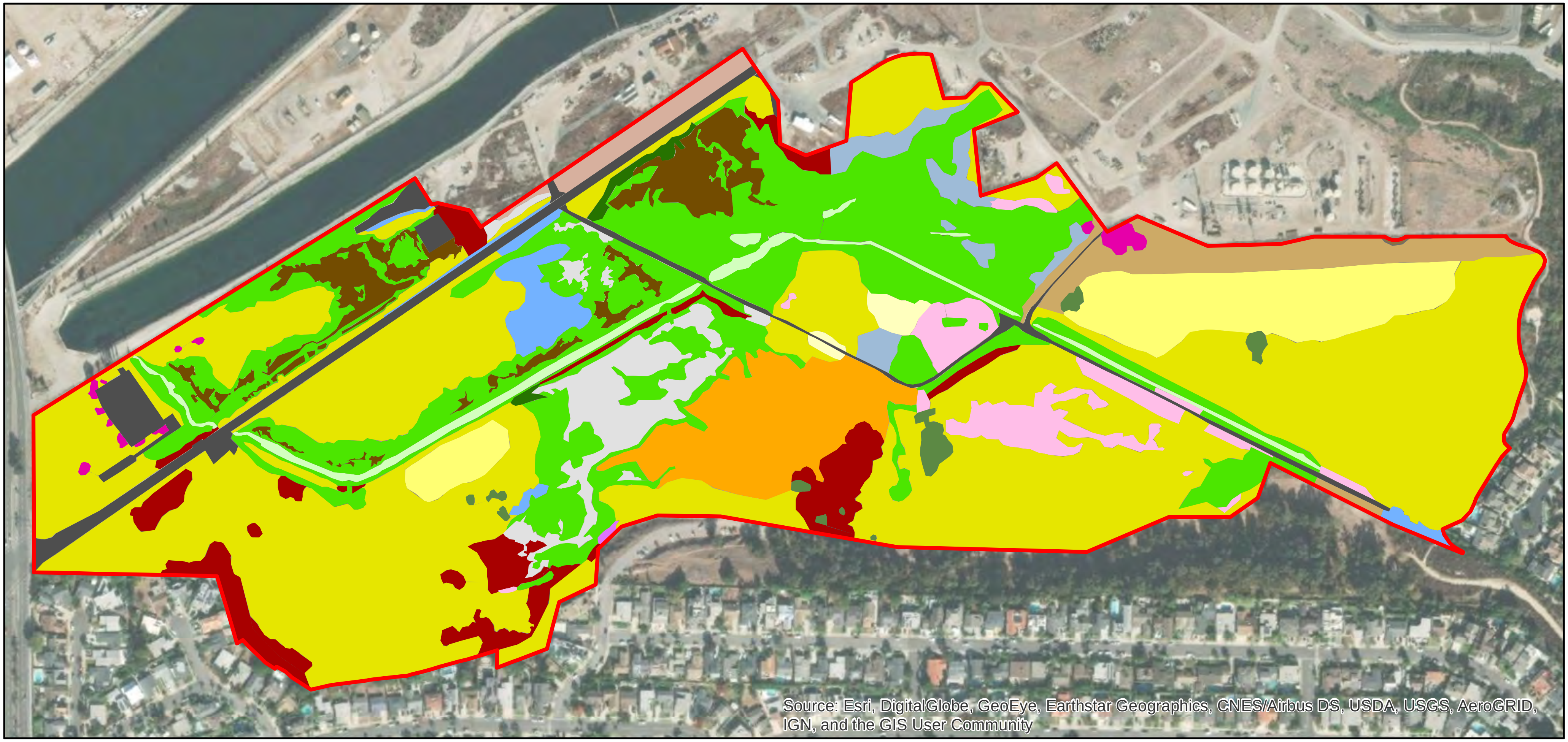
0 185 370 740 1,110 1,480 Feet

Tidal Influence

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
June 17, 2021
1 inch = 458 feet

Exhibit J

Vegetation Alliances Map



Vegetation Alliances

Southern Los Cerritos Wetlands Area - Seal Beach, CA

- Survey Area (103.54 acres)
- Cressa truxillensis - Distichlis spicata Herbaceous Alliance
- Distichlis spicata Herbaceous Alliance
- Sarcocornia pacifica Herbaceous Alliance
- Frankenia salina Herbaceous Alliance
- Ulva lactuca algal mat
- Arthrocnemum subterminale Herbaceous Alliance
- Heterotheca grandiflora herbaceous stand
- Isomeris arborea shrub stand
- Isocoma menziesii Shrubland Alliance
- Baccharis salicifolia Shrubland Alliance
- Bassia hyssopifolia Semi-Natural Herbaceous Stand
- Brassica nigra and other mustards Herbaceous Semi-Natural Alliance
- Bromus diandrus,rubens Semi-Natural Herbaceous Stand
- Conium maculatum - Foeniculum vulgare Herbaceous Semi-Natural Alliance
- Mesembryanthemum spp. - Carpobrotus spp. Herbaceous Semi-Natural Alliance
- Ornamental
- Disturbed - mowed/disked fire break
- Unvegetated salt flat
- Unvegetated tidal flat
- Developed

Coordinate System: NAD 1983 2011
StatePlane California VI FIPS 0406 ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Produced by Hannah Craddock
May 13, 2021
1 inch = 458 feet

Tidal Influence

0 185 370 740 1,110 1,480 Feet

Appendix A

Wetland Determination Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 1

Investigator(s): Eric Zahn,Marcelo Ceballos Jr,Hannah Craddocl Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): LRRC Lat: 33.751714 N Long: -118.095969 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerothents dredged spoil-Typic Fluvaquents comple NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ____
Hydric Soil Present?	Yes ____	No ✔
Wetland Hydrology Present?	Yes ____	No ✔

Is the Sampled Area within a Wetland? Yes ____ No ✔

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: 2m)			
1. Baccharis salicifolia	60	X	FAC
2.			
3.			
4.			
5.			
= Total Cover	60		
Herb Stratum (Plot size: 2m)			
1. Melilotus indicus	5		FACU
2. Conium maculatum	35		FACW
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	40		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	35	x 2 = 70
FAC species	60	x 3 = 180
FACU species	5	x 4 = 20
UPL species		x 5 =
Column Totals:	100 (A)	270 (B)

Prevalence Index = B/A = 2.7

Hydrophytic Vegetation Indicators:

- ✔ Dominance Test is >50%
- ✔ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-22	2.5Y, 3/2	100	N/A				Sandy	clay balls

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: __________

Depth (inches): __________

Hydric Soil Present? Yes ____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____
Water Table Present? Yes ____ No ✔ Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes ____ No ✔ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sandy top layer

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authroity State: CA Sampling Point: 2

Investigator(s): Eric Zahn,Marcelo Ceballos Jr,Hannah Craddocl Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR): LRRC Lat: 33.752207 N Long: -118.09361 W Datum: WGS84

Soil Map Unit Name: Bolsa silty clay loam, drained NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___
Wetland Hydrology Present?	Yes ✔	No ___

Is the Sampled Area within a Wetland? Yes ✔ No ___

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Conium maculatum	75	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	75		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	1	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	75	x 2 =	150
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	75 (A)		150 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

- ✔ Dominance Test is >50%
- ✔ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
20	7.5YR, 3/1	98	7.5YR, 5/8	2	D	PL	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ✔ **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✔ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✔ Depth (inches): ______

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✔ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ✔ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 3

Investigator(s): Eric Zahn,Marcelo Ceballos Jr,Hannah Craddocl Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): LRRC Lat: 33.752238 N Long: -118.093484 W Datum: WGS84

Soil Map Unit Name: Bolsa silty clay loam, drained NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✔ No ____**
Hydric Soil Present?	Yes ✔ No ____		
Wetland Hydrology Present?	Yes ✔ No ____		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 2m)			
1. Frankenia salina	50	x	FACW
2. Bassia hyssopifolia	50	x	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	50	x 2 = 100
FAC species		x 3 =
FACU species	50	x 4 = 200
UPL species		x 5 =
Column Totals:	100 (A)	300 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

✔ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
21	2.5YR, 2.5/1	95	7.5YR, 3/4	5	C	PL	Loamy Clay	Loamy Clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
✔ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✔ **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
✔ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✔ Depth (inches): ______

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✔ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ✔ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 4

Investigator(s): Eric Zahn,Marcelo Ceballos Jr,Hannah Craddocl Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): LRRC Lat: 33.751339 N Long: -118.094047 W Datum: WGS84

Soil Map Unit Name: Bolsa silty clay loam, drained NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No ✔
Hydric Soil Present?	Yes ___	No ✔
Wetland Hydrology Present?	Yes ___	No ✔

Is the Sampled Area within a Wetland? Yes ___ No ✔

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: 2m)			
1. Baccharis salicifolia	35		FAC
2.			
3.			
4.			
5.			
= Total Cover	35		
Herb Stratum (Plot size: 2m)			
1. Brassica nigra	25		UPL
2. Ambrosia psilostachya	5		FACU
3. Melilotus indicus	25		FACU
4.			
5.			
6.			
7.			
8.			
= Total Cover	55		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	35	x 3 =	105
FACU species	30	x 4 =	120
UPL species	25	x 5 =	125
Column Totals:	90 (A)		350 (B)

Prevalence Index = B/A = 3.89

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
24	2.5Y/3-2	100					sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✔ Depth (inches): ______

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✔ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 5

Investigator(s): Eric Zahn,Marcelo Ceballos Jr,Hannah Craddocl Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): LRRC Lat: 33.750882 N Long: -118.093482 W Datum: WGS84

Soil Map Unit Name: Bolsa silty clay loam, drained NWI classification: PEMC1x

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✔
Hydric Soil Present?	✔	
Wetland Hydrology Present?	✔	

Is the Sampled Area within a Wetland? **Yes** ___ **No** ✔

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Mesembryanthemum nodiflorum	63	x	FACU
2. Laennecia coulteri	35		FAC
3. Brassica nigra	2		UPL
4.			
5.			
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species	35	x 3 = 105
FACU species	63	x 4 = 252
UPL species	2	x 5 = 10
Column Totals:	100 (A)	367 (B)

Prevalence Index = B/A = 3.67

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** ✔

Remarks:

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
16	5Y, 4/2	90	5YR, 3/4	10	C	PL	Sandy/Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ✔ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ✔ **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✔ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✔ Depth (inches): ______

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✔ No ______ Depth (inches): 0-16

Wetland Hydrology Present? **Yes** ✔ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 6

Investigator(s): Eric Zahn,Marcelo Ceballos Jr,Hannah Craddocl Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 2

Subregion (LRR): LRRC Lat: 33.750888 N Long: -118.093218 W Datum: WGS84

Soil Map Unit Name: Bolsa silty clay loam, drained NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✔
Hydric Soil Present?	✔	
Wetland Hydrology Present?	✔	

Is the Sampled Area within a Wetland? Yes ___ No ✔

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Mesembryanthemum nodiflorum	5		FACU
2. Brassica nigra	2		UPL
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	7		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 93 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species	5	x 4 = 20
UPL species	2	x 5 = 10
Column Totals:	7 (A)	30 (B)

Prevalence Index = B/A = 4.29

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks:

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	5Y, 3/2	80	7.5YR, 4/6	20	C	PL	Sandy Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ✔ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ✔ **No** ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✔ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		✔	
Water Table Present?		✔	
Saturation Present? (includes capillary fringe)	✔		0-10

Wetland Hydrology Present? **Yes** ✔ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/19/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 7

Investigator(s): Eric Zahn,Marcelo Ceballos Jr,Hannah Craddocl Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 10

Subregion (LRR): LRRC Lat: 33.750291 N Long: -118.094235 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents comp NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔
Hydric Soil Present?	Yes ____	No ✔
Wetland Hydrology Present?	Yes ____	No ✔

Is the Sampled Area within a Wetland? **Yes** ____ **No** ✔

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Brassica nigra	25		UPL
2. Hirschfeldia incana	25		FACU
3. Frankenia salina	5		FACW
4. Salicornia pacifica	5		OBL
5. Polypogon monspeliensis	40	x	FACW
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	45	x 2 =	90
FAC species		x 3 =	
FACU species	25	x 4 =	100
UPL species	25	x 5 =	125
Column Totals:	100 (A)		320 (B)

Prevalence Index = B/A = 3.2

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** ✔

Remarks:

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	2.5Y, 3/2	97.5	7.5YR, 5/8	2.5	C	PL	Silt/Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ **No** ✔

Remarks:

very small occurances dotted throughout

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✔ Depth (inches): ________
Water Table Present? Yes ______ No ✔ Depth (inches): ________
Saturation Present? (includes capillary fringe) Yes ______ No ✔ Depth (inches): ________

Wetland Hydrology Present? Yes ______ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/26/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 8

Investigator(s): Eric Zahn,Marcelo Ceballos Jr,Hannah Craddocl Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace/flatform Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): LRRC Lat: 33.751968 N Long: -118.09983 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents comp NWI classification: R2UBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	✔	
Hydric Soil Present?		✔
Wetland Hydrology Present?		✔

Is the Sampled Area within a Wetland? Yes ___ No ✔

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Arthrocnemum subterminale	20		FACW
2. Salicornia pacifica	10		OBL
3. Mesembryanthemum nodiflorum	5		FACU
4. Cressa truxillensis	15		FACW
5.			
6.			
7.			
8.			
= Total Cover	50		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	35	x 2 =	70
FAC species		x 3 =	
FACU species	5	x 4 =	20
UPL species		x 5 =	
Column Totals:	50 (A)		100 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ✔ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks:

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y, 3/2	100					Clay	Silty clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✔ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): ______

Water Table Present? Yes ___ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): ______

Wetland Hydrology Present? Yes ___ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/26/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 9

Investigator(s): Eric Zahn,Marcelo Ceballos Jr,Hannah Craddocl Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Flat land Local relief (concave, convex, none): none Slope (%): 2

Subregion (LRR): LRRC Lat: 33.751895 N Long: -118.099862 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents comp NWI classification: R2UBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No ___	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ___
Hydric Soil Present?	Yes ✔ No ___	
Wetland Hydrology Present?	Yes ✔ No ___	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Arthrocnemum subterminale	40	x	FACW
2. Mesembryanthemum nodiflorum	5		FACU
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	45		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 55 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	40	x 2 = 80
FAC species		x 3 =
FACU species	5	x 4 = 20
UPL species		x 5 =
Column Totals:	45 (A)	100 (B)

Prevalence Index = B/A = 2.22

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

✔ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks:

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	2.5Y, 3/2	90	7.5YR, 4/6	10	C	M	Sandy	
10-16	5Y, 3/2	98	10YR, 5/8	2	C	M	Clay	Sandy clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ✔ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soil Present? **Yes** ✔ **No** ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✔ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✔ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____

Water Table Present? Yes ____ No ✔ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ✔ No ____ Depth (inches): 0-16

Wetland Hydrology Present? **Yes** ✔ **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 2/26/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 10

Investigator(s): Eric Zahn,Marcelo Ceballos Jr,Hannah Craddocl Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): convex Slope (%): 2

Subregion (LRR): LRRC Lat: 33.751016 N Long: -118.101627 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents comp NWI classification: R2UBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	✔	
Hydric Soil Present?		✔
Wetland Hydrology Present?		✔

Is the Sampled Area within a Wetland? Yes ____ No ✔

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Salicornia pacifica	40	x	OBL
2. Cressa truxillensis	20		FACW
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	60		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	40	x 1 = 40
FACW species	20	x 2 = 40
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	60 (A)	80 (B)

Prevalence Index = B/A = 1.33

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

✔ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks:

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	2.5Y, 3/2	99	2.5YR, 2.5/4	1	C	M	Sandy	Clumps of clay within core

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✔ Depth (inches): ______

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✔ No ______ Depth (inches): 0-18

Wetland Hydrology Present? Yes ______ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/5/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 11

Investigator(s): Hannah Craddock,Marcelo Ceballos,Wanisa Jai Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): LRRC Lat: 33.751859 N Long: -118.10031 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents comp NWI classification: R2UBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✔
Hydric Soil Present?		✔
Wetland Hydrology Present?	✔	

Is the Sampled Area within a Wetland? Yes ___ No ✔

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Mesembryanthemum nodiflorum	5		FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	5		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 95 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species	5	x 4 = 20
UPL species		x 5 =
Column Totals:	5 (A)	20 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✔

Remarks:

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y, 3/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 12

Hydric Soil Present? Yes ___ No ✔

Remarks:

The area is likely salty fill material

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✔ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✔ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✔	Depth (inches): ___
Water Table Present?	Yes ___	No ✔	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ✔	No ___	Depth (inches): 12

Wetland Hydrology Present? Yes ✔ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Drainage patterns likely due to runoff

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/5/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 12

Investigator(s): Hannah Craddock,Marcelo Ceballos,Wanisa Jai Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): LRRC Lat: 33.752674 N Long: -118.099921 W Datum: WGS84

Soil Map Unit Name: Bolsa silty clay loam, drained NWI classification: PUSCx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	✔	
Hydric Soil Present?		✔
Wetland Hydrology Present?	✔	

Is the Sampled Area within a Wetland? **Yes** ___ **No** ✔

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Arthrocnemum subterminale	25	x	FACW
2. Mesembryanthemum nodiflorum	5		FACU
3. Salicornia pacifica	5		OBL
4. Symphyotrichum subulatum	5		OBL
5.			
6.			
7.			
8.			
= Total Cover	40		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	10	x 1 = 10
FACW species	25	x 2 = 50
FAC species		x 3 =
FACU species	5	x 4 = 20
UPL species		x 5 =
Column Totals:	40 (A)	80 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

- ✔ Dominance Test is >50%
- ✔ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks:

SOIL

Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y, 3/1	100					clay	
2-9	2.5Y, 3/2	100					sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✔ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✔ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✔ Depth (inches): ______

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✔ No ______ Depth (inches): 9

Wetland Hydrology Present? Yes ✔ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/5/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 13

Investigator(s): Hannah Craddock,Marcelo Ceballos,Wanisa Jai Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): LRRC Lat: 33.751863 N Long: -118.098854 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents comp NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ___	Is the Sampled Area within a Wetland?	Yes ___ No ✔
Hydric Soil Present?	Yes ___	No ✔		
Wetland Hydrology Present?	Yes ✔	No ___		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Arthrocnemum subterminale	60	x	FACW
2. Mesembryanthemum nodiflorum	2		FACU
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	62		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 38 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	60	x 2 =	120
FAC species		x 3 =	
FACU species	2	x 4 =	
UPL species		x 5 =	8
Column Totals:	62 (A)		128 (B)

Prevalence Index = B/A = 2.06

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

✔ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks:

SOIL

Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR, 3/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✔

Remarks:

No redox
No indicators present, so likely not hydric due to these observations

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✔ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✔ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		✔	
Water Table Present?		✔	
Saturation Present? (includes capillary fringe)	✔		12

Wetland Hydrology Present? Yes ✔ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Salt crust in the immediate surrounding areas
Area moist likely due to recent rain event

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/5/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 14

Investigator(s): Hannah Craddock,Marcelo Ceballos,Wanisa Jai Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): LRRC Lat: 33.749846 N Long: -118.097925 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents comp NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are “Normal Circumstances” present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No ___	**Is the Sampled Area within a Wetland?** Yes ___ No ✔
Hydric Soil Present?	Yes ___ No ✔	
Wetland Hydrology Present?	Yes ✔ No ___	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Rumex crispus	5		FAC
2. Carpobrotus edulis	20		UPL
3. Eleocharis macrostachya	75	x	OBL
4.			
5.			
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	75	x 1 = 75
FACW species		x 2 =
FAC species	5	x 3 = 15
FACU species		x 4 =
UPL species	20	x 5 = 100
Column Totals:	100 (A)	190 (B)

Prevalence Index = B/A = 1.9

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

✔ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks:

SOIL

Sampling Point: 14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y, 3/2	100					Silty Sand	very saturated

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✔

Remarks:

90% silt, 10% clay

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✔ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ✔ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✔ No ______ Depth (inches): 6

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✔ No ______ Depth (inches): 14

Wetland Hydrology Present? Yes ✔ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/5/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 15

Investigator(s): Marcelo Ceballos Jr,Hannah Craddock,Wanisa J Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): LRRC Lat: 33.750239 N Long: -118.097454 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents comp NWI classification: PEM1Cx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	✔	
Hydric Soil Present?		✔
Wetland Hydrology Present?		✔
Is the Sampled Area within a Wetland?		✔

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Salicornia pacifica	40	x	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	40		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	40 (A)		40 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

- ✔ Dominance Test is >50%
- ✔ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks:

SOIL

Sampling Point: 15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y, 3/2	100					Sandy	Sandy fill, chunks of clay
12	5Y, 3/2	100					Clay	Chunks of clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? **Yes** ______ **No** ✔

Remarks:

Mainly sand, but there are chunks of clay. This clay is likely imported from when fill material from the surrounding area was dumped onto the site. The area has an old history of dumping.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✔ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✔ Depth (inches): ______

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✔ Depth (inches): ______

Wetland Hydrology Present? **Yes** ______ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Salt crust due to sand fill. No tidal connection.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/5/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 16

Investigator(s): Marcelo Ceballos Jr, Hannah Craddock, Wanisa Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): LRRC Lat: 33.750224 N Long: -118.103226 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents comp NWI classification: R2UBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No ___	Is the Sampled Area within a Wetland? Yes ✔ No ___
Hydric Soil Present?	Yes ✔ No ___	
Wetland Hydrology Present?	Yes ✔ No ___	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Salicornia pacifica	80	x	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover			
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	80	x 1 = 80
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	80 (A)	80 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

✔ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ___

Remarks:

SOIL

Sampling Point: 16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y, 3/2	95	5YR, 3/4	5	D	M	Clay	Spotted redox throughout

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ✔ No ______

Remarks:

The redox isn't typical but it is distributed throughout

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✔ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ✔ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✔ Depth (inches): ______

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✔ No ______ Depth (inches): 12

Wetland Hydrology Present? Yes ✔ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/12/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 17

Investigator(s): Eric Zahn,Marcelo Ceballos Jr,Hannah Craddocl Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): depression in terrace Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): LRRC Lat: 33.752169 N Long: -118.102477 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents comp NWI classification: PUBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✔
Hydric Soil Present?	Yes ____	No ✔
Wetland Hydrology Present?	Yes ____	No ✔

Is the Sampled Area within a Wetland? **Yes** ____ **No** ✔

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 2m)			
1. Bassia hyssopifolia	5		FACU
2. Brassica nigra	20		UPL
3. Atriplex semibaccata	15		FAC
4. Ditrichia graveleons	5		UPL
5. Mesembryanthemum nodiflorum	5		FACU
6. Bromus diandrus	40	x	UPL
7. Galium angustifolium	5		FACU
8. Cressa truxillensis	1		FACW
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	1	x 2 = 2
FAC species	15	x 3 = 45
FACU species	18	x 4 = 72
UPL species	66	x 5 = 330
Column Totals:	100 (A)	449 (B)

Prevalence Index = B/A = 4.49

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** ✔

Remarks:

Additional Herb Stratum Species: Melilotus indicus, 3%, FACU. Sonchus oleraceus, 1%, UPL.

SOIL

Sampling Point: 17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	5YR, 2.5/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✔

Remarks:

Rocky fill on top layer, loamy bottom layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✔ Depth (inches): ______

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✔ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Recent rains may account for saturation

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LCWA South Area City/County: Seal Beach/Orange County Sampling Date: 3/12/21

Applicant/Owner: Los Cerritos Wetlands Authority State: CA Sampling Point: 18

Investigator(s): Marcelo Ceballos Jr., Hannah Craddock Section, Township, Range: T5S, R12W

Landform (hillslope, terrace, etc.): base of slope Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): LRRC Lat: 33.749934 N Long: -118.100546 W Datum: WGS84

Soil Map Unit Name: Bolsa, drained-Typic Xerorthents, dredged spoil- Typic Fluvaquents comp NWI classification: R2UBHx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ✔, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ___
Hydric Soil Present?	Yes ✔	No ___
Wetland Hydrology Present?	Yes ✔	No ___

Is the Sampled Area within a Wetland? **Yes** ✔ **No** ___

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 2m)			
1. Salicornia pacifica	95	x	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	95		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	1	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	95	x 1 =	95
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	95 (A)		95 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

- ✔ Dominance Test is >50%
- ✔ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks:

SOIL

Sampling Point: 18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR, 4/2	100					Sandy clay	
4-7	2.5Y, 4/2	95	7.5YR, 4/4	5	D	M	Clay	
7-16	Gley 1 410Y	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ✔ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✔ No ______

Remarks:

Top layer was sandy clay, lower layer is clay
One layer clearly present due to saturation, hard to discern.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✔ No ______ Depth (inches): ______

Water Table Present? Yes ______ No ✔ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ✔ No ______ Depth (inches): 6

Wetland Hydrology Present? Yes ✔ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Rained last 2 days, soil pit was filled with water.
Normal to see rain in this area each winter.
Saturated soils may be due to recent rain storm.

Appendix B

Soil Resource Report

Custom Soil Resource Report
Soil Map

Map Scale: 1:8,960 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 100, 200, 400, 600

Feet: 0, 400, 800, 1600, 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

Appendix C

Soil Sample Photos

Soil Sample & Location #1

Soil Sample & Location #2

Soil Sample & Location #3

Soil Sample & Location #4

Soil Sample & Location #5

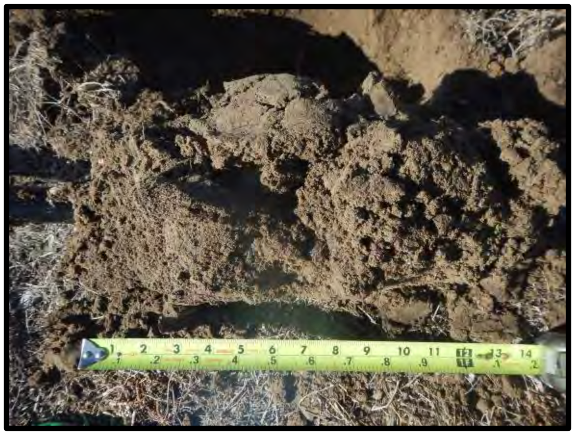
Soil Sample & Location #6

Soil Sample & Location #7

Soil Sample & Location #8

Soil Sample & Location #9

Soil Sample & Location #10



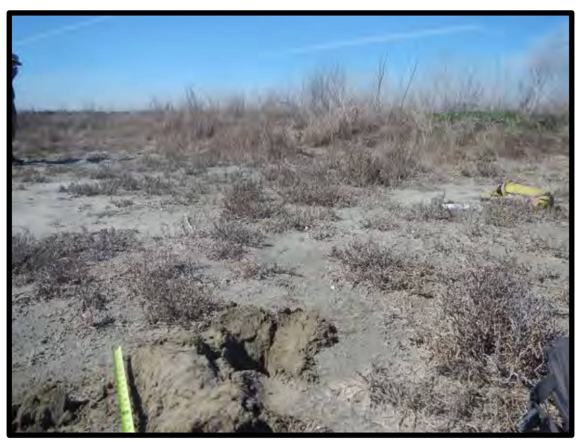
Soil Sample & Location #11

Soil Sample & Location #12

Soil Sample & Location #13

Soil Sample & Location #14

Soil Sample & Location #15



Soil Sample & Location #16

Soil Sample & Location #17

Soil Sample & Location #18

Appendix F: Cultural Resources Assessment for the Southern Los Cerritos Wetlands Restoration Project

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

CULTURAL RESOURCES ASSESSMENT FOR THE SOUTHERN LOS CERRITOS WETLANDS RESTORATION PROJECT

Prepared for:
Los Cerritos Wetlands Authority
100 North Old San Gabriel Canyon Road
Azusa, CA 91702

Authors:
Desireé Martinez, M.A., Shannon Lopez, M.A., John Gust, Ph.D.

With contributions from:
Joyce Perry

Principal Investigator:
Desireé Martinez, M.A., RPA

Date:
October 2022; Revised January 2023, March 2023

Cogstone Project Number: 5148
Type of Study: Cultural Resources Assessment
Sites: P-30-000256, P-30-000258, P-30-000260, 2021_08_05_SD.1-I, 2021_08_28_DRM_1-I, 2021_08_06_SD.1, 2021_08_06_SD.2, 2021_08_06_SD.3, Hellman Channel, *Puvungna* Traditional Cultural Landscape
USGS 7.5' Quadrangles: Los Alamitos (1984), Seal Beach (1981)
Area: 105 acres
Key Words: Culturally sensitive area, Gabrielino/Gabrieleño/Tongva/Kizh, Juaneño/Acjachemen, *Puvungna*, *Motuucheyngna; Puvungna* Traditional Cultural Landscape

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Federal Certifications WOSB, EDWOSB, SDB
State Certifications DBE, WBE,, UDBE

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

PURPOSE OF STUDY

This study was conducted to determine the potential impacts to cultural resources during the Southern Los Cerritos Wetlands Restoration Project (Project) as well as to document the *Puvungna* Traditional Cultural Landscape (PTCL; Figure 1). The Los Cerritos Wetlands Authority (LCWA) is the lead agency under the California Environmental Quality Act (CEQA).

Figure 1. Project vicinity map

PROJECT LOCATION AND DESCRIPTION

The Project, located on the border of Los Angeles and Orange counties (
Figure 2), affords the opportunity to restore salt marsh, seasonal wetlands, and other freshwater wetlands within an approximately 503-acre area. The Southern California Wetlands Recovery Project (WRP), a partnership of 17 state and federal agencies, has identified the acquisition and restoration of the Los Cerritos Wetlands as a high regional priority. The restored habitat will provide multiple benefits, including provision of critical habitat for listed species and other fish and wildlife, carbon sequestration, improved flood control, sea level rise resiliency, preservation of tribal cultural resources, and improved public access to open space.

The Project area is located within the southern portion of the Los Cerritos Wetlands Complex which adjoins the lower reach of the San Gabriel River where, prior to channelization, the mouth of the San Gabriel River migrated back and forth across the coastal plain. Historically, the complex covered approximately 2,400 acres and stretched approximately two miles inland, varying from freshwater and brackish wetlands in its inland areas to salt marsh closer to the ocean. Channelization of the San Gabriel River began in the 1930s and cut off tidal action to much of the wetland area. The size of the historic wetlands has been reduced by agriculture, placement of fill and excavation of channels and basins for oil fields and landfill burn dumps, and urban development. There is ongoing oil production throughout the area and much of the remnant salt marsh is within a grid of dikes, berms, roadways, and levees. Other channels which service upstream power plants also bifurcate sections of the complex. Today, remnants of the historic wetlands occur in degraded patches, divided into the following four areas: North, Central, Isthmus, and South.

Furthermore, the Los Cerritos Wetlands Complex is significant to the Gabrielino (Gabrieleño; Tongva; Kizh[1]) and Acjachemen (Juaneño) tribes. Tribal representatives described the Los Cerritos Wetlands and its surroundings as sacred lands that encompass a larger area of connected tribal sites. The Los Cerritos Wetlands are located in between the villages of *Puvungna* and *Motuucheyngna*, and are thus considered by tribes to be part of a larger cultural landscape. This landscape will be identified as the *Puvungna* Traditional Cultural Landscape in this study.

Through the conceptual restoration planning process, the LCWA determined what opportunities exist for Los Cerritos Wetlands restoration, public access, and interpretation that will meet the needs of the agency, community, and stakeholders. This included identifying opportunities for restoring tidal connections, creation of new wetland and associated upland habitats, consolidation of oil operations, improvement to passive recreation facilities, creation of a

[1] Since there is not an agreement on the general term to be used to identify the descendants of the original people who lived within the Los Angeles Basin, the term Gabrielino (Gabrieleño; Tongva; Kizh) will be used throughout this proposal to recognize each group's right of self-identification and tribal sovereignty.

visitor's center, and accommodation of special status species. This analysis culminated in the Los Cerritos Wetlands Conceptual Restoration Plan (CRP) that was adopted by the LCWA's Governing Board in August 2015.

The LCWA, as the lead agency, prepared then certified a Program Environmental Impact Report (PEIR) in January 2021. This PEIR used the CRP designs to create a program description for a 503-acre program area. The potential impacts of this proposed program were analyzed, and mitigation measures were determined for potentially impacted resources. This program also included phasing for potential projects to eventually tier-off from the program.

One of the near-term projects identified by the PEIR is located in the South Area on 105 acres identified as the South LCWA site (aka Hellman Ranch Lowlands) and the State Lands Commission site (together comprising the Project area), both managed by LCWA. This Project area was historically salt marsh but has been altered through anthropogenic activities. The site currently contains former sumps, landfills, foundations, and contaminated areas from prior oil operations and land uses.

The Project is led by the LCWA, a joint powers authority (JPA) formed by the following four agencies:

- San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC)
- California State Coastal Conservancy (CSCC)
- City of Long Beach
- City of Seal Beach

Figure 2. Aerial map showing the Los Cerritos Wetlands Complex and the South LCW restoration project area

PROJECT PERSONNEL

Cogstone Resource Management, Inc. (Cogstone) conducted pedestrian cultural resources and built environments surveys, a traditional cultural landscape study that included collecting and transcribing oral histories from tribal members, background research, and prepared this assessment report. Qualifications of key personnel are described below and short resumes are in Appendix A.

- Desiree Martinez served as Project Manager, provided QA/QC and conducted oral history interviews with members of the Gabrielino (Tongva) community, wrote and conducted the evaluation of the cultural landscape study, and co-authored this report. Ms. Martinez is a Registered Professional Archaeologist (RPA) and holds an M.A. in Anthropology from Harvard University and has more than 24 years of experience in California archaeology.

- John Gust, RPA, served as the Task Manager and Principal Investigator for Archaeology for the Project, and co-authored this report. Dr. Gust has a Ph.D. in Anthropology from the University of California (UC) Riverside, and over 10 years of experience in archaeology.

- Shannon Lopez conducted the built environment assessment and evaluation, and co-authored this report. Ms. Lopez holds an M.A. from California State University (CSU), Fullerton and has more than three years of experience as an architectural historian.

- Kim Scott prepared the geoarchaeological section of this report. Ms. Scott has an M.S. in Biology with paleontology emphasis from CSU San Bernardino, a B.S. in Geology with paleontology emphasis from University of California, Los Angeles, and over 25 years of experience in California paleontology and geology.

- Logan Freeberg prepared the Geographic Information System (GIS) maps throughout this report. Mr. Freeberg has a B.A. in Anthropology from UC Santa Barbara and a GIS certification from CSU Fullerton and over 18 years of experience in California archaeology.

REGULATORY ENVIRONMENT

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA states that: It is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required are intended to assist public agencies in systematically identifying both the significant effects of the proposed project and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.

CEQA declares that it is state policy to: "take all action necessary to provide the people of this state with...historic environmental qualities." It further states that public or private projects financed or approved by the state are subject to environmental review by the state. All such projects, unless entitled to an exemption, may proceed only after this requirement has been satisfied. CEQA requires detailed studies that analyze the environmental effects of a proposed project. In the event that a project is determined to have a potential significant environmental effect, the act requires that alternative plans and mitigation measures be considered.

TRIBAL CULTURAL RESOURCES

As of 2015, CEQA established that “[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment” (Public Resources Code, § 21084.2). In order to be considered a “tribal cultural resource,” a resource must be either:

(1) listed, or determined to be eligible for listing, on the national, state, or local register of historic resources, or

(2) a resource that the lead agency chooses, in its discretion, to treat as a tribal cultural resource.

To help determine whether a project may have such an effect, the lead agency must consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. If a lead agency determines that a project may cause a substantial adverse change to tribal cultural resources, the lead agency must consider measures to mitigate that impact. Public Resources Code §20184.3 (b)(2) provides examples of mitigation measures that lead agencies may consider to avoid or minimize impacts to tribal cultural resources.

PUBLIC RESOURCES CODE

Section 5097.5: No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands (lands under state, county, city, district or public authority jurisdiction, or the jurisdiction of a public corporation), except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

CALIFORNIA REGISTER OF HISTORICAL RESOURCES

The California Register of Historical Resources (CRHR) is a listing of all properties considered to be significant historical resources in the state. The California Register includes all properties listed or determined eligible for listing on the National Register, including properties evaluated under Section 106, and State Historical Landmarks No. 770 and above. The California Register statute specifically provides that historical resources listed, determined eligible for listing on the California Register by the State Historical Resources Commission, or resources that meet the California Register criteria are resources which must be given consideration under CEQA (see above). Other resources, such as resources listed on local registers of historic resources or in local surveys, may be listed if they are determined by the State Historic Resources Commission to be significant in accordance with criteria and procedures to be adopted by the Commission and are nominated; their listing in the California Register is not automatic.

Resources eligible for listing include buildings, sites, structures, objects, or historic districts that retain historical integrity and are historically significant at the local, state or national level under one or more of the following four criteria:

1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
2) It is associated with the lives of persons important to local, California, or national history;
3) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or
4) It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

In addition to having significance, resources must have integrity for the period of significance. The period of significance is the date or span of time within which significant events transpired, or significant individuals made their important contributions. Integrity is the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance.

Alterations to a resource or changes in its use over time may have historical, cultural, or architectural significance. Simply, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. A resource that has lost its historic character or appearance may still have sufficient integrity for the California Register, if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data.

NATIVE AMERICAN HUMAN REMAINS

Sites that may contain human remains important to Native Americans must be identified and treated in a sensitive manner, consistent with state law (i.e., Health and Safety Code §7050.5 and Public Resources Code §5097.98), as reviewed below:

In the event that human remains are encountered during project development and in accordance with the Health and Safety Code Section 7050.5, the County Coroner must be notified if potentially human bone is discovered. The Coroner will then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she shall contact the Native American Heritage Commission (NAHC) by phone within 24 hours, in accordance with Public Resources Code Section 5097.98. The NAHC will then designate a Most Likely Descendant (MLD) with respect to the human remains. The MLD then has the opportunity to recommend to the property owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and associated grave goods.

CALIFORNIA ADMINISTRATIVE CODE, TITLE 14, SECTION 4307

This section states that "No person shall remove, injure, deface or destroy any object of paleontological, archeological or historical interest or value."

MITIGATION MEASURES

In addition to California State laws and codes, this Project is governed by Mitigation Measures developed for the Los Cerritos Wetlands Restoration Plan Program Environmental Impact Report (PEIR). Mitigation Measures can be found in Appendix B.

BACKGROUND

ENVIRONMENTAL SETTING

The Los Cerritos Wetlands Complex area is located in the Peninsular Ranges topographic province (Appendix C,
Figure C - 1). The Peninsular Ranges extends from Mount San Jacinto in the north, through the tip of Baja, Mexico in the south. Subparallel to these ranges on the east is the San Andreas Fault Zone. The northwestwards motion of the Pacific Plate has created these ranges and their corresponding valleys. The topographic variations across California, created by plate tectonics, resulted in California Native populations having access to different ecosystems, fertile valleys, mountains and hills (Lightfoot and Parrish 2009:52).

The current Los Cerritos Wetlands Complex is a remnant of a once much larger tidal estuary system that sits at the mouth of the San Gabriel River (Coastal Restoration Consultants 2021:5). The greater area has long been hydrologically dynamic. For example, the Santa Ana River which is channelized at its mouth now flows into the Pacific Ocean in Huntington Beach but "composite of early historic maps of the Orange County region shows that the Santa Ana drainage has migrated within an area measuring approximately seventeen miles along the coastline. During various points in time, the river fed (from north to south): Alamitos Bay, Anaheim Bay, Bolsa Bay, Santa Ana Marsh, and Newport Bay" (WPA 1936 in Wiley 2012).

Further, California has been recognized as full of diversity based on its plants, animals and landscapes which in turn has affected human occupation and settlement through time. Based on this diversity, the California Geological Survey has divided the state into 12 geomorphic provinces. The Los Cerritos Wetlands Complex area is located within the South Coast Province (Appendix C,
Figure C - 2; Lightfoot and Parrish 2009:61; Schoenherr 2017:1).

The Southern LCW Project area "contains multiple former sumps, landfills, and contaminated areas from prior oil operations, and is currently owned and maintained by the LCWA. Some areas of tidal southern coastal salt marsh still persist on the site, but other areas were converted by previous land owners from coastal salt marsh habitat to primarily ruderal uplands with no tidal connections. Former access roads still bisect the site…" (ESA 2020).

GEOLOGICAL SETTING

The Southern LCW Project area lies in the broad coastal plain of Los Angeles and Orange counties, California, named the Tustin Plain. The Tustin Plain is bounded by the Santa Ana

Mountains to the east, the Puente and Coyote Hills to the north, the Pacific Ocean to the west, and the San Joaquin Hills to the south. Orange County is part of the coastal section of the Peninsular Range Geomorphic Province, which is characterized by elongated northwest-trending mountain ridges separated by sediment-floored valleys. Faults branching off from the San Andreas Fault to the east create the local mountains and hills.

STRATIGRAPHY

The Southern LCW Project area is mapped as middle to late Pleistocene old marine to nonmarine deposits and modern artificial fill (Appendix C,
Figure C - 3; Saucedo et al. 2016).

Old marine to non-marine deposits, middle to late Pleistocene (Qom)

These middle to late Pleistocene (500,000 to 11,700 years old), interfingering near shore marine and non-marine sediments were deposited along the ancient coast. Beach, estuarine, and reddish-brown alluvial deposits of clays to conglomerates are now frequently present as wave cut platforms brought to the surface by uplift (Saucedo et al. 2016).

Artificial fill, modern (af)

Modern artificial fill from dredging activities is less than 200 years old. These sediments will not contain scientifically significant fossils or artifacts if any are present. Only large areas of fill are typically mapped (Saucedo et al. 2016).

CULTURAL SETTING

Based on linguistic, ethnographic, and archaeological cultural affiliation, the Project Area has been occupied by the Gabrielino/Gabrieleño/Tongva/Kizh (McCawley 2002; Strudwick et al. 2007) and Juaneño (Acjachemen) since prior to the arrival of the Spanish and continuing to the present. The following summarizes the prehistoric setting, historic setting, and ethnography.

PRE-CONTACT HISTORY

Several Southern California regional syntheses exist (Appendix C,
Figure C - 4), however this study will use the cultural sequence developed by Mason and Peterson (2004) since it was developed locally using many dated sites (N=37) and over 300 radiocarbon dates (see Table 1)

Table 1. Southern California Cultural Sequence (after Mason and Peterson 2004)

Period	Years Before Present	Calendar Years (AD/BC)
Mission	181-116	AD 1769-1834
Late Prehistoric 2	650-200	AD 1300-1750
Late Prehistoric 1	1350-650	AD 600-1300
Intermediate	3000-1350	1050 BC-AD 600
Milling Stone 3	4650-3000	2700-1050 BC
Milling Stone 2	5800-4650	3850-2700 BC
Milling Stone 1	8000-5800	6050-3850 BC
Paleo-Coastal	Prior to 8000	Prior to 6050 BC

PALEOCOASTAL (PALEOINDIAN) PERIOD (PRIOR TO 6050 BC / 8000 BP)

The search for the earliest Paleo-Coastal communities has been predicated on the "Ice Free Corridor" theory; that at the end of the Pleistocene (~11,700 years Before Present [BP]) people from northeast Asia crossed Beringia and entered the western United States through a gap between the Laurentide and Cordilleran ice sheets; after which they moved to settle the coasts. Paleontological, geological and pollen analyses, however, has shown that the so-called "Ice Free Corridor" was not a viable migration option from 30,000 to 11,500 years ago (Mandryk et al. 2001). Additionally, with the increase in the number of accepted sites dated prior to 11,700 BP (e.g., Monte Verde, Chile at 14,800 BP) including several Coastal California Channel Island sites (e.g., Arlington Springs on Santa Rosa Island at 13,000 cal BP and Daisy Cave on San Miguel Island at 12,000 cal BP), new models for the settlement of the New World had to be considered (Erlandson et al. 1996; Johnson et al. 2002).

Paleo-Coastal subsistence patterns have predominantly been described as dependent on the hunting of megafauna as represented by large Clovis-like points in the archaeological record. However, this pattern has not been convincingly identified in coastal California (Erlandson et al. 2007:56). Instead at early sites such as Daisy Cave, there is evidence of much more diverse subsistence patterns, particularly the use of a variety of marine habitats. As an alternative to the "Ice Free Corridor" theory and considering the cultural material seen at early Channel Islands sites, Erlandson et al. (2007) argue that the earliest New World settlers followed the productive kelp forest habitats that exist along the Pacific Rim. This "kelp highway" allowed settlers to use near shore marine resources, such as large red abalones (Haliotis rufescens), black turban snails (Tegula funebralis), sea urchin (Strongylocentrotus spp.), pinnipeds, sea otter, and California sheephead (Semicossyphus pulcher) while portions of North America were covered by ice sheets. In addition to near-shore marine ecofacts found at early Channel Island sites, Paleocoastal artifacts include small stemmed Channel Island Barbed points, chipped stone crescents (proposed to be used for bird hunting), fish gorges and evidence of boat technology (Erlandson et al. 2011). There is also evidence, based on the discovery of spire lopped Callianax biplicata beads dating to 9000 to 7000 cal BC of inter-regional trade with the Great Basin (Fitzgerald et al. 2005).

The earliest evidence of the settlement of the Southern Channel Islands comes from Eel Point (SCLI-43) on San Clemente Island around 6500 to 6000 cal BC, straddling the Paleo-Coastal/Milling Stone Period 1 boundary. Based on its distance from the mainland (77 kilometers), and the fact that it was never connected to the mainland, it can be assumed that seaworthy vessels were used, although no remnants of such vessels have been found to date (Cassidy et al. 2004; Yatsko 2000). Other evidence for the presence of seaworthy vessels on San Clemente Island includes a woodworking tool kit that is consistent with tools used to build watercraft historically (Rondeau et al. 2007). Eel Point also shows a marine subsistence pattern that is focused on hunting seals, sea lions, and dolphins as well as the collection of seashells (Porcasi and Fujita 2000). The earliest evidence of the occupation of San Nicolas Island occurred approximately 6555 BC (8505 BP) at CA-SNI-339 (Schwartz and Martz 1992). Earlier sites may have been lost due to rising sea levels after 10,000 BP (Martz 1994). Other sites show that the San Nicolas Islanders hunted sea mammals, near-shore fish such as perch, and a variety of shellfish (Bleitz-Sanburg 1987).

Milling Stone Period (6050-1050 BC / 8000-3000 BP)

Mason and Peterson divide the Milling Stone Period into three subdivisions: Milling Stone 1 (8000-5800 BP), Milling Stone 2 (5800-4650 BP), and Milling Stone 3 (4650-3000 BP). The climate at the beginning of Milling Stone Period 1 was warmer and drier than today with freezing winters rare near the coast. However, toward the end of the Milling Stone Period 1, the climate started to cool and stabilize to a climate similar to today's weather (King 2001).

Also, during the Milling Stone Period there is evidence of trade between the Great Basin and other areas of California. Coso Mountain obsidian artifacts have been found at archaeological sites in southern California while shell beads, particularly Olivella Grooved Rectangle beads, have been found as far away as Oregon and Nevada (King 2001; Raab and Howard 2002; Vellanoweth 1995, 2001). Vellanoweth (2001) argues that Olivella Grooved Rectangle beads may be used as an ethnic marker for Uto-Aztecan speaking peoples like the Gabrielino (Gabrieleño; Tongva; Kizh) since they were not made in Chumash territory to the north.

At 5000 BP on the southern California mainland, there was an increase in the quantity of ground stone tools (e.g., manos, metates, mortars, pestles) suggesting an intensification of the use of plant and marine resources, particularly seeds and shellfish (Arnold et al. 2004). Toward the end of the Milling Stone Period, the use of manos and metates subsided while the number of mortars and pestles grew. This switch may indicate that acorns started to make up a larger portion of the diet.

The presence of pottery within Gabrielino (Gabrieleño; Tongva; Kizh) territory prior to contact has been argued to be the result of trade or exchanges with those Native American communities that made pottery, i.e., the southwest or Colorado River Tribes. However, some archaeologists argue that they have identified fired hand shaped ceramic pieces using local materials. Nineteen irregular hand shaped and fired ceramic pieces from Little Harbor on Santa Catalina Island were dated to around 5000 years old (Porcasi 1998). Porcasi argues that these ceramic pieces are like those found at the Irvine site (CA-ORA-64) in Orange County and suggests they are evidence of a broad interaction sphere linking the southern Channel Islands with the desert interior. Boxt and Dillon (2013) argue that the Gabrielino (Gabrieleño; Tongva; Kizh) living at CA-LAN-2630, located on the campus of California State University, Long Beach, made ceramics prior to the post-Contact era from locally derived clays.

Intermediate Period (1050 BC-AD 600 / 3000-1350 BP)

During the Intermediate Period, the climate became warmer and drier, with lower rainfall, than the Milling Stone Period. The sea level rise slowed with surface temperatures lower than before; although paleoclimate data suggests that between circa (ca.) 3000 and 1700 BP, there was a period of heavier rainfall Early in the Intermediate Period, mortars and pestles replace milling stones and hand stones in artifact assemblages, which may signal a shift from the use of grass and hard seeds to acorn exploitation. During this time, there was an increase in the utilization of nearshore fish, sea mammal resources, and deep-water resources on the islands (Glassow 1980; King 2001, 2014; Tartaglia 1976). There was increased sedentism in the Intermediate Period, with villages being permanent or semi-permanent. Population growth resulted in intensive resource collection leading to the decline of local resources and the need to collect higher-cost resources. This is evident at Eel Point, where there is a focus on lower-ranked resources such as fish and small shellfish as is evident (Byrd and Raab 2007:223). The active management of terrestrial resources became evident on the mainland during this time, with intentionally set fires and intensive horticulture practices such as pruning, sowing, planting, and irrigation being used to increase the productivity of trees and plants (Arnold et al. 2004). This may have also occurred on the islands as well. Burial practices included flexed inhumations with large slate slabs or metates located on top of or near the head of the individual (Gamble and King 1997).

Late Prehistoric period (AD 600-1750 / 1350-200 BP)

Mason and Peterson divide the Late Prehistoric Period into two subdivisions: Late Prehistoric 1, 1350-650BP (AD 600-1300) and Late Prehistoric 2, 650-200 BP (AD 1300-1750). It is during the Late Prehistoric Period that the cultural manifestations observed in the ethnohistoric period begin to emerge. By AD 500, there is a change in the cultural manifestations seen in the archaeological record within Gabrielino (Gabrieleño; Tongva; Kizh) territory. This includes a change in interment practices from burial to cremation, dog burials, as well as a switch from z-twining to s-twining in basketry (Sutton 2009; Rozaire 1967). These features are considered the markers signaling the migration of Takic-speaking people from the desert to the coast, pushing the Chumash to the north and the Yuman-speaking Kumeyaay people to the south. See the Ethnography section below for a description of the Takic language group which includes the Gabrielino (Gabrieleño; Tongva; Kizh) language. Known as the "Shoshonean intrusion" (or Shoshonean Wedge) theory, it is argued that the Takic groups settled along the coast and immediately "got with the program" and imitated the cultural practices and adaptions used by the previous Hokan-speaking populations they supposedly displaced (Kowta 1969; Koerper 1979; Kroeber 1925; Moratto 1984:560; Sutton 2009).

The Late Prehistoric Period saw the emergence of complex social organization with ascribed status evinced by the presence of abundant grave goods in child burials (King 1982; Martz 1984). Starting at AD 800, there is evidence of the exchange of Santa Catalina Island soapstone vessels to the mainland (e.g., Malaga Cove) with craft specialization intensifying at the end of the period (Howard 2002).

There has been considerable debate regarding to what extent climate change contributed to the development of complex societies in Southern California, including the Gabrielino (Gabrieleño; Tongva; Kizh) (Arnold 1992; Gamble 2005; Kennett and Kennett 2000; Koerper et al. 2002; Raab et al. 1995; Raab and Larson 1997). What is known is that new fishing strategies begin to be utilized by AD 500. These new practices include the development and use of the Gabrielino (Gabrieleño; Tongva; Kizh) ti'at, (*tomool* in Chumash), the sewn plank canoe (Arnold and Bernard 2005), and a new fishing kit which includes circular shell fishhooks manufactured from single pieces of abalone (*Haliotis* spp.), California mussel (*Mytilus californianus*), and Norris' top shell (*Norrisia norrisi*) (Strudwick 1986). Such a fishing kit was found at the Nursery site on San Clemente, consisting of a seagrass bag containing fishing tackle such as lithic drills, abraders, rib net-spacers, a bone knife and barbs, pry bars, abalone fishhooks and hook blanks, a steatite whale effigy, and serpentine sinkers (Bleitz and Salls 1993). Coupled together, these tools were used to obtain deep sea fish such as the broadbill swordfish, striped marlin, albacore, yellowfin tuna, bluefin tuna, blue shark, and shortfin mako (Arnold and Bernard 2005). Also, by AD 500–600 BC, the bow and arrow comes into the area and as a result, projectile points get smaller, although large points are still evident on the Channel Islands due to the continued used of spears on large marine mammals (Arnold and Bernard 2005).

Mission Period (AD 1769-1834)

Historic archaeologists identify the beginning of the Mission Period with the establishment of the first Spanish Mission in San Diego in 1769 and the settlement of Alta California by the Spanish. Even though Vizcaino had explored the Pacific coast in 1602, the Spanish did not immediately settle Alta California. Beginning in 1566, Spanish galleons from Manila, Philippines brought Asian goods to Acapulco, Mexico. During these long and arduous voyages, ships lacked substantial food resources resulting in the death of crew members and eventual loss of ships (Corle 1949:37). To ensure a safe return, the Spanish government decided that ports needed to be built in Alta California in order to re-supply the ships with fresh meat, fruits and vegetables (Corle 1949:32; James 1913:14). Additionally in 1767, Marques de Grimaldi, the Minister of State, told Jose de Gálvez, the Visitor-General of Mexico, that the Russians and French were encroaching on its Alta California territory (Archibald 1978:1; James 1913:14). As a result, King Carlos II of Spain gave the order to "occupy and fortify San Diego and Monterey for God and the King of Spain" to fight foreign claims to Spanish land (James 1913:16).

In 1769, Gaspar de Portolá led one of three groups to Alta California to establish Spanish settlements, or presidios, at San Diego and Monterey Bay (McCawley 1996:188). Accompanying Portolá was Junípero Serra and other Franciscan priests who sought to establish missions to convert the Native Americans they encountered. They established several missions, sustained by Indian labor, that supplied the presidios with subsistence goods.

Another factor that changed trade relations in southern California during the Mission period was the missions' policy of 'reducción' (Webb 1983). The reduction of the Indian population in its initial settlement caused the fathers to look for more converts. The stability of the mission relied on the Indian population to make cloth, to cook, and to farm. As the population grew sparse, the fathers traveled further, past the mission lands, to gather new Indians to live in the missions and carry on the work.

ETHNOGRAPHY

The following section will provide an overview of the cultural patterns as recorded for the Gabrielino (Gabrieleño; Tongva; Kizh) and the Juaneño (Acjachemen). Although several anthropologists and ethnologists have collected information regarding the cultural practices, village location, and language of the Gabrielino (Gabrieleño; Tongva; Kizh) in the late 19th and early 20th centuries, it is not as extensive as it is for other southern California Tribes. These collections were recovered under a "salvage ethnography" paradigm, predicated on the notion that the Tribes would soon vanish, and it was imperative to collect as much information about pre-Columbian Native languages and lifeways as possible for future study. Thus, scholars looked for Tribal members who had knowledge of, and still practiced, the uncorrupted tribal lifeways. However, Gabrielino (Gabrieleño; Tongva; Kizh) communities and other California Tribes had been so decimated by years of colonial mission control, many who survived had been successfully converted into a Spanish/Mexican peasant labor force that spoke Spanish and practiced Catholicism. Scholars disregarded Tribal members that did not fit their preconceived notions of who a "pure" Indian was (Martinez 2010:216). As a result, there is a big hole in the ethnographic record on the use of the Los Cerritos Wetlands area as Gabrielino (Gabrieleño; Tongva; Kizh) and Juaneño (Acjachemen) community members who had that knowledge may have been overlooked.

GABRIELINO (GABRIELEÑO; TONGVA; KIZH)

Territory

As stated earlier, the study area is located within Gabrielino (Gabrieleño; Tongva; Kizh) territory (Appendix C,
Figure C - 5). Gabrielino (Gabrieleño; Tongva; Kizh) Traditional Territory included large portions of Los Angeles County, the northern part of Orange County, small sections of Riverside and San Bernardino counties as well as the four southern Channel Islands of Pimu (Santa Catalina), Santa Barbara, Kiinkepar (San Clemente), and Haraasgna (San Nicolas).

Their territory encompassed a number of ecological zones which affected their subsistence and settlement patterns. The Gabrielino (Gabrieleño; Tongva; Kizh) would supplement the resources gathered near them with resources from other ecological zones by obtaining them either directly or through trade (Bean and Smith 1978). Various scholars have divided these ecological zones differently. McCawley divides southern California into the Interior Mountains and Foothills, Valleys and Prairies, Exposed Coast, Sheltered Coast, and the Southern Channel Islands zones (McCawley 1996). The Los Cerritos Wetlands Complex is located in the Exposed Coast ecological zone. The resources available in this ecological zone include shellfish, rays, sharks, and fish. On the other hand, Heizer and Elasser (1980; Appendix C,
Figure C - 6) place the study area within their Foothill Ecological Culture Type and identify the Gabrielino (Gabrieleño; Tongva; Kizh) as Foothill Hunters and Gatherers, Coastal Tidelands Collectors, Coastal Sea Hunters-Fishers, and Valley and Plains Gatherers. Appendix C,
Figure C - 6 lists the resources that would have been available to the Gabrielino (Gabrieleño; Tongva; Kizh) in those ecological cultural types.

Origins

Much of the southern California archaeological literature argues that the Gabrielino (Gabrieleño; Tongva; Kizh) moved into southern California from the Great Basin around 4,000 BP, 'wedging' themselves between the Hokan-speaking Chumash, located to the north, and the Yuman-speaking Kumeyaay, located to the south (see Sutton 2009 for the latest discussion). This Shoshonean Wedge, or Shoshonean 'intrusion' theory, is counter to the Gabrielino (Gabrieleño; Tongva; Kizh) community's knowledge about their history and origins. Oral tradition states that the Gabrielino (Gabrieleño; Tongva; Kizh) have always lived in their traditional territory, with their emergence into this world occurring at Puvungna, located in Long Beach (Martinez and Teeter 2015:26).

Language

The Gabrielino (Gabrieleño; Tongva; Kizh) language is classified as part of the Uto-Aztecan language family, under the Takic branch. It is now generally accepted that the Gabrielino (Gabrieleño; Tongva; Kizh) language is a stand-alone Takic language, distinct from the Cupan sub-group (Mithun 1999:539). Several Gabrielino (Gabrieleño; Tongva; Kizh) words lists, descriptions of lifeways, and songs have been collected by ethnographers from various Gabrielino (Gabrieleño; Tongva; Kizh) community members over the years: Hale (1846), Loew (1876), Reid (1852[1968]), Merriam (1907), and Harrington (1917-1930s).

Settlement Patterns

Gabrielino (Gabrieleño; Tongva; Kizh) life centered on the village; composed of paternally related extended families, lineages, and/or clans, typically numbering 50-100 people. Houses, called *kiiy* in Gabrielino (Gabrieleño; Tongva; Kizh), were domed and circular with frames made from willow posts (or whale rib bones on the islands and along the coastline) covered with tule reed mats. Coastal *kiiys* had entryways that opened towards the sea with mats covering them. A large *kiiy* could hold up to three or four families and was perhaps 60 feet in diameter. Smaller homes were as little as 12 feet in diameter. Wind screens were usually adjacent to the *kiiy* and were used as open-air kitchens during fair weather. Large acorn granary baskets, sometimes coated with asphaltum and seated upon posted platforms, were also placed near the *kiiys*.

In addition to the habitation structures described above, other village structures included sweathouses, which were small semi-circular, semi-subterranean earth-covered buildings located near water to provide access for bathing, menstrual huts, and ceremonial open-aired enclosures, *yoyovars*, were located near chiefs' houses and near the center of villages.

In addition to the permanent villages, the Gabrielino (Gabrieleño; Tongva; Kizh) occupied temporary seasonal campsites that were used for a variety of activities such as hunting, fishing, and gathering plants (McCawley 1996:25). Hunting was primarily for rabbit and deer, while plant collection included acorns, buckwheat, chia, berries, and fruits. Coastal seasonal camps and camps near bays and estuaries were used to gather shellfish and hunt waterfowl (Hudson 1971).

Leadership

Each village had a *Tomyaar*, a leader whose position was typically inherited paternally, who regulated the village's religious and secular life. Each lineage had a leader that participated in the Council of Elders which in turn advised the *Tomyaar*. Through study of the personal names recorded in mission records and ethnohistorical information from other Southern California communities, King and Parsons (2014a:8-10) have identified a number Gabrielino (Gabrieleño; Tongva; Kizh) leadership roles that were not previously recognized. King and Parsons identified the title *Chari* as belonging to the town or settlement chief. The *Nu* was the bundle keeper, the person who protected sacred items that were bundled together, and the *Paha* (ceremonial assistant) was in charge of ceremonial preparation, including notifying people of the ceremony, carrying shell money between groups, and dividing money and food during ceremonies (Strong 1972:96). The *Nu* worked with the *Kika*, the household chief. The singer, *Eacuc*, was also known as a knowledge keeper.

Another important role in Gabrielino (Gabrieleño; Tongva; Kizh) society was the medicine person, known as a shaman in the anthropological literature. They were the doctors, therapists, philosophers, and intellectuals of the villages. Some *Tomyaars* were also influential medicine people in their own right (Kroeber 1925; Johnson 1962; Bean and Smith 1978; McCawley 1996). Both clans and villages were exogamous and patrilocal (Reid 1852). Villages were autonomous but came together seasonally for harvests and other cooperative activities including ceremonies.

Ceremonial Life and Beliefs

Gabrielino (Gabrieleño; Tongva; Kizh) life was also organized around the celebration and observance of various rituals and ceremonies. These included rites of passage, village rites, seasonal ceremonies, and participation in the widespread *Chingichngish* religion (various spellings; Kroeber 1925; McCawley 1996).

Gabrielino (Gabrieleño; Tongva; Kizh) concept of afterlife and burial practices came from *Chingichngish's* instructions to the Gabrielino (Gabrieleño; Tongva; Kizh). Upon death, it was believed that the heart of the person did not die, but was transported to *Shiishonga*, the land of the dead, located beyond Santa Catalina Island. If the deceased was a *tomyaar* or medicine person, they could reach *Tokuupar* or "heaven" or "sky" through the enactment of the proper rituals. For three days the community mourned, and the body was wrapped in a hide blanket or mat made of seagrass. After the mourning period, the body was carried to the village burial area. Mainland Gabrielino (Gabrieleño; Tongva; Kizh) tended to conduct cremations, while the Island Gabrielino (Gabrieleño; Tongva; Kizh) adhered to flexed inhumation burial practice. The hands were placed across the breast, and the entire body was bound.

For those villages practicing cremation, the remains were either interred or disposed of to the east of the village. Grave offerings included seeds, otter skins, baskets, soapstone pots, bone and shell implements, and shell beads. The amount of grave goods reflected the person's status. If the person held a leadership position, an item designating their office might also be placed with their body. Some interments featured dog burials placed above the corpse. The Gabrielino (Gabrieleño; Tongva; Kizh) saw the worlds of the living and the dead to be parallel places; therefore, the items buried or burned with the deceased were intended to accompany that person into the afterworld where their status would be recognized by the items that accompanied them. Graves were marked by baskets or rock slabs made of sandstone or slate. On San Nicholas Island, stone slabs decorated with ashpaltum would sometimes also be buried with the body. The living mourned for a year; the mourning period ended at the annual mourning ceremony conducted for all of those who had died in the past year (Bean and Smith 1978:545–546; McCawley 1996:155–158.)

Trade and Exchange Routes

The Gabrielino (Gabrieleño; Tongva; Kizh) played an important role in the various trade routes that extended throughout the western United States. In the seminal study Power and Persistence, Bean et al. (1978) discussed the Pacific Ocean-Great Plains trade system and demonstrated that the Gabrielino (Gabrieleño; Tongva; Kizh), Cahuilla, Panya (Halchidoma), Northern Pima and O'odham (Kohatk) were trade partners. The Santa Catalina Island Gabrielino (Gabrieleño; Tongva; Kizh) were the western anchor of the trade route with steatite items moving across the ocean via *ti'ats*, the mainland foot trails through the San Gorgonio Pass and into to Cahuilla territory. Today's Interstate 10 freeway follows that trail (Bean et al. 1978:5-1). In addition to steatite from Santa Catalina Island, other trade items from Gabrielino (Gabrieleño; Tongva; Kizh) territory included abalone shell, olivella beads, asphaltum, sea otter pelts and salt (Figure 3; Dobyns 1984). Food such as dried fish, marine mammal meat and acorns were also traded (Meighan 1959:391; Rosen 1980:27; McCawley 1996:79, 2002:47). In return the Gabrielino (Gabrieleño; Tongva; Kizh) received obsidian, furs, ceramic vessels, buckskins and other items.

Commodity	Gabrielino	Cahuilla	Panya	Gila River Pima	Kohatk
Steatite	----→	---→	---→	--C--	
Abalone Shell	----→	---→	---→	--C--	
Olivella Beads	----→	---→	--C→	--C--	
Dried Fish	----→				
Dried Wild Mutton				--C--	←----
Dried Venison				--C--	←----
Sea Otter Pelts	----→	---→	--C-		
Salt	----→	←---		--C--	←---→
Asphaltum	----→	---→	--C-		
Acorns	--C-→	←--→	--C-	--C--	←----
Wild Gourd Seeds				--C--	←----
Seeds	C--	←---		C--	←----
Buckskins	C--	←---		C--	←----
Deer Tallow	C--	←---	←-C-	←-C--	←----
Obsidian	C--	←---			
Furs	C--	←---			
Red Paint	C--	←---	←-C→	--C	
Yellow Ochre				C--	←----
Maize		C--	←---		
Squash		C--	←---		
Gourds		C--	←---		
Turquoise		C--	←---		
Stone Axes		C--	←---		
Saguaro Syrup	C-?	←-?--	←-C-	←-C--	←-C--
Ceramic Vessels	C-?	←-?--	←-?--	←-C--	←-C--
Beans				--C-→	--C
Pumpkins				--C-→	--C
Melons				--C-→	--C
Cotton Fiber				--C-→	--C

Figure 3. Commodities Traded from Gabrielino (Gabrieleño; Tongva; Kizh) Territory to/from the Kohatk (O'odham) on the Gila River (from Bean et al. 1978)

Gates et al. (2013) connects Tongva territory to the Pacific to Rio Grande Trails Landscape that includes three major travel corridors from/to the Southern California coast (Appendix C, Figure C - 7). The trade route closest to the study area is the route that follows the US Interstate 10 freeway.

Village Use Areas and Locations
Based on research conducted on Santa Catalina Island and the mainland, the Gabrielino (Gabrieleño; Tongva; Kizh) community recognizes that in addition to the area used for habitation, i.e., houses and cooking areas, there are several other areas used outside the habitation area that are still considered part of the village (Posadas et al. 2011). These village use areas include short term camp sites, subsistence sites (e.g., hunting, gathering, fishing), sweat and ceremonial houses, quarries, tool production areas (e.g., lithic reduction), sacred sites, burial sites/cemeteries, and rites of passage areas (McCawley 1996:25). These village use areas are usually within 3-5 miles of the main habitation area. As a result, for the traditional cultural landscape study detailed later in this report, a review of archaeological sites within 3 miles of the Los Cerritos Wetlands Complex was completed to identify these associated village use areas.

There are two villages that lie within three miles of the Los Cerritos Wetlands Complex. *Puvungna*, located to the north, was, and continues to be, an important ceremonial center (in Tongva *puvu* = big ball of people, *ngna* = place of) for the Gabrielino (Gabrieleño; Tongva; Kizh) and Juaneño (Acjachemen). Portions of the National Register for Historic Places (NRHP)-listed *Puvungna* Indian Villages lay on the campuses of California State University, Long Beach, the Veterans Affairs Long Beach Healthcare System (VALBHS), and Rancho Los Alamitos Historic Ranch and Gardens. *Motuucheyngna* village has been identified on a portion of the former Hellman Ranch property, to the east and outside the Southern LCW Project area. *Motuucheyngna* was reported to mean flea (Harrington 1917-1930: R104 F24). More detailed information on these two villages is located in the Traditional Cultural Landscape section.

The Gabrielino (Gabrieleño; Tongva; Kizh) Community Today
Even with the devastating effects of disease, colonization, forced labor, and other genocidal activities perpetrated against them, 2,493 people in California (2,903 nationwide) identified themselves as Gabrielino on the 2010 United States Census; a testament to their survival (United States Census 2013a and 2013b). There are currently seven different Tribess or and Tribal organizations that some community members belong to: the Gabrieleno Band of Mission Indians - Kizh Nation, the Gabrielino-Tongva Indians of California Tribal Council, the Gabrielino Tongva Nation, the Gabrielino/Tongva San Gabriel Band of Mission Indians, the Gabrielino-Tongva Tribe, the Gabrielino-Shoshone Nation and the Ti'at Society/Traditional Council of Pimu. , although some Gabrielino people choose not to belong to any group. None of the groups are recognized by the United States federal government; however, five groups have filed letters of intent with the Office of Federal Acknowledgement (Office of Federal Acknowledgement

2013). In 1994, the California State Assembly and Senate jointly recognized the San Gabriel Band of Mission Indians' territory as encompassing the entire Los Angeles Basin area and the Channel Islands of Santa Catalina, San Nicholas, San Clemente, and Santa Barbara from Topanga in the west, to Laguna in the south, and to the base of the San Bernardino Mountains in the east (Resolution Chapter 146, Statutes of 1994 Assembly Joint Resolution 96).

Gabrielino (Gabrieleño; Tongva; Kizh) community members continue to fight against the misconception that they are extinct (Martinez et al. 2014; Teeter and Martinez 2009). To combat these uninformed notions, Gabrielino (Gabrieleño; Tongva; Kizh) community members work with various public entities and private philanthropic groups to educate the public about the deep history of the Gabrielino (Gabrieleño; Tongva; Kizh) within the Los Angeles area and their continued existence within a thriving metropolis. Additionally, community members are working with linguists to revitalize the Gabrielino (Gabrieleño; Tongva; Kizh) language (Marquez 2014).

Figure 4. A portion of the 1937/1938 Kirkman-Harriman Pictorial and Historical Map of Los Angeles County showing the County as it existed in 1860 with the Project area overlain

JUANEÑO (ACJACHEMEN)[2]

Territory

The Project area is within the traditional homeland of the Juaneño (Acjachemen) (Appendix C, Figure C - 8). The Acjachemen speak a language that is part of the Takic language family. The concept of territory is a complex one that carries distinct meanings within native people's perceptions, and for archeologists and researchers working within the European scholarship tradition. The European tradition favors a view of territory derived from clearly delineated boundaries and surveyed and fenced property lines. A traditional native view of territory is generally broader and more dynamic, accounting for various ways land has been used by many people, or simultaneously by different groups of people. With that in mind, the Acjachemen territory spans from coastal Long Beach to the north, Camp Pendleton to the south and includes all of Orange County as well as parts of western Riverside County (see Appendix C, Figure C - 8). At the arrival of the Euroamericans (1769) in California, the Acjachemen were living primarily in what we now know as Orange County, but their aboriginal territory extended as far south as San Onofre Creek in San Diego County and east to the ridge of the Santa Ana Mountains in Riverside County, an area of about 600 square miles in size. The Acjachemen believe that their ancestors have lived here from the beginning of time. Debate and controversy continually surround the gap between scientific theory and Acjachemen beliefs surrounding the time frame when the Acjachemen first inhabited the area. The population of the Acjachemen tribe in 1769 has been estimated at about 4,000 people. The ancestors shared boundaries with four other tribes: the Gabrielino [Gabrieleño; Tongva; Kizh] to the north, the Serrano and Luiseno to the east and south, and the Kumeyaay to the south.

The Acjachemen territory and even particular properties, such as mountains and rivers, are recorded in their memories, from traditional migration and creation stories that were told and retold, and songs that have been sung and danced for generations. Such features as special rocks, oak groves, fishing places, mountain ranges and places from where one can see the sun rise and set form a mental image, or map, of their homeland that combines history and geography into a whole body of traditional cultural knowledge.

Community Life

The Acjachemen depended upon gathering, hunting and fishing. Their lives centered on their permanent villages, with ready access to their specific hunting, fishing and collecting areas where they might stay for part of a season. Some of these areas were quite close by, but others were a day or more of travel from their villages. Individual families would travel inland or to the seashore at certain times of the year and set up temporary camps for a few days or weeks. When they returned to their village, they would carry baskets filled with the food they had collected. Houses were typically conical in shape and thatched with locally available plant materials. The

[2] The Juaneño (Acjachemen) ethnographic section was contributed by Joyce Perry, Tribal Manager and Cultural Resource Director for the Juaneño Band of Mission Indians, Acjachemen Nation.

principal house, or *kiicha,* belonged to the chief. It was usually the largest because he was apt to have a large family. Frequently, the chief had more than one wife, and relatives living nearby. Work areas were often shaded by rectangular brush-covered roofs (ramada). Each village had a ceremonial structure in the center called a *wamkish* enclosed by a circular fence where all religious activities were performed (Bean and Shipek 1978:553).

While the Acjachemen were not a nomadic people, if there was a serious drought, or their population grew too rapidly, they would sometimes relocate their village to another location. Archeological and ethnographic evidence clearly supports such movements. The Marine Corps Base Camp Pendleton Ethnographic Study, prepared by David Earle in 2020 references Boscana's recounting of an ancestral migration story of the Acjachemen.

"A chief named Oyaison had been chief of a village at Los Nietos Valley..had migrated with his eldest daughter, Corrone, to the vicinity of San Juan Capistrano…*The people that migrated under chief Oyaison had found people already living in the San Juan Capistrano area, and the migrants together with the original population settled a total of fifteen towns in the region*. (Harrington 1934:57-62, Johnson and O'Neil 2001:17)" (Earle 2020).

Religion

The hereditary village chief (*Nò-t*) held an administrative position that combined control of religious, economic and spiritual powers (Boscana 1933:43) Religion was an important aspect of their society. Religious ceremonies included rites of passage at puberty and mourning rituals (Kroeber 1925:636-647). At puberty, boys and girls underwent initiation rituals during which they were taught about the powerful beings governing them and punishing any infractions of the rules (Sparkman 1908:221-225). They were taught to respect their elders, give them food, to listen to them, and to refrain from anger. The boys' ceremony included drinking datura, dancing, and teaching the songs and rituals. The girls' ceremony included advice and instructions and necessary knowledge for village life, roasting in warm sand and rock painting (Bean and Shipeck 1978:555). Death is a major ritual for the Acachemen/ Luiseno. They observe at least a dozen mourning ceremonies. The Acjachemen participated in the widespread Chingichngish religion. There are several creation stories that the Acjachemen believe, inland and a coastal creation. Below is an excerpt of one of the inland creation stories:

"And so it is…before this world was as we know it today, there existed one above and another below. The two were brother and sister. The one above represented the heavens and the one below the earth. In time they were united and from their union came other beings full of life. This included rocks and stones of all kinds, particularly chert, for their arrows, trees and shrubs, herbs and grasses, and all kinds of animals. These were the First People, the *Kaamalam.*

After Earth had given birth to all the things in the world, she brought forth as her last child, one whom they called Wiyóot. Wiyóot's name signifies 'something which has taken root', denoting that his power and authority would extend over the earth as the largest trees spread their roots in every direction. Wiyóot had children, both male and female, and although he and his children were animate, they were not people like we know them today. As Wiyóot's descendants multiplied, the piece of earth his mother had given birth to continued to increase in size, always from the north to the south. And as the number of people increased, so did the size and shape of the earth."

Trade

Like many regions in California, the Acjcahemen homeland lies in a rich environment with an abundant variety of natural resources. Acjachemen relied on local materials to create tools, but also participated in trade with other California Indians, by trading their surplus in shell beads, mammal skins, salt dried fish, seaweed, and asphaltum (tar) with their inland neighbors for a variety of goods and luxury items.

The Juaneño (Acjachemen) Today

Despite the history of genocide, the devastating effects of the mission system, the Mexican period, and the American period, the Acjachemen have persisted. They are a vibrant community that continues to practice their traditional and cultural ways of life. Currently, there are three bands of Juaneño/Acjachemen. The Acjachemen are a non-federally recognized tribe. In 1993, the Juaneño Band of Mission Indians, Acjachemen Nation was jointly recognized by the California State Assembly and Senate as the original inhabitants of Orange County and parts of Los Angeles County, to parts of Riverside County, and to parts of Camp Pendleton (Resolution Chapter 121, Statutes of 1993 Assembly Joint Resolution 48). The Acjachemen are active in preservation of their language and sacred sites.

HISTORIC SETTING

City of Seal Beach

The Project area is located within the boundaries of the City of Seal Beach. The history of what would become Seal Beach began soon after the founding of Anaheim in 1857. At that time, the Anaheim Landing Company constructed a port for the Santa Ana Valley known as Anaheim Landing. Located on a small bay where Anaheim Creek emptied into the Pacific Ocean (now Seal Beach), the port consisted of a wharf and warehouse. Despite multiple disasters due to the treacherous water, coastal trade continued at Anaheim Landing for approximately 15 years (Glasgow 2021).

In 1875, the arrival of the railroad in Anaheim provided an easier and safer shipping alternative to the Landing. It was also during this period that the beaches surrounding the Landing had become a popular summer vacation location, with local newspapers reporting particularly large crowds numbering in the hundreds.

In 1901, Philip Stanton sold a plot of land which he had purchased from the Hellman Ranch to John C. Ord. After hiring a team of 30 mules, Ord relocated his Los Alamitos based general store to his new property at what is now the southwest corner of Main Street and Electric Avenue in Seal Beach. The Ord Company would buy additional property located at the eastern end of Anaheim Landing, which was later subdivided ca. 1903 (Alioto 2005).

On October 25, 1915, with a population of 250, the town of Seal Beach incorporated but under the name Bay City. The name was changed to Seal Beach shortly after incorporation in order to avoid confusion with San Francisco, which was also known as Bay City. In 1935, the site of Anaheim landing was designated a California Historical Landmark (Office of Historic Preservation 1935).

Substantial change would come to Seal Beach during World War II as the U.S. Navy purchased most of the land around Anaheim Landing to build the United States Navy's Naval Weapons Station Seal Beach. Construction of the Naval Weapons Station resulted in the demolition of 200 homes and the dredging of a 15-foot channel. Use of the water of Anaheim Bay is currently shared between the Navy and civilian craft (Glasgow 2021).

RANCHO LOS ALAMITOS

The Project area is within the boundaries of the former Rancho Los Alamitos, previously a contributor of the much larger Rancho Los Nietos (Appendix C, Figure C - 9).

In 1790, Spanish soldier Manuel Nieto was granted a 300,000-acre tract by his former military commander Pedro Fages (then recently appointed governor of California; Jurmain et al. 2011). When Manuel Nieto died in 1804, his massive landholdings, then known as Rancho Los Nietos, passed to his widow and children.

In 1834, Rancho Los Nietos was subdivided into five ranchos and one smaller ranch amongst Nieto's heirs: Rancho Los Coyotes, Rancho Las Bolsas, Rancho Cerritos, Rancho Santa Gertrudes, Rancho Alamitos, and Palo Alto (smaller ranch). Juan Jose Nieto, the eldest son, received the 28,027-acre Rancho Los Alamitos in addition to the 48,806-acre Rancho Los Coyotes. In 1837, Juan Nieto sold Rancho Los Alamitos and lived on Rancho Los Coyotes (Dixon 2004). On July 12, 1842, a deed of sale was issued to Abel Stearns for the "six square leagues of Rancho Los Alamitos." Just prior to Stearns' purchase of the rancho, an inventory was taken which documented the existence of three adobe buildings on the property. It is not known what improvements Stearns made to the ranch or the preexisting adobes during his period of ownership (Jurmain et al. 2011).

Following the conclusion of the Mexican-American war and the subsequent annexation of California to the United States, the U.S. Land Commission confirmed Stearns' title to Rancho Los Alamitos in 1855. Despite Stearns' monumental success as a cattle rancher, which made him the richest man in Southern California, a series of natural disasters coupled with an economic recession resulted in the collapse of his cattle empire. Between 1860 and 1870, catastrophic flooding followed by a period of drought resulted in the ruin of many ranches and farms within Southern California; up to 70 percent of the cattle in Los Angeles County were dead from drought by 1864. Thus ended the reign of the great cattle barons of California (Jurmain et al. 2011).

In 1865, Stearns was taken to court for failure to repay a $20,000 loan against Rancho Los Alamitos. Due to Stearns' dire financial situation, he was unable to raise the funds required to pay back the loan and accrued interest. As a result, Stearns lost Rancho Los Alamitos to his creditor Michael Reese. In 1871, a portion of Rancho Los Alamitos was leased by John Bixby of the successful American ranching Bixby family. Due to the severe regional drought, the sheep ranching tenants of Rancho Los Alamitos were willing to sublease their land to Bixby to sustain themselves. Bixby saw the potential of the rancho's land to sustain agriculture and dairy cows (Jurmain et al. 2011).

In 1881, the entirety of the 26,395-acre Los Alamitos rancho was offered for sale for $125,000 following the death of Michael Reese. Bixby, who had already been leasing a large portion of the rancho, entered into a three-way partnership with Isaias W. Hellman and the J. Bixby & Co. and together obtained an $80,000 mortgage of the rancho. They began operations that same year under the name J.W. Bixby & Co. (Jurmain et al. 2011).

Taking advantage of the soaring profit of wheat exports to England due to severe crop failures across Europe, Bixby used much of the rancho to grow wheat for export during the 1870s and 1880s. The size of Rancho Los Alamitos was such that tenant farming was introduced in 1878. This system of sharecropping would continue to grow and by 1890 nearly 18% of farmers in California were tenant farmers. Also of note, by 1890, a substantial population increase in Southern California led Bixby to notice the shifting value and use of land. J.W. Bixby & Co decided to capitalize on the new trend of budding beachside communities and developed the townsite he called Alamitos Beach on 5,000 acres of the seaside portion of Rancho Los Alamitos (Jurmain et al. 2011).

In May of 1887, John Bixby died suddenly at age thirty-nine from what is believed to be appendicitis. As a result of his death, Rancho Los Alamitos was divided amongst its surviving co-owners. Each recipient received 7,200 acres: J. Bixby & Co. received the inland section, Hellman received the section of land along the coast, and the remaining central area went to John Bixby's widow and children (Jurmain et al. 2011).

ISAIAS WOLF HELLMAN (OCTOBER 3, 1842-APRIL 9, 1920)

A Jewish immigrant from Bavaria, Isaias Wolf Hellman came to the United States in 1859 when he was 17 years old and immediately found work at a clothing store (Los Angeles Times 1920). In 1868, the Farmers & Merchants National Bank (the second bank in Los Angeles) opened its doors for business with Isaias Wolf Hellman as one of its co-founders. Known as a real estate magnate, Hellman had begun purchasing multiple properties in Southern California and pursued a successful career as a financier of local ranchos (including Rancho Los Alamitos) and wealthy landowners (such as James Irvine).

Hellman's influence grew and in 1887, the Los Angeles Clearinghouse Association was formed and he was elected President. In 1890, Hellman undertook the rehabilitation of the Nevada Bank of San Francisco which later merged with Wells Fargo. Isaias W. Hellman spent the majority of his working life in San Francisco where he died on April 19, 1920 at the age of seventy-eight (Los Angeles Times 1920).

HELLMAN RANCH

For 50 years, the majority of the work done on the Hellman Ranch used horse-drawn equipment. A single steam-powered excavator was used to excavate the many drainage ditches found on the property, including the Hellman Channel (Tyler 2018).

This ranch was used to provide feed for beef cattle the Hellman Company raised on a 35,000 acre ranch (Nacimiento Ranch) near Paso Robles, California. Cattle would be transported from the Nacimiento Ranch to the Seal Beach ranch to graze and then shipped to the Los Angeles Market. The land was divided into large parcels which were farmed by immigrant farmers who produced cash crops such as sugar beets. Support structures were constructed for the farmers which included homes, wells, barns and other ancillary buildings (Tyler 2018).

The rearing of cattle at the Hellman Ranch ceased during World War II when the U.S. Navy acquired most of the farmland in Seal Beach for the construction of what is now the Naval Weapons Station Seal Beach. This takeover by the Navy included large portions of Hellman's land. As a result, the Hellman Company pivoted use of the land from cattle to agriculture. In 1961, 541 acres of the ranch's best farmland was sold to the developers of Rossmoor Leisure World. Following the sale, the old ranch buildings were abandoned and were eventually sold to an aerospace company (Tyler 2018).

Los Angeles Basin Oil Industry

In 1920, I.W. Hellman, President of the Los Alamitos Land Company, died and was replaced by rancher and co-owner of the company Fred H. Bixby. Bixby leased tracts of land owned by the Alamitos Land Company to Standard Oil, Royal Dutch Shell Company, and the Marland Oil Company. Roads were constructed through the Project area and foundations for the oil derricks were set on driven pilings. In 1926, the Marland Oil Company began drilling with great success on the Bixby Lease (part of the Seal Beach Oil Field) now known as the Synergy Oil Field and that same year went into full commercial oil production. Production of oil at the Seal Beach Oil Field reached its peak in 1927, averaging 70,000 barrels per day (ESA 2019).

Oil extraction from the Seal Beach Oil Fields eventually declined post World War II with major issues such as damage to multiple wells (518) from earthquakes and subsidence. By the mid-1970s, 223 oil wells were still in use but produced far less then offshore drilling facilities in San Pedro Bay (ESA 2019).

Project Area History

The Project area overlaps with the property boundaries and history of Hellman Ranch and the production of oil in association with the Los Angeles Basin's oil industry.

Based on the earliest known USDA aerial photographs of the Project area, in 1927 the Hellman Channel is clearly visible in its current configuration; however, this aerial photograph shows that the channel continued southeast and then turned northeast at the eastern end of the Project area boundary (Appendix D,
Figure D - 1). There are also two water retention ponds and multiple dirt access roads leading to and from the Project area.

In a 1928 USDA aerial photograph, two large tanks are visible near the northern center of the Project area (Appendix D,
Figure D - 2). What is believed to be two additional large water retention ponds are visible adjacent to an access road near the northeast side of the Project area. In a 1938 USDA photograph, multiple small structures/objects are visible at the westernmost end of the Project area near an access road (Appendix D,
Figure D - 3). By 1952, the majority of what is now 1st Street (which crosses into the Project area from the west) is visible in most of its current configuration (Appendix D,
Figure D - 4). A large structure (previously identified by ESA in 2019 as LCWA-CRE-004-H), is located on the State Lands [Commission] Parcel site (ESA 2019). While only the concrete foundation currently remains, ESA determined the building was related to the Airport Club Marina Palace and was initially constructed in 1950. The building was a large Quonset hut which was used as a gambling house and music venue (ESA 2019).

Between 1962 and 1965, the 90 degree bend at the northernmost point of the Hellman Channel is altered to its current configuration (Appendix D,
Figure D - 5 and Appendix D,
Figure D - 6). Sometime between 1965 and 1974, a long portion of the northeast/southwest access road near the center of the Project area was removed (Appendix D,
Figure D - 7).

In 1974, two large rectangular water retention basins are present (which remain today) at the western end of the Project area, adjacent to 1st Street. It is assumed these basins are associated with the nearby oil fields which are outside the boundaries of the Project area. The structures located at the western end of the Project area (LCWA-CRE-004-H) are no longer present. Only the concrete foundation is visible. There are no notable alterations within the Project area between 1974 and present day (Appendix D,
Figure D - 8 and Appendix D,
Figure D - 9).

RECORDS SEARCH

CALIFORNIA HISTORIC RESOURCES INFORMATION SYSTEM

For the Los Cerritos Wetlands Restoration Plan Program Environmental Impact Report (PEIR), ESA archaeologist Vanessa Ortiz completed a search of the California Historic Resources Information System (CHRIS) from the South Central Coastal Information Center (SCCIC) located on the campus of California State University, Fullerton on May 19, 2019. The records search was for the entire Los Cerritos Wetlands Complex which included the proposed Project area as well as a one-mile radius.

Cogstone archaeologist Logan Freeberg requested a second and expanded records search from the SCCIC on March 23, 2021. The updated records search focused on identifying cultural sites within a three-mile buffer around the entire Los Cerritos Wetlands Complex. SCCIC Assistant Coordinator Michelle Galaz completed the search on April 30, 2021. Results of the record search indicate that 13 previous studies have been completed within the Los Cerritos Wetlands Complex while an additional 99 studies have been completed previously within a one-mile radius of the Los Cerritos Complex (Appendix E, Table E - 1).

Three prehistoric cultural resources have been recorded within the Southern LCW Project area: P-30-000256 (Landing Hill #1), P-30-000258 (Landing Hill #3), and P-30-000260. Outside of the Southern LCW Project area, a total of 350 cultural resources have been previously documented within the 3-mile radius from the Los Cerritos Wetlands Complex area. These consist of 30 cultural resources within 0 – 0.25 miles, 56 cultural resources within 0.25 – 0.5 miles, 34 cultural resources within 0.5 – 1 miles, 121 cultural resources within 1 – 2 miles and 109 cultural resources within 2 – 3 miles of the Los Cerritos Wetlands Complex area (Appendix F, Table F – 1).

P-30-000256 (LANDING HILL #1)

P-30-000256 was recorded as a prehistoric habitation site with milling stones located on Landing Hill above the coastal plain and tidal flats of Alamitos and Anaheim Bays, and close to food sources. The site was surface collected for many years prior to being recorded and much of it has been destroyed by development (McKinney 1969a based on information from Redwine 1959).

P-30-000258 (LANDING HILL #3)

P-30-000258 was recorded as a prehistoric habitation site that covered the highest of the small knolls on Landing Hill. Numerous chipped stone and ground stone artifacts were identified on the surface including 60 manos, 13 mortar fragments, 16 hammerstones, and a broken and mended sandstone bowl. This site has been largely destroyed by housing development (McKinney 1969b based on information from Redwine 1959).

P-30-000260

P-30-000260 was a prehistoric archaeological site that covered a small flat on the edge of Landing Hill. It is described as a seasonal camp marked mainly by shell remains and fragmented ground and chipped stone artifacts (McKinney 1969c based on information from Redwine 1959).

OTHER SOURCES

In addition to the SCCIC records search, a variety of sources were consulted in July 2021 to obtain information regarding the cultural context of the Project area. Sources included the National Register of Historic Places (NRHP), the California Register of Historic Resources (CRHR), California Built Environment Resource Database (BERD), California Historical Landmarks (CHL), and California Points of Historical Interest (CPHI) (Table 2). Specific information about the Project area, obtained from historic-era maps and aerial photographs, is also presented in the Project area History section.

Table 2. Additional Sources Consulted

Source	Results
National Register of Historic Places (NRHP)	Negative
Historic USGS Topographic Maps	The earliest USGS topographic quadrangle maps of the Project area are the 1886 Los Bolsas and 1896 Downey (both 1:62,500), which show the Project area as a wetland with improved roads close to its eastern border (Appendix G, Figure G - 1.) Little change is depicted until 1935, when the Los Alamitos (1:31,680) map shows a road in the south portion of the Project area (Appendix G, Figure G - 2). The San Gabriel River has not yet been channelized. The 1941 Las Bolsa and 1942 Downey (both 1:31,680) USGS topographic quadrangles show additional dirt roads and three buildings within the Project area (Appendix G, Figure G - 3). Depictions on USGS quadrangle maps change little to the present except for the 1974 Los Alamitos (1:24,000) USGS topographic quadrangle, based on an aerial photograph, and shows additional small roads, two larger retaining basins, and features encircled by roads that may be smaller retaining basins.
Historic US Department of Agriculture Aerial Photographs	Per the earliest known USDA aerial photographs, in 1927 (NETROnline 1927) there are multiple access roads visible within the Project area boundaries. Due to the poor quality of the photograph, observation of additional built environment is limited. In 1927, the Hellman Channel is clearly visible in its present location and configuration. Multiple dirt access roads are present, leading to and from the Project area. At least two large tanks are present at the northern center of the Project area. At least three water retention ponds are also visible. The 1952 USDA historic aerial photograph shows a large structure (previously identified by ESA in 2019 as LCWA-CRE-004-H) located on a State Lands [Commission] Parcel site (NETROnline 1952). While only the concrete foundation remains, ESA determined the building was related to the Airport Club Marina Palace and was initially constructed in 1950. The building was a large 32uonset hut which was used as a gambling house and music venue (ESA 2019). The 1974 USDA historic aerial photograph shows two water retention basins in place (NETROnline 1974). The features remain today. It is assumed these basins are associated with the nearby oil fields which are outside the boundaries of the Project area.
California Register of Historical Resources (CRHR)	Negative
Built Environment Resource Directory (BERD)	Negative
California Historical Landmarks (CHL)	Negative
California Points of Historical Interest (CPHI)	Negative

Source	Results
Bureau of Land Management (BLM) General Land Office Records	Table 3. Abel Stearns; 1874; Mexican Land Grant; Accession No. CACAAA 084787; Township 5 South, Range 12 West, Sections 11, 12 and 14; as part of 27143-acre land grant.
Local Registers (Historical Societies/Archives)	There is currently no active historical society in Seal Beach. Based on information found on the social media page for the Seal Beach Historical Society the organization is defunct and the whereabouts of its documentary holdings is unknown.

Table 3. Land Patents

Name(s)	Year	Accession Number	Type	T; R; Section
Abel Stearns	1874	CACAAA084787	Serial Patent	T: 5S; R: 12W, Sections 11, 12 and 14

Abel Stearns was one of the richest and most influential citizens of Los Angeles during his lifetime. Born in Massachusetts in 1799, he eventually made his way to California and settled in Los Angeles around 1833. Mr. Stearns made a large amount of money in trade and eventually purchased large swaths of real estate including Ranchos Los Alamitos, Las Bolas, La Laguna de Los Angeles and half interest in Los Coyotes. In 1849 he was a member of the first Constitutional Convention representing the district of Los Angeles. Mr. Stearns became one of the largest land and cattle owners in California. His wife, Dona Arcadia, who was the daughter of Don Juan Bandini, inherited the entire estate upon his death in 1871 (Barrows 1899).

SACRED LANDS FILE SEARCH

A Sacred Lands File (SLF) search was requested from the Native American Heritage Commission (NAHC) for the Los Cerritos Wetlands Complex for the PEIR in 2019. The NAHC responded that the search was positive but did not specifically identify the Sacred Land (Appendix H). Cogstone did not request an additional SFL search as Anthony Morales of the Gabrieleno/Tongva San Gabriel Band of Mission Indians identified that the sacred lands were the village of *Puvungna* which was nominated to the Sacred Lands file on November 19, 2019, and the village of *Motuucheyngna* which was nominated on May 9, 2019.

TRIBAL COORDINATION AND INTERVIEWS

TRIBAL ADVISORY COUNCIL

Consultation with Native American Tribes under AB 52 as well as other potentially interested Tribes was conducted for the PEIR (Section 3.15, ESA 2020). As a result of that process, a

Tribal Advisory Group (TAG) was created to collaborate first, with all tribes that consulted with LCWA through the AB 52 process for the PEIR, and potentially second, other interested Tribes, to engage tribal perspectives early on and throughout planning development, and to incorporate traditional ecological knowledge into restoration designs. Nine Tribes were invited to participate in TAG meetings (Table 4; Appendix I). The Gabrielino-Shoshone Nation was not part of the original AB 52 consultation for the PEIR as they had been inactive for several years but are now included for their knowledge of the area.

Table 4. Tribes invited to TAG

Tribe
Gabrieleño Band of Mission Indians – Kizh Nation
Gabrieleño/Tongva San Gabriel Band of Mission Indians
Gabrielino Tongva Indians of California Tribal Council
Gabrielino/Tongva Nation
Gabrielino-Shoshone Nation
Gabrielino-Tongva Tribe
Juaneño Band of Mission Indians Acjachemen Nation – Belardes
Juaneño Band of Mission Indians Acjachemen Nation – Romero*
Ti’at Society/Traditional Council of Pimu

*Teresa Romero has been replaced as Chairwoman by Heidi Lucero as of July 10, 2021.

The first TAG meeting was held on May 25, 2021, via Zoom. Four Tribal participants representing four Tribes attended (the Gabrieleno Shoshone Tribe, Gabrielino/Tongva Nation, the Gabrielino Tongva Indians of California, and Gabrielino-Tongva San Gabriel Band of Mission Indians). Participants were provided an overview of the purpose and goals of the TAG, information on the Southern LCW Restoration Project, results of the cultural resources records search, and information on the cultural landscape study of the greater Los Cerritos Wetlands Complex. After the meeting, minutes of the TAG meeting were prepared by LCWA and sent to representatives of the nine Tribes via email.

During the first TAG meeting, Tribal representatives requested an in-person field visit. On July 23, 2021, LCWA staff and consultants met with five Tribal representatives and three California Coastal Commission staff members (
Figure 5; Appendix J). Prior to the meeting, Tribal representatives were provided a list and map of the prehistoric sites within a 3-mile buffer around the Los Cerritos Complex and information about interviews to be conducted for the TCL study. Hard copies of these documents were made available to site visit participants, who walked the Southern LCW Restoration Project area as LCWA representatives provided information about the proposed project. Tribal members asked

questions and provided feedback on the proposed restoration plan. Detailed comments are summarized in the Tribal Feedback section below.

TRIBAL INTERVIEWS

To better understand the Gabrielino's (Gabrieleño; Tongva; Kizh) and Juaneño's (Acjachemen) relationship to the Los Cerritos Wetlands, saltwater marshes, and the greater cultural landscape encompassing the Los Cerritos Wetlands, including the villages of *Puvungna* and *Motuucheyngna*, Cogstone conducted interviews with Tribal members recommended by Tribal representatives.

Figure 5. Meeting with LCWA. Coastal Commission, and TAG on July 23, 2021.

Interviews were conducted in conjunction with UCLA's "Diverse Perspectives on Water" project. Funded by the National Science Foundation, the "Diverse Perspectives on Water" project is investigating how Gabrielino (Gabrieleño; Tongva; Kizh) and Tataviam viewed/views water in the past, present, and future in Los Angeles County. Prior to each interview, each interviewee was provided an Interview Consent Form and list of possible interview questions (Appendix K).

UCLA staff, Dr. Jessica Cattelino and Sedonna Goeman-Shulsky, conducted digital video recording of the interviews of four of the interviewees while Cogstone staff recorded interviews via digital audio recorder and took digital photographs. Each participant was provided an honorarium for their participation.

Los Cerritos Wetlands Authority staff conducted an interview with Matt Teutimez, Gabrieleño Band of Mission Indians – Kizh Nation, via Zoom. The Gabrieleño Band of Mission Indians – Kizh Nation's history and stories are not interchangeable with the history of other tribes interviewed in this study.

The Lawrence de Graaf Center for Oral and Public History at the California State University, Fullerton transcribed the digital audio interviews.

Copies of the interview transcripts, photos and interview audio and video will be provided to all interviewees. The interview transcripts, photos and video may be donated to the Graaf Center for Oral and Public History, upon consent of participants. Five Tribal members were interviewed (Table 5).

Table 5. Tribal members interviewed

Name	Tribe	Date	Location
Cindi Alvitre	Ti'at Society/Traditional Council of Pimu	August 14, 2021	Gum Grove Park, Seal Beach, CA
Mercedes Dorame	Gabrielino Tongva Indians of California Tribal Council	August 14, 2021	Gum Grove Park, Seal Beach, CA
Craig Torres	Ti'at Society/Traditional Council of Pimu	August 28, 2021	Southern LCW Project area, Seal Beach, CA
Nicholas Rocha	Gabrielino Shoshone Nation	August 28, 2021	Southern LCW Project area, Seal Beach, CA
Matt Teutimez	Gabrieleño Band of Mission Indians – Kizh Nation	October 7, 2021	Via Zoom

Rocha, Torres, and Alvitre were also given a tour of the Southern LCW Project area by D. Martinez.

Cindi Alvitre

Ms. Alvitre is Director of the Ti'at Society/Traditional Council of Pimu and has been an educator and artist activist for over three decades. She served as the first woman chair of the Gabrieleno/Tongva Tribal Council and in 1985, she and Lorene Sisquoc co-founded the Mother Earth Clan, a collective of Indian women who created a model for cultural and environmental education, with a particular focus on traditional art. In the late 1980s, she co-founded the Ti'at Society sharing in the renewal of the ancient maritime practices of the coastal/island Tongva, extending into the public realm as participants in the World Festival of Sacred Music and Moompetam, the American Indian Festival at the Aquarium of the Pacific in Long Beach. Cindi is currently a professor in American Indian Studies and the NAGPRA Coordinator for California State University, Long Beach.

Mercedes Dorame

Ms. Dorame is a Tongva artist and currently visiting faculty at CalArts. She is the daughter of Robert Dorame, Chair of the Gabrielino Tongva Indians of California Tribal Council. As an artist, she calls on her Tongva ancestry to engage the problematics of (in)visibility and ideas of cultural construction. As a Native American monitor, she observed construction at the Hellman Ranch site, located to the east of the Southern LCW Restoration Project and at the Playa Vista/Ballona wetlands. Dorame's work is in the permanent collections of the Hammer Museum, San Francisco Museum of Modern Art, The Triton Museum, The Allen Memorial Art Museum, The de Saisset Museum, The Montblanc Foundation Collection, and The Phoebe A. Hearst Museum.

Craig Torres

Mr. Torres is an Tongva artist and cultural educator descended from the indigenous communities of the Yaavetam (Los Angeles) and Komiikravetam (Santa Monica Canyon). He is a member of the Ti'at Society/Traditional Council of Pimu. As a Tongva cultural educator he has taught at many schools, culture and nature centers, museums as well as other governmental agencies on Tongva history, culture and contemporary issues. He is an ongoing consultant at Rancho Los Alamitos Historic Ranch and Gardens in Long Beach, working with the Tongva program that he helped develop. He has also been involved with the Chia Café Collective which provides cooking demos and classes with California native plants and provided education on the importance of preserving native plants, habitats and landscapes for future generations (Drake et al. 2016). He is also an advocate of "indigenizing" public and residential landscapes to California native plants and raising the public's awareness of drought and water issues. As an artist, he derives his inspiration from his Tongva cultural heritage. He works in digital media as a graphic designer, mixed media as well as utilized some of his designs as inspiration for community collaborative "sacred art" installations.

Nicholas Rocha

Mr. Rocha is currently the Chair of the Gabrielino Shoshone Nation and is on the cultural advisory board for Anahuacalmecac International Baccalaureate World School in Los Angeles. His mother, Vera Rocha, was chief of the Gabrielino Shoshone Nation while his father was its spiritual leader. The Rocha family has been involved with Native America activism and politics for many years including bringing a lawsuit against the City of Los Angeles in 1996 along with the Wetlands Action Network/Ballona Valley Preservation League/Earth Trust Foundation, and Friends of Sunset Park to protect the Ballona Wetlands, a salt marsh located in west Los Angeles.

Matthew Teutimez

Mr.Teutimez is a biologist and has both a Bachelor and Master of Science in Biology from California State University of Long Beach. He brings his indigenous perspective to his projects, melding his educational background and traditional ecological knowledge passed down from generation to generation. Mr. Teutimez's father, John Teutimez Jr. is a tribal elder, and he is cousin to current Tribal Chairperson Andrew Salas. The family can trace their lineage through the decades of colonization, through the Spanish, Mexican, and American periods, tying back to the San Gabriel Mission and workers of the ranchero families that occupied Long Beach and Seal Beach. Mr. Teutimez also sits on California's Environmental Protection Agency's Tribal Advisory Council.

Attempts to interview Juaneño (Acjachemen) Tribal members have been unsuccessful.

Overview of the responses to the interview questions are incorporated in the Tribal Feedback as well as summarized in the Cultural Landscape sections below.

Figure 6. Mercedes Dorame and Cindi Alvitre, Gum Grove Park, Seal Beach, CA August 14, 2021.

Figure 7. Craig Torres and Nicholas Rocha, Los Cerritos Wetlands, Seal Beach, CA August 28, 202

SURVEY

METHODS

The survey stage is important in a Project's environmental assessment phase to verify the exact location of each identified cultural resource, the condition or integrity of the resource, and the proximity of the resource to areas of cultural resources sensitivity. All undeveloped ground surface areas within the Project area were examined for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools or fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions and features indicative of the former presence of structures or buildings (e.g., postholes, foundations), or historic-era debris (e.g., metal, glass, ceramics). Existing ground disturbances (e.g., cutbanks, ditches, animal burrows, etc.) were visually inspected. Photographs of the Project area, including ground surface visibility and items of interest, were taken with a digital camera. Cogstone archaeologist Desiree Martinez conducted an intensive cultural resources pedestrian survey of selected areas of the Project area (northern edge of the Hellman Channel) on July 21 and August 28, 2021. Cogstone archaeologist Sandy Duarte completed an intensive-level pedestrian survey on August 5 and 6, 2021, of those areas not covered by dense vegetation.

Built environment survey methods include thoroughly photographing all elevations/facades of a structure including close-up photographs of important character defining features such as overall shape of the structure, its materials, craftsmanship, decorative details, etc. Cogstone Architectural Historian Shannon Lopez documented the Hellman Channel on July 21, 2021.

RESULTS

Ground visibility within the Project area was very poor (less than 3 percent) due to dense vegetation. As a result, Ms. Duarte surveyed approximately 20 acres of the 105 acres within the Project area which consisted of bare and semi-bare surrounding areas, having 95 percent visibility (Appendix L, Figure L - 1). The intensive pedestrian survey consisted of one- to three-meter wide transects in accessible areas. The wetlands and surrounding areas are covered with glasswort, prickly lettuce, sage brush, mule fat, wild tobacco, bladderpod, and an abundance of other native and non-native flora (
Figure 8). Most of the Project area surveyed has been highly disturbed from anthropogenic activities. Most of the Project area's surface was covered with dredge sediments and various sized shell fragments including clam, oysters, scallops, barnacles, California Horn Snail, etc. (
Figure 9).

Figure 8. Overview of the Southern LCW Project area showing dense vegetation, facing northeast

Figure 9. Overview dredge sediments and shell within the Project area

NEWLY RECORDED CULTURAL RESOURCES

Six new cultural resources were recorded: one historic earthen irrigation channel, two prehistoric isolates (2021_08_05_SD.1-I and 2021_08_28_DRM.1-I), two historic sites (2021_08_06_SD.1 and 2021_08_06_SD.2) and one prehistoric site (2021_08_06_SD_3).

Hellman Channel

This segment of the historic Hellman Channel within the Southern LCW Project area is 4,161 feet long (Figure 10). This channel was likely constructed ca. 1928 and originally used for irrigation purposes on the Hellman Ranch. The channel is not lined and is gravity fed. The depth of the channel is between 1-2 feet and varies in width, approximately 4 feet at its narrowest point and around 15 feet at its widest. The bank of the channel is covered with dense vegetation. Several concrete conduits located in various points along the channel allow water to flow under an asphalted road crossing.

Figure 10. Segment of Hellman Channel near 1st Street; facing east

2021_08_05_SD.1-I

2021_08_05_SD.1-I is an isolated prehistoric artifact consisting of 1 piece of obsidian debitage, located north of 1st Street (
Figure 11; Appendix L, Figure L - 1). The isolate measures 2.7 centimeters (cm) x 2.5 cm x 2 cm.

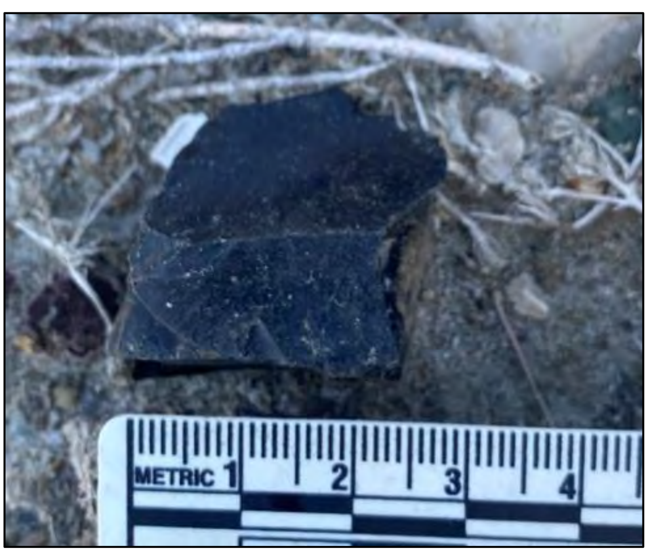

Figure 11. 2021_08_05_SD.1-I, isolated obsidian debitage

2021_08_28_DRM_1-I

2021_08_28_DRM_1-I is a prehistoric isolate consisting of 1 prehistoric exfoliated granitic unifacial mano and an exfoliated chalcedony scraper found in three pieces (
Figure 12; Appendix L, Figure L - 1). The mano measures 12.7 cm in diameter and 3.81 cm in thickness. When whole the scraper measured 2.54 cm x 2 cm and 0.5 cm in thickness. No other cultural resources or features were present.

Figure 12. 2021_08_28_DRM_1-I, granitic mano and chalcedony scraper

2021_08_06_SD.1

2021_08_06_SD.1 is a historic-age refuse site consisting of two piles of wood planks and boards, a pile of broken concrete, and some metal scraps
Figure 13,
Figure 14,
Figure 15,
Figure 16 and Appendix L, Figure L - 1). The wood and concrete had no diagnostic features.

Figure 13. Overview of first wood pile within 2021_08_06_SD.1, facing south

Figure 14. Overview of second wood pile within 2021_08_06_SD.1, facing north

Figure 15. Overview of concrete pile within 2021_08_06_SD.1, facing south

Figure 16. Metal scrap within 2021_08_06_SD.1.

2021_08_06_SD.2

2021_08_06_SD.2 is a historic-age refuse site consisting of deteriorated red bricks (Figure 17), a pile of tile fragments (
Figure 18) and a historic soda fired ceramic pipe sherd (
Figure 19). The site measures approximately 72 feet by 43 feet and is adjacent to the northern edge of the Hellman Channel (Appendix L, Figure L - 1).

Figure 17. Overview of deteriorating red brick within 2021_08_06_SD.2

Figure 18. Overview of ceramic tile in 2021_08_06_SD.2

Figure 19. Historic soda fired ceramic pipe sherd

2021_08_06_SD.3

2021_08_06_SD.3 is a prehistoric site consisting of a lithic scatter of a quartz flake (
Figure 20), a modified tool of pink quartzite (
Figure 21), and a grey quartzite scraper (
Figure 22). This site is approximately 60 meters east of 2021_08_06_SD.2. The site measures 60 meters by 14 meters and is adjacent to the northern edge of the Hellman Channel (Appendix L, Figure L - 1).

Figure 20. Quartz Flake within 2021_08_06_SD.3

Figure 21. Pink Quartzite tool within 2021_08_06_SD.3

Figure 22. Grey Quartzite scraper within 2021_08_06_SD.3

PREVIOUSLY RECORDED SITES

Portions of three previously recorded cultural resources are located within the Southern LCW Project area. P-30-000256 was revisited. This northwest portion of the site sits atop a bluff and spills down slope into the wetlands. Approximately 15 percent of the site was visible. No cultural resources were observed.

The portions of P-30-000258 and P-30-000260 that lie within the Southern LCW Project area were not accessible due to dense vegetation and were not revisited.

EXTENDED PHASE I TESTING

Cogstone returned in September/October for Extended Phase I presence-absence testing of three resources recorded during the August 2021 survey and site visits. These resources (temporary names) are 2021_08_05_SD.1/I and 2021_08_28-DRM_1-I cultural isolates, and site 2021_08_06_SD.3. Planned excavation is summarized in Table 6 below (and investigation methods are summarized in the next section and detailed in Gust and Martinez 2022). Eric Zahn of Tidal Influence met with the archaeological crew on the first day of excavation to provide optimal access routes to the resources and to point out sensitive vegetation. Native American monitors representing Tribal Advisory Group participants accompanied the archaeological crew on a rotating basis (Table 7).

Table 6. Planned excavation

Site Name	Site Type and Description	Type of Excavation	Depth of fill	Planned Disturbance (Grading)
2021_08_05_SD.1/I	Isolate-obsidian debitage	Shovel Test Pit (STP) 50 cm diameter x 1.2 m (1.3 x 4 feet) deep	3 feet	3 feet
2021_08_06_SD.3	Site-lithic scatter	Test Excavation Unit (TEU) 1m x1m x 1.6m (3 x 3 x 5 feet)	4 feet of fill	2-3 feet of cut
2021_08_28-DR_1-I	Isolate-granitic mano and chalcedony scraper	STP 40 cm diameter x 30 cm (1.3 x 1 foot) deep	0 feet	No planned ground disturbance

Table 7. Native American monitoring schedule

Date	Monitor	Representing
9/28/2022	none	Planned representative was ill and unavailable
9/29/2022	Robert Dorame	Gabrielino Tongva Indians of California Tribal Council
9/30/2022	Dominic Robles	Ti'at Society/Traditional Council of Pimu
10/3/2022	John Blunt	Gabrielino Tongva Nation
10/4/2022	Sam Dunlap	Gabrielino Tongva Tribe

METHODS

The testing crew included a single supervisor-level archaeologist and a qualified field technician. The principal archaeologist was on-site a on spot-check basis.

Cogstone contacted Dig-Alert (digalert.org) prior to the start of excavation, to obtain the locations of underground utilities.

Extended Phase I testing within the Southern LCW consisted of excavation with three prehistoric resources (2021_08_05_SD.1/I, 2021_08_06_SD.3, and 2021_08_28-DRM_1-I) identified during fields visits/pedestrian survey in 2021 (Appendix L, Figure L - 1; see Table 6). Excavations were accomplished using a a round-tipped shovel, pick, and dig bar in 10-centimeter (4-inch) levels. Sediments at each excavation location were screened through 1/8-inch hardware mesh. Sediment color was identified using a Munsell® Soil Color Chart, and any natural stratigraphy or effects of bioturbation were described using standard methods and terminology. All surface artifacts that could be reidentified were collected and the crew was prepared to collect all prehistoric artifacts and all temporally diagnostic historic-aged artifacts. A Handheld Trimble GeoXH 6000 high resolution GPS unit was used to record each excavation location. Color digital photographs were taken before, during, and after fieldwork. Other documentation included field notes on the condition of the deposit and excavation records. After excavation was complete, each excavation location was backfilled using sediments from the excavation.

2021_08_05_SD.1/I

Work at 2021_08_21.SD/I was originally planned to consist of one 50 cm diameter x 1.2 m (1.3 feet x 4 feet) deep STP (STP 1). Sediment color varied from white (2.5Y8/1) at the surface to dusky red (2.5Y3/2) to 30 centimeters to dark brown (7.5Y3/3) from 30 centimeters to the bottom of the pit. Sediments in STP 1 were silty sand that become progressively less silty and more compact with depth. Clay content varied from minimal within first 20 centimeters to increasingly large dense nodules from 20 centimeters (8 inches) to 50 centimeters (20 inches) (Figure 23). At approximately 50 centimeters further excavation was stopped by a large piece of reddish in color dimensional lumber. Due to this obstruction, a second STP (designated STP 1B) was excavated 5.2 meters (17 feet) due south of STP 1. Sediments within STP 1B were similar to those in STP 1 except it had greater clay content within the first 20 centimeters. A similar piece of reddish dimensional lumber was encountered at 58 centimeters (23 inches) (Figure 24). No other subsurface cultural material was found in STP 1 or STP 1B.

Figure 23. STP 1 at 2021_08_05_SD.1/I post-excavation, view to the north. Note dimensional lumber at bottom of STP.

Figure 24. STP 1B at 2021_08_05_SD.1/I post-excavation. Note dimensional lumber at bottom of STP.

2021_08_28_DRM_1.I

Work at 2021_08_28_DRM_1.I consisted of a single STP (STP 2) excavated to the planned depth of 30 centimeters (1 foot) (Figure 25). Sediment color varied from white (2.5Y8/1) at the surface to very dark grayish brown (2.5 Y3/2) in the first 10 centimeters (4 inches) to grayish brown inches (2.5Y5/2) from 10 centimeters (4 inches) to 30 centimeters (12 inches). A thin layer of salt covered STP 2 at the surface. Sediments consisted of wet silty sand with minimal clay and a small amount of shell that diminishes with increasing depth. No cultural material was found subsurface within STP 2.

Figure 25. STP 2 at 2021_08_28_DRM_1.I post-excavation.

2021_08_06.SD.3

Planned work at 2021_08_06.SD.3 consisted of a single 1 meter (3 feet) by 1 meter (3 feet) TEU excavated to 1.6 meters (5.2 feet) deep. A possible hand stone (mano) was found 3.1 (10 feet) meters northwest of TEU on the surface but the not all of the cultural material identified during survey was reidentified during testing. Starting at a few centimeters below the surface the content of the TEU became approximately 20 percent very dark gray (5YR3/1) silty sand and 80 percent rocky material predominated by fragments of broken concrete. One lithic flake and two possible lithic flakes were found in the first ten centimeters (4 inches) (Level 1) and some chert and quartzite were also present. Contents of Levels 2 and 3 were a similar 80 percent rocky material/20 percent very dark gray (5YR3/1) silty sand, with a small number of shell fragments mixed within fragments of modern plastic bags. One potential lithic flake was recovered from 16 to 26 centimeters (6 to 10 inches) below surface, and another was found at 20 to 30 (8 to 12 inches) centimeters below surface. Starting at approximately three centimeters (1 inch) deep within Level 4 the rocky material content began to decrease. No artifacts were recovered from the very dark gray (5YR3/1) silty sand within Level 4 other than a possible piece of wood. A brick fragment was found within the now nearly 100 percent very dark gray (5YR3/1) silty sand within Level 5. Small bits of asphaltum was also present from near the top of Level 1 to the bottom of Level 5. The first 5 centimeters of Level 6 consisted of the same very dark gray (5YR3/1) silty sand (Figure 26).

When the excavation reached 55 centimeters (22 inches) below surface, a shift in excavation methods was necessary due to time constraints. Instead of continuing the unit an STP (STP 3) was placed in the center of TEU 1. At approximately 85 centimeters (33 inches) below surface the dark reddish brown (2.5Y3/1) silty sand became wet and compacted and no longer contained shell or asphaltum. These sediments continued to 152 centimeters (5 feet) below surface where the STP was stopped due to time constraints and difficulty removing sediments from the STP for screening (Figure 27). Natural sediments were reached in this testing operation as fill depth was estimated to be approximately 4 feet (120 centimeters). No potentially prehistoric cultural material was found below 30 centimeters (1 foot) and any potentially historic-age material found was mixed with modern trash. Lithic artifacts from TEU 1 are shown in Figures 28 to 31.

Figure 26. TEU 1 at 2021_08_06.SD.3 post excavation at 55 centimeters deep, view to the north.

Figure 27. STP 3 in TEU 1 at 2021_08_06.SD.3 post excavation at 152 centimeters deep, view to the north.

Figure 28. Lithic flake (4) 1.4from TEU 1, 0 to 10 centimeters below surface.

Figure 29. Possible lithic flakes from TEU 1, 0 to 10 centimeters below

surface.

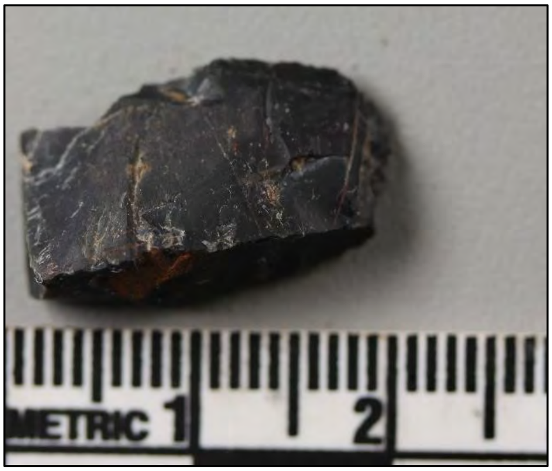

Figure 30. Possible lithic flake from TEU 1, 16 to 26 centimeters below surface.

Figure 31. Possible lithic flake from TEU 1, 20 to 30 centimeters below surface.

RESULTS

None of the three resources that underwent tended phase I presence/absence testing in September/October 2022 were found to have associated intact buried cultural deposits. Specific information for each tested resource follows.

2021_08_05_SD.1/I

According to Eric Zahn of Tidal Influence (personal communication to John Gust on October 3, 2022) this resource was in an area that previously contained sump pits used in fossil fuel extraction. The reddish dimensional lumber found in the bottom of STPs 1 and 1B is consistent with this as cedar and redwood, both reddish in color, are commonly used in wet situations due to their natural resistance to rotting. Excavation for a sump pit would have disrupted any cultural deposits once present.

2021_08_28_DRM_1.I

The planned STP in this resource was excavated according to plan and revealed no cultural material subsurface.

2021_08_06.SD.3

Testing excavation in this resource was deeper than within the two isolates. The only potentially prehistoric material was found no deeper than 30 centimeters (1 foot) below surface and then mixed with modern trash and concrete debris. Natural sediments were reached in the last approximately 30 centimeters (1 foot) without encountering cultural deposits.

GEOARCHAEOLOGICAL SENSITIVITY ANALYSIS

METHODS

For this assessment, University of California Davis National Resources Conservation Service California Soils Resource Lab (UCD SoilWeb, accessed September 2021) soils maps were consulted along with the United States Department of Agriculture National Resources Conservation Service (USDA-NRCS, accessed September 2021) soils descriptions, and geologic maps. Soils of the Project area were determined using the UCD maps.

Subsurface site preservation depends on many factors. Soils and locations were analyzed for grain sizes, slope, and environmental indicators that contribute to the preservation of sites. Primarily, sites accumulate where people have the highest probability of living; on lower slope gradients near water sources but in areas that are unlikely to experience regular flooding. Additionally, lower slope gradients decrease erosion and increase deposition assisting in site burial. Both pebbly and coarser grain sizes as well as clay rich soils preserve artifacts poorly. The age of a soil also determines the likelihood of buried archaeological sites and must be assessed as the older soils are less likely to contain sites unless items were intentionally buried in them. Soils likely too old for site preservation have duripans (hardpans), and argillic (clay rich) horizons, while younger soils with a higher potential for preservation are indicated by the lack of a B horizon or the presence of a cambic horizon. Both Holocene alluvial and aeolian units have a higher potential for artifacts as the soils were co-deposited with the local cultural groups.

CLASSIFICATIONS FOR BURIED SITE POTENTIAL ARE AS FOLLOW

Very low: Soils are underlain by deposits that predate human occupation of the region. Soils that include B horizons, especially if they are argillic or silicic (duripan) horizons are also classified as very low. Additionally, exposed bedrock, borrow pits, heavily eroded or gullied land, or water bodies have a very low potential. Areas of high erosion, water, borrow pits, rock outcrops, or sediments mapped as Pleistocene or older are classified as having a very low potential.

Low: Soils are underlain by deposits that predate human occupation of the region, high-energy deposits unlikely to contain cultural materials in a primary context, are residual soils (soils weathered in place above bedrock), or include B horizons. Low-potential areas include Inceptisols. These are formed in residual soils weathered directly from bedrock and, thus, have a low potential for buried sites. Areas where soils are weathered from bedrock, dissected alluvial fans, and locations where soils are forming on mountains are classified as having a low potential.

Medium: Soils are underlain by deposits that are most likely terminal Pleistocene or Holocene in age, possibly have intact buried surfaces, or have sediments that are likely to have been deposited in a low-energy environment. Alluvial fans, fan aprons, valley fills, dissected remnants of alluvial fans, floodplains, and drainages are classified as having a medium potential.

High: Soils are underlain by deposits that are most likely terminal Pleistocene or Holocene in age, or sediments represent low-energy deposits, or have a high potential to contain buried intact geomorphic surfaces that could have been used by humans in the past. Alluvial stream terraces and floodplains, terrace escarpments, alluvial fans (fan skirts, fan aprons, and inset fans), and areas with aeolian deposits are classified as having a high potential.

RESULTS

The Project area is mapped as middle to late Pleistocene old marine to nonmarine deposits and modern artificial fill. The location of the Southern LCW Project area adjacent to the Pacific Ocean and San Gabriel River would have made the area highly appealing for settlement. However, the minimal topography indicates that the area would have likely been marshy and subject to flooding. The slightly raised Landing Hill located to the south and east of the Project area would have been a more likely area to find settlements, as is evident by the many archaeological sites documented. Several soils are present within the Project area, some of which formed in the marsh habitat and others that are introduced to the Project area as fill and denote disturbance (Appendix M, Figure M - 1; USDA-NRCS 2021).

SOILS MAPPED OVER ARTIFICIAL FILL

At the surface, all areas mapped as artificial fill will have a very low potential as any artifacts present would be not in situ. Soils impacted include Balcom clay loam (112), Bolsa silty clay loam, drained (125), Bolsa, drained (1230LA), and Myford sandy loam (173, 175; Appendix M, Figure M - 1).

Based on the geology map, a good portion of the sediments below the artificial fill are probably middle to late Pleistocene old marine to nonmarine deposits (Qom), late Pleistocene to Holocene young alluvial fan deposits (Qya2) associated with the San Gabriel River, late Pleistocene to Holocene young paralic estuarine deposits (Qype), and late Holocene paralic estuarine deposits (Qpe; Appendix C,
Figure C - 3). Pleistocene deposits mostly predate human settlement, and both estuary and marine environments are unfavorable to settlement. As such, all of these sediments are assigned a low to very low potential for buried sites.

SOILS MAPPED OVER MIDDLE TO LATE PLEISTOCENE OLD MARINE TO NONMARINE DEPOSITS

Unit 112, the Balcom clay loam, is assigned a very low potential for buried sites due to the topography of the adjacent steep slope, the potentially marshy flats, as well as the age of the underlying sediments. Additionally, the presence of B horizons decrease the potential for buried sites.

Unit 125, the Bolsa silty clay loam, drained is assigned a low potential for buried sites due to the potentially marshy flats and the age of the underlying sediments.

Units 173 and 175, Myford sandy loam, are assigned a very low potential for buried sites due to the topography of the adjacent steep slope, the potentially marshy flats, as well as the age of the underlying sediments. Additionally, the presence of B horizons decrease the potential for buried sites.

TRIBAL FEEDBACK

As previously stated, in compliance with Mitigation Measure CUL16: Future Native American Input for the PEIR, the LCWA created a Tribal Advisory Group (TAG) to solicit recommendations regarding the Southern LCW Restoration Project. Members of the TAG recommended Tribal members to be interviewed for their cultural knowledge of the area. Mitigation Measure CUL17 of the PEIR states that a Tribal Access Plan will be created "to preserve and enhance tribal members' access to, and use of, the restoration Project area for religious, spiritual, or other cultural purposes." The following is a summary of comments, concerns, and information gathered through TAG meetings, site visits and interviews. Further, comments provided in Section 3.15: Tribal Cultural Resources of the PEIR are also included here, as one of the Tongva elders who provided comments passed away in early 2021 and would have been interviewed for her extensive knowledge of salt marshes.

PAST USE OF SALT MARSHES

A search of the ethnographic record, including the J.P. Harrington and C. Hart Merriam notes, did not turn up any significant description of the use of salt marshes or the Los Cerritos Wetlands by the Gabrielino (Gabrieleño; Tongva; Kizh) or the Acjachemen. Merriam (n.d.: Roll 8) did record the Luiseno name of the "Salinas" at today's Redondo Beach as *Engva*. Historically, Redondo Beach, located 18 miles northwest of the Project area, was well known for the Pacific Salt Works that was established there in 1854 (Gnerre 2010). It was also used by the local Gabrielino (Gabrieleño; Tongva; Kizh). Alfred Kroeber recorded from Jose Zalvidea that the

Gabrielino (Gabrieleño; Tongva; Kizh) name of the village was *Ongoving* (Kroeber 1907: 143). McCawley spells it *'Ongoovanga* (McCawley 1996: 63).

Merriam records the Gabrielino (Gabrieleño; Tongva; Kizh) words for salt as "*Ung-er*" from Mrs. J.V. Rosemyre, a Tongva woman who lived in Bakersfield, California in 1903. She further stated that the salt made from salt grass was "*se'-e-mōt*" and that the salt was used for fever (Merriam n.d. 1556: Roll 49).

The LCWA met with Julia Bogany of the Gabrieleno/Tongva San Gabriel Band of Mission Indians, who stated that the Los Cerritos Wetlands was probably used as a "salt works" much like the Redondo area (Coastal Restoration Consultants 2021:61-62). She provided further information as summarized in the PEIR:

> In the Tongva history, it is known that salt marsh used to exist in this area because their tribe would travel from the ocean to the salt marsh on canoes. The salt marshes were important to the Tongva because throughout prehistoric times, the Tongva traded salt gathered from salt flats in the salt marsh. Multiple stories exist that document the salt trade, for example, the tribe used to trade salt to a hospital in San Bernardino to treat patients. The Los Cerritos Wetlands is the only prehistoric salt marsh left in the area from Pacific Palisades, and the Los Cerritos Wetlands was and continues to be an important cultural resource to the Tongva and Acjachemen tribes (Section 3.15.2.3 of the PEIR).

Lowell Bean also documented salt being traded from the Gabrielino (Gabrieleño; Tongva; Kizh) to the Cahuilla and vice versa (
Figure 3).

SALT AS MEDICINE

Cindi Alvitre stated that salt was and continues to be an important medicine.

> I'll give you an example of that, is I grew up with a father who when we got sick we would go to the ocean, he would gather the salt water, the ocean water—we could do that back in the fifties—and we would, like, use a neti pot and we would breathe it in through our nose…And then at some point we stopped doing it because the water was polluted. And that's when we started accessing Hawaiian salt. You know the Hawaiian salt is very holy, just like to the Pueblo people it's (salt) very holy. It's holy to all people… also we would use it where you take like a tablespoon of salt, good salt, and as hot as you can take the water, if you're getting the flu or something, and you drink it. And it'll just—it literally flushes everything out of your system.

Torres also recalls using salt water as medicine.

> The one thing that sticks out in my mind is, especially with my mom, is using salt water, not necessarily from the ocean, because we couldn't go down and use the salt water for health, but gargling with salt water all the time when we got sick, you know? And I think it really stems from us traditionally using that salt water for healing in the past, because she would always talk about that, gargle with salt water, gargle with salt water. And so that's what sticks out in my mind as a child, always having her talking about that whenever we got sick.

Alvitre further stated that:

> …every time there's a bad kid you just want to bathe him in that water…Bathing in the water was like, not a Christian baptism, but it was a way of rebalancing yourself. So that motivation is always connecting to the water, to that sacredness, that holiness, that place that has so much energy and life.

Rocha explains that it is also not just about salt water, but the salt air as well that can be healing. He recalls is mother would say:

> … it's not so much salt water, because everything lives in a relationship in the community, you know, air is an organism and salt water with the air. My mom used to call it salt air therapy. Not only does it have the spirit, it kind of makes you mentally stable. You know, you come out here, you breath the air, and that stimulates the body and it gets you focused…You know, it's—something generates that from inside them and my mom always had the theory of salt air as therapy. If someone was mad, someone was angry, somebody was sad, this was a place we came. And you were good. I mean, it works; it works beautifully. I recommend it.

Torres commented that he felt healed being out in the Los Cerritos Wetlands on the day of the interview:

> … I just came from the desert right now, where it was like 114 degrees. And being back here on the coast with the fog there is something—I mean, I feel healed just being here right now, you know, compared to being out in the desert yesterday. And so, there's something—I don't know if it's just the ions, the ancestors, or just the…—because this is the place where they lived for thousands of generations—and being back home, as opposed to the desert. But there's

> something to be said about—you know, we were talking about this too on the ride, just a while ago. It's like this fog and this salt in the air, for me it's healing.

Fishing

Mr. Rocha recalls the stories that his mother would tell him about the Los Cerritos Wetlands, "So, my mom would talk about the days her uncles used to come out here in a four-man skiff and fish for crab, shrimp, mussels, whatever."

Mr. Teutimez stressed the value of shellfish both as a food source and the value of the shells cultural uses, and would like to get them back into our estuaries.

Collecting Plants and Animals

Dorame stated that her dad Robert told her that he used to eat watercress from the wetlands located on the west side of Los Angeles.

> …he said his mother would take him to the shore but only let him—put his hands behind his back so he wouldn't take too much. So he actually had to eat it out of the water with his mouth because it was a means of respecting that you weren't taking too much of what you could consume in that moment.

Alvitre recounted:

> Like, my father would go into the wetlands. I mean, we were more Newport Back Bay, [those] wetlands. Of course it's the same wetlands system, but what we're lacking now is, again, that access and even the use of a lot of those foods because of the denial of access. The birds, the water fowl—that's a food source. The eggs are a food source. The fish, different kinds of fish that come into the wetlands at high tide and low tide, being able to recognize that and know which one of those are good.

Rocha stated that when his family would travel through the area, his mother, Vera, would tell stories of the gifts that could be found within the wetlands.

> As soon as my mom always asked this question, we knew what was going to become of this conversation. She would say, "Not much pickleweed anymore. We've got to get the pickleweed." My dad would always answer with the same response, "What the heck do we want with that for? It's poisoned. It's no good no more." And my mom would say, "Well, I remember the pickleweed." I remember her mom telling her stories about how uncles and relatives, ancestors, used to

> come out here when the tide rolled out, to see what the tide left them, what presents the tide left them. There were things in abundance back then…But she would tell stories about the baby green sea turtles out here, that you'll find that they'll be dropping from the sky because the terns would pick them up. And then the terns would be fighting for them and they'll be dropping from the sky and you'd have to put them back in the water. There were stories of even fishing for halibut out here and other things: soft shell crab, oysters, mussels. Things were in abundance. When the tide rolled out it left a lot of gifts. And when the eel grass was visible, you know, that was one of the best times to go on an adventure…

Additionally, while on the tour of the Project area, Rocha stated that pickleweed was used in the abalone stew his family would make. Rocha mentioned that although his mother would talk about the gifts of the wetlands, they never went in because of the oil drilling and contamination. Table 8 lists a few salt marsh plants that have been identified as used by the Gabrielino (Gabrieleño; Tongva; Kizh) and their uses. The interviewees would like to be able to incorporate these plants into their community once again.

Table 8. Selected salt marsh plants

Common name	**Scientific name**	**Tribal Uses**
Pickleweed	*Salicornia pacifica*	Food
California sea lavender/ western marsh rosemary	*Limonium californicum*	Food; medicine
Southern tar plant	*Centromadia parryi ssp. australis*	
Salt grass	*Distichlis spicata*	Used to season food
California boxthorn	*Lycium californicum*	Edible berries
Watercress	*Nasturtium officinale*	Food, leaves eaten (personal communication; Dorame 2021)
Bladderpod	*Peritoma arborea*	Food; flowers boiled (Ramirez and Small 2015: 12-17)
Evening primrose	*Oenothera elata*	Food; medicine
Yebra Mansa	*Anemopsis californica*	Medicine; tea used for colds and sore throat (Drake in Ramirez and Small 2015); poultice doe cuts and wounds (Mojado in Ramirez and Small 2015)

Common name	Scientific name	Tribal Uses
Shore grass	*Distichlis littoralis*	
Eelgrass	*Zostera marina*	Food; use of rhizomes, seeds and leaves

CURRENT USE OF THE LOS CERRITOS WETLANDS AND SALT MARSHES

None of the interviewees or Tribal representatives at the site visit stated that they currently use the Los Cerritos Wetlands or other salt marshes for the collection of plants or animals or other cultural activities. Although Ms. Dorame and her father have close connections to the Ballona Wetlands and have participated in the creation of educational programming and more recently the installation of a monument created to honor the Gabrielino/Tongva ancestors at the Ballona Wetlands Discovery Center (
Figure 32), neither are using the salt marsh to gather plants or for other cultural activities.

Figure 32. Monument at the Ballona Discovery Center created by Robert Dorame

FUTURE USE OF SALT MARSHES

COLLECTION OF PLANTS AND AANIMALS

As previously stated, although the use and connection of the Gabrielino (Gabrieleño; Tongva; Kizh) and Acjachemen communities to salt marshes have been cut because of urbanization and colonization, all of the interviewees stated they would like reconnect the community with the salt marsh through the harvesting of plants and animals.

Alvitre stated:

> You know, as Craig [Torres] would say, it's all about that relational reciprocity. You know, that's something that is …important—it's one of our core values as Tongva people is to have that relationship because it's not a matter of today the practice is very common amongst indigenous people, Native American people, is they just go *buy* the feathers. They go *buy* the abalone, or buy this or buy that. I practice it, too; I'm no different than anybody else. And we don't have a relationship with that which we use. Two or three hundred years ago it was different because you did have a relationship. You had to have a relationship with it, and to disrespect it or to abuse it would have the consequences, would not be very good. So that's—how do we teach that core value to our young people and to our old people and to all of us, you know, to have those spaces so we *can* have that relationship with the cormorants and learn about them; so we can learn about those ancient pelicans, you know, the herons, the egrets, the hawks that are here. And oh my gosh there's so many, many—the black-crowned night heron. What are their stories? You know, the different fish! Nobody—I never hear much people talking about the fish, you know? Sea bass and bonito and clams and mussels and abalone—well, that's a whole other thing.

Mr. Rocha stated that he would like to come out to the wetlands to fish for crab, shrimp, mussels like his mother and her uncles used to.

Mr. Teutimez discussed the connection of Puvunga to cottonwoods and the importance of cottonwoods as medicinal plants.

> …we can talk about Puvungna. What does it mean? Because our names were very indicative of that location. The name explained the whole location, and the name there actually is very specific to me because of where my family grew up, Los Alamitos. Los Alamitos means the little cottonwood.

> That's actually one of the main trees [cottonwood] that I look for, for the medicines that I make for our Tribe….[their] bark has these oily components in it, and that oil was heavily used for healing of cuts, just like Neosporin.

Harvesting Salt

Although harvesting salt from a salt marsh or from the salt grass is currently not practiced, all interviewees would like to re-establish those connections and use the salt for medicinal purposes.

Collection of Dredged Shell

During both the TAG visit and the tour provided to interviewees, Tribal representatives saw piles of large clam and other shell within the Southern LCW Project area. They requested prior to construction that they be allowed to collect the shell for educational and cultural activities.

Reconnecting with the Land

Torres stated that being able to come out to the wetlands to teach the Tongva community how to be human is important.

> … I always tell people that the animals and the plants are going to teach us how to be human again because we've lost that. So that's the significance to me of this place is being out here physically on the landscape and just sitting here watching, and they will teach you how to behave as human. You know, because we've lost so much of what that is and that connection to what has sustained our ancestors for thousands of generations, and we need that. We need that for the healing of our human communities, but also the healing of our relatives, the plant communities, the animal communities, the air, the water—everything.

Alvitre agreed when she stated, "That's kind of the whole point there, too, is for us to re-learn and to reconnect, to renew."

Place to Launch Tule Boats

As stated in the section Past Use of the Salt Marsh above, salt marshes connected the communities from the ocean to the interior using boats, both tule and ti'ats. Currently there is a resurgence in the creation and use of tule boats within the Gabrielino and Acjachemen communities, however due to urbanization, there are not a lot of safe places to practice paddling. For example, members of the Gabrielino, Acjachemen, and greater southern California Native American community members demonstrated the building of a tule boat at the Moompetam American Indian Festival held at the Aquarium of the Pacific, September 24, 2018. After the festival was over, the community lowered the tule boat into the harbor (
Figure 33). While in the water, the paddlers had to contend with not only the private boats pulling and out of their slips but the larger touring Aquaboats that were docking. Since the tule

boat was so small, it was dangerous to paddle. A dozen community members tried paddling over the course of an hour until the boat became waterlogged. As a result, Tongva and Acjachemen community members stated that they would like to use the wetlands to teach the next generation how to paddle and use the boats to collect resources. Using the wetlands in this way would be creating a place where community members could gather, assemble, and build a tule boat and launch it safety into the water.

Figure 33. Heidi Lucero (Acjachemen) and Frank Magallanes (Ti'at Society) paddling a tule boat made during the Moompetam American Indian Festival at the Aquarium of the Pacific, September 24, 2018 in the City of Long Beach Rainbow Harbor surrounded by private boats.

CO-STEWARDSHIP

Having access to collect plant material, conduct ceremony and other cultural activities in the Los Cerritos Wetlands is important. However, the tribal interviewees discussed the idea of co-management (co-steward) the wetlands. Co-stewardship means using methods that are grounded in the Gabrielino's and Acjachemen' s relationship to the land and relatives as instructed by their Creator. "These relationships include, but are not limited to, a combination of knowledge, experience, tradition, places, locality, all living and nonliving things, skills, practices, theories, social strategies, moments, spirituality, history, heritage, and more; and may not be fully embraced by people who fail to understand all those dimensions" (NCRS 2010). Co-stewardship also means having the Gabrielino (Gabrieleño; Tongva; Kizh) and Acjachemen community involved in all planning and decision making so that natural processes can be sustained and to ensure that the use by the community does not diminish the potential to meet the needs and aspirations of future generations.

EDUCATION

Ms. Bogany, during consultation for the PEIR, stated that she would like to see all members of the Gabrielino/Tongva community be invited to help with "the physical and interpretive design" of the Los Cerritos Wetlands. This would include signage as well as "including actual 'harvest' of the salt as a cultural and educational activity" (Moffat and Nichol 2015: 59)

Although both Rocha and Torres agreed that the Los Cerritos Wetlands have a lot to teach the public, any educational programming created should first be focused on the Gabrielino/Tongva community. Torres states:

> Educating our younger generations, specifically Tongva community, on this place and what comes from this place. Reconnecting them to this place, getting them to re-establish their relationship with this place and the nature that comes from this place, and then they become responsible for educating the public about that. Not a place that is filled with non-Native docents that are interpreting it, but our own people, our own communities. And giving them the responsibility and obligation to talk about, 'this is where your identity comes from; it comes from the land. Without it you're nothing.' And getting them to understand that so then they can go out and educate the larger public about this place.

Torres stated that he would like to see some type of outdoor classroom that does not affect the landscape or viewshed of the wetlands. "It becomes part of the landscape, you know, instead of being intrusive and being a huge building right there, it becomes so much part of the landscape that you don't even see it as a building." Rocha suggested a traditional building like a *kiiy*.

Alvitre stated that any public educational materials created for the wetlands should include discussion of a:

> … whole history that's been erased and that history needs to be corrected. And it's as if we have a responsibility of identifying all these very specific areas and redefining and rearticulating what that use is to the public, because it's important that our history is recorded…, it's about the public realizing that the health of the wetlands is also reliant on their behavior and their own practices, right? We're at that point on our planet right now that people need to change that around, you know? So, it's almost as if we have a responsibility. Here we are trying to heal our communities and trying to bring back life to our communities, but at the same time we also have that responsibility to share a lot of the information that we can with the public so they renew their relationship with the natural world, that they

> have to renew that. It's everybody's responsibility, but who has the language for that? Who has the experience and the history? It's the Tongva.

Gathering Place

All of the interviewees agreed that a place should be created for the Gabrielino/Tongva community to gather for ceremonies or practice cultural traditions within the wetlands in private. Currently, the Gabrielino (Gabrieleño; Tongva; Kizh) community must use public parks, campgrounds, beaches, university/college property, and personal backyards to conduct ceremonies. None of these locations are ideal as the possibility of interference, unwanted onlookers, and/or noise from traffic affects the atmosphere that is necessary to conduct the ceremony.

Dorame lamented that, "There's no space where we can go and just have that sovereignty of existence and ceremony and medicine and teaching the next generation."

Rocha felt similarly when he stated:

> I want to see something that involves family; that involves our drums; involves our rattles. So much not as a pow-wow grounds, but just like a community area where we come together for prayer, morning prayers, you know, tide prayers—anything. We would like to see something like that, where the sound reverberates and where people won't complain about a drum…How nice would it be to hear some drums, you know, at this point in time? A nice little primary where the sound can reverberate, where we can appease Mother Earth by song or by poems––something.

Alvitre suggested that a community gathering space would need to accommodate a number of people, she did not give a number, with the possibility of staying overnight. Dorame also suggested that the community space could be used as a healing space. Alvitre further stated that this space should be closed to the public and only be available for Gabrielino community members as having a place open to the public has:

> … been part of the problem. Like at *Puvungna* we have it there, but it's public space and people just wander in and out, you're doing ceremony. Wherever we're at people just kind of wander in and out and it's a distraction. You know, they start asking questions and yeah. And we deserve more than that.

Alvitre elaborated that having ceremonies being disrupted in public spaces by people who ask what she is doing, "… changes the energy; it changes even our feelings and our peace. It changes our own peace, that we can't be comfortable, we can't feel safe, we can't feel interfered." Thus it becomes important to have that private space, away from the public, to have that peace.

Land Capability

Mr. Teutimez noted how the current state of natural systems affects what can be done in restoring the land.

> So, when we do coastal restoration, you pretty much have to say, okay, what era do we want to go back in, because in the 1600s this part was a whole different component, and in the 1800s, because the river changed and now it's flowing this way, it's a whole different component. So, it's pretty much whatever the land provides for us is what we're going to be allowed to revegetate and to help re-heal and put in there. So, we can try and do these other components, but it's up to the land in terms of how it's going to take, because that's just the cycles. You know, we may get a huge flood event and, boom, now we've taken off all these layers of stuff and then other developing stuff grows. Or it becomes a ponding area or a ponded area, you know? It's just, it's so dynamic it's hard for us as humans to put it into a box.

Nursery

Rocha stated that he would like to see a nursery be created to grow the plants that would be used to restore the area.

> So I would like to see a dedicated nursery area where we can generate the plants from here to be restored. You know, to the place where they came from, not relocated from somewhere else. Because the medicine stays strong; the spirit stays strong in them. …kids could come and learn how to regenerate plant life that is farmed in this area and contribute back to it instead of taking away. That would be great; I'd like to see that.

Name of the Project Area

Both Rocha and Torres commented that it would be great to name the Project area with a Gabrielino/Tongva name.

CONCERNS

Contamination

Although those interviewed and during the site visit were excited about possibility of using the Southern Los Cerritos Wetlands as described above, there were concerns about contamination as a result of the urban runoff and oil extraction. Further, since the area was part of the Hellman

Ranch which was used for agriculture, tribal representatives at the site visit asked if the area has been tested for pesticides and DDT (Dichlorodiphenyltrichloroethane).

ACCESS

One of the major barriers to using areas such as the Los Cerritos Wetlands for cultural practices is the lack of access or the difficulty of gaining access. Los Angeles County urban sprawl has destroyed or significantly impacted areas that were used by the Gabrielino (Gabrieleño; Tongva; Kizh) and Acjachemen community prehistorically and historically. If there are lands that have prime habitat, they are usually privately owned and marked with no trespassing signs. Some tribal community members have jumped over barbed wire fences, parked on the sides of narrow two-lane highways to climb on their truck roof, or hiked for miles to gather plants. These are dangerous actions which can only be done by the young and/or able bodied.

These access limitations also do not allow elders or community members with mobility issues to participate in gathering. As explained above, part of a Gabrielino (Gabrieleño; Tongva; Kizh)'s responsibility to our plant, animal and rock relatives is to acknowledge our reciprocal responsibility to them. If elders cannot offer prayers during collection, weed, and trim the plants themselves, they are not fulfilling their relative's expectations which may cause harm in the future. Thus, it becomes important to have easily accessible plant communities for elders to drive up to or only have a very short walk on a flat and un-rocky trail.

All of the interviewees commented that permit applications to use land are lengthy, costly and/or need a lot of lead time to obtain in time for the appropriate season to conduct community gatherings or harvest medicine. Thus, the LCWA should create a process, in collaboration with the Gabrielino (Gabrieleño; Tongva; Kizh) and Acjachemen Tribes, which will allow community members to collect or use the land as easily as possible. This means not requiring permits or providing long term permits (e.g., 5-year permits) at no cost.

THE *PUVUNGNA* TRADITIONAL CULTURAL LANDSCAPE

As previously stated in the introduction, the Los Cerritos Wetlands complex is significant to the Gabrielino (Gabrieleño; Tongva; Kizh) and Juaneño (Acjachemen) tribes. Tribal representatives described the Los Cerritos Wetlands and its surroundings during Tribal consultation of the PEIR as sacred lands. Located in between the villages of *Puvungna* to the north and *Motuucheyngna* to the east, all three are considered by Tribes to be part of a larger cultural landscape (Appendix C, Figure C - 10. Location of villages within the *Puvungna* Traditional Cultural Landscape). Although the LCWA identified the Los Cerritos Wetlands complex as part of a larger cultural landscape as a tribal cultural resource under CEQA, no name was giving to the larger cultural landscape. This study will use *Puvungna* Traditional Cultural Landscape (PTCL) to identify this larger landscape (Appendix C, Figure C - 11).

RESEARCH APPROACH

Cogstone adheres to using Indigenous Archaeology methods during all work. Indigenous Archaeology was first defined as conducting archaeological research “with, for, and by indigenous people” (Nicholas and Andrews 1997:3). Indigenous Archaeology practitioners have extended this definition to include all work that deals with the indigenous past, present, and future (Martinez 2010). When applied to cultural resources management assessments, this means ensuring the recordation of cultural sites is done in collaboration with indigenous communities so that it captures site use from an indigenous perspective. This includes identifying a site as significant even if it does not meet the significance criteria under the California Register of Historical Resources (CRHR) and recording culturally significant spaces even if there are no physical remnants on the surface.

The CRHR does not provide guidance on identifying traditional cultural landscapes. Although this study will be using an Indigenous Archaeology method to identify resources, this study must also use federal and state regulations to identify, assess and evaluate cultural resources which are described below.

TRADITIONAL CULTURAL PROPERTIES

In addition to the NRHP criteria listed above, a property may be listed on the National Register based on its *traditional cultural significance.*

> Traditional in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional cultural significance of a historic property, then, is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices.
>
> Examples of properties possessing such significance include:
>
> - a location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world;
> - a rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long term residents;
> - an urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices;

> - a location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice; and
> - a location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity.
>
> A traditional cultural property, then, can be defined generally as one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community (Parker and King 1998:1).

The National Register Bulletin 38 (Parker and King 1998) discusses other characteristics to be used when considering a traditional cultural property for its eligibility to the National Register which will be used in this study.

IDENTIFYING LANDSCAPES

Although a landscape approach to archaeological sites can be traced to the 1920s (Stoddard and Zubrow 1999), its application began in the mid-1970s in Britain as a way to blend field archaeology with landscape history (Aston and Rowley 1974:11; Fleming 1997:267). Since that time, scholars have taken landscape archaeology in a variety of directions.

Early archaeological studies viewed the landscape solely as the backdrop onto which material culture was placed. It was seen as a factor that influenced how past peoples arranged themselves, whether by the landscape's available resources and/or its physical characteristics (i.e., settlement patterns) (Ashmore and Knapp 1999:1; Wandsnider 1992). Recently, scholars have recognized that the landscape is more than just a synonym for the natural environment. Instead, landscapes represent "a way in which… people have signified themselves and their world through their…relationship with nature, and through which they have underlined and communicated their own social role and that of others with respect to external nature" (Cosgrove 1985:13).

Also important within a landscape approach is the recognition that the so-called "empty" spaces; areas lacking clusters of material remains or "sites," are just as significant as those with tangible cultural phenomena (Anschuetz et al. 2001:161; Wobst 2005). Thus, consideration of the entire landscape surrounding an archaeological site, including its physical and metaphysical properties, must be included in order to gain more nuanced understandings of the past.

> We will have to allow for the 'natural' (that is 'non-artefactual') and

> ‘cultural’ (that is, ‘artefactual’) variables to be enculturated, to be significant to human action, and to articulate, like artifacts, with social life (Wobst 2005:28).

The application of landscape theory has been utilized in several California regions and time periods (Allen 2011; Eerkens et al. 2007; Fleming 1997; Kryder-Reid 2007; Laylander and Schaefer 2010; Perry and Delaney-Rivera 2011; Robinson et al. 2011; Whatford 1994). A sub-section of these studies includes understanding how people and places are connected via trails and pathways. For example, the Chuckwalla Valley Prehistoric Trails Network Cultural Landscape study, undertaken by the Bureau of Land Management and the California Energy Commission, was generated in response to the destruction of archaeological sites by recent massive renewable energy development in the California desert. The study aims to understand how “sites that may lack individual distinction” may have “greater significance and research value when contributing to a larger data base” (Laylander and Schaefer 2010).

Part of using Indigenous Archaeology methods is recognizing that how archaeologists identify and record areas used by Native Americans does not reflect how the Native American community sees those same spaces. Archaeologists work with the tangible, drawing circles around clusters of artifacts, putting dots on maps, and connecting the dots to understand prehistoric Native American lifeways. Further, archaeologists use various technologies to understand the patterning of the lines, dots, and polygons they created to signify tangible cultural phenomena. This arbitrary boxing of data leads to the misinterpretation of prehistoric settlement patterns, socio-economic connections, and the cosmological significance of an area. Native American communities did not live on dots, in lines or within bounded spaces. Instead, they lived among the hills and mountains, between meandering streams, and around watering holes, all the while surrounded by a landscape given to them by the first beings. The areas used by Native peoples may have had visible and invisible boundaries with tangible and intangible cultural remains. Thus, what is most important for this study is to transcend traditional interpretations of site type, placement and significance, in order to align more squarely with the Native American understandings of how “everything is connected” (Martinez et al. 2012).

California state regulations do not provide guidance on identifying cultural landscapes; however, the National Park Service has several bulletins that define different types of landscapes. The Advisory Council on Historic Preservation has also issued some guidance. Both are briefly described below.

LANDSCAPE DEFINITIONS

The five types of historic properties identified in the NHPA were further categorized by NPS - 28: Cultural Resource Management Guideline (National Park Service 1998) based on common attributes for the ease of management: archeological resources, cultural landscapes, structures, museum objects, and ethnographic resources (NPS 1998). Of importance to this study are the categories of cultural landscapes and ethnographic resources. According to the Management Guideline:

> *Cultural landscapes* are settings we have created in the natural world. They reveal fundamental ties between people and the land–ties based on our need to grow food, give form to our settlements, meet requirements for recreation, and find suitable places to bury our dead. Landscapes are intertwined patterns of things both natural and constructed: plants and fences, watercourses and buildings…They are special places: expressions of human manipulation and adaptation of the land.
>
> *Ethnographic resources* are basic expressions of human culture and the basis for continuity of cultural systems. A cultural system encompasses both the tangible and the intangible. It includes traditional arts and native languages, religious beliefs and subsistence activities. Some of these traditions are supported by ethnographic resources: special places in the natural world, structures with historic associations, and natural materials.

Preservation Brief 36 "Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes" (Birnbaum 1994) defines four general types of cultural landscapes: historic sites, historic designated landscapes, historic vernacular landscapes, and ethnographic landscapes. Ethnographic landscapes are those that contain "a variety of natural and cultural resources that associated people define as heritage resources" (Birnbaum 1994:2). The *Puvungna* Traditional Cultural Landscape and its use by the Gabrielino (Gabrieleño; Tongva; Kizh) would be considered an ethnographic landscape.

ADVISORY COUNCIL ON HISTORIC PRESERVATION GUIDANCE

Although Bulletin 38 supports the nomination of and the National Register includes traditional cultural landscapes, the guidelines are vague with many cultural resources practitioners not knowing how to identify and nominate cultural landscapes to the NRHP. As a result, the Preserve America Summit Panel (Advisory Council on Historic Preservation 2007:19) recommended in its report that Bulletin 38 should be reviewed and/or revised in order to address these concerns. Additionally, with the increase of the renewable energy projects and their possible effects on Native American sacred landscapes as identified through the Section 106 consultation process, the Advisory Council on Historic Preservation (ACHP) created a traditional cultural landscapes initiative and adopted an action plan in November 2011. The action plan also suggested that Bulletin 38 be revised and recommended raising awareness within the preservation community about the existence and importance of Native American traditional cultural landscapes by developing tools to assist all participants in their recognition (Advisory Council on Historic Preservation 2011, 2012a, 2012b). Although official guidance for the identification of landscapes is currently still under development, this report will use current scholarship in landscape studies to identify and understand the Los Cerritos Wetlands Complex and surrounding areas as a cultural landscape.

BACKGROUND

GABRIELINO (GABRIELEÑO, TONGVA) RELATIONSHIP TO THE LAND: MAXAAX[3]

To better understand how the Gabrielino (Gabrieleño, Tongva) have used, are using, or may use the Los Cerritos Wetlands Complex, one must understand the Gabrielino's (Gabrieleño, Tongva) relationship to the land. This relationship started with the Gabrielino (Gabrieleño, Tongva) creation as Craig Torres, a Tongva cultural educator, recounts:

> Tongva Creation narratives convey that a pre-human *'Amuupavetam* (First People) during a time of great earth changes, transformed themselves and became the landscape of the Middle World, Upper World and Lower Worlds…we are all connected.
>
> Human Beings were the last to emerge and appear on the landscape and were the most vulnerable of all creation. Because of the "gifts" and sacrifices made by the *'Amuupavetam*, humans reciprocated a responsibility and obligation to be part of and care take the whole of nature.
>
> Human existence on Mother Earth was only possible because certain beings enabled others to survive through their very existence. Reciprocal relationships of giving, gifting, swapping, and sharing embedded in the Tongva word *maxaax* and practiced with all of the nature…rock/stone, plant, animal, and air, water, fire and earth (
> Figure 34; Torres n.d.a).

For the Gabrielino (Gabrieleño, Tongva) everything around them is seen as a relative (i.e., water, air, land, rocks, animals, plants, etc.), not resources to be used by humans. This view recognizes the reciprocal relationship that was established at creation. Mr. Torres also teaches that before sustainability protocols such as the "reduce, reuse and recycle" campaign can be implemented, people need to know the other three R's: Recognition, Respect, and Responsibility (

3. This section does not reflex the views of the Kizh.

Figure 35).

In other words, the public needs to recognize the indigenous people of the land, the original caretakers and recognize the special relationship as described above. This also includes ensuring, as LWCA is doing through this study, that the Gabrielino (Gabrieleño, Tongva) can continue this relationship unfettered. The second R stands for respect; respect that the Gabrielino (Gabrieleño, Tongva) and their relatives have co-evolved with each other for thousands of years. The last R stands for responsibility, that the public and the Tongva have a responsibility to the relatives to protect their habitat and ensure their continued survival.

As a result of these teachings, the Gabrielino (Gabrieleño, Tongva) community is looking for spaces and places where they can fulfill the obligations given to them through their oral traditions. The Gabrielino (Gabrieleño, Tongva) community is looking to re-establish and/or strengthen their relationships to the land and relatives. This would include space to plant, tend, harvest, etc. plants.

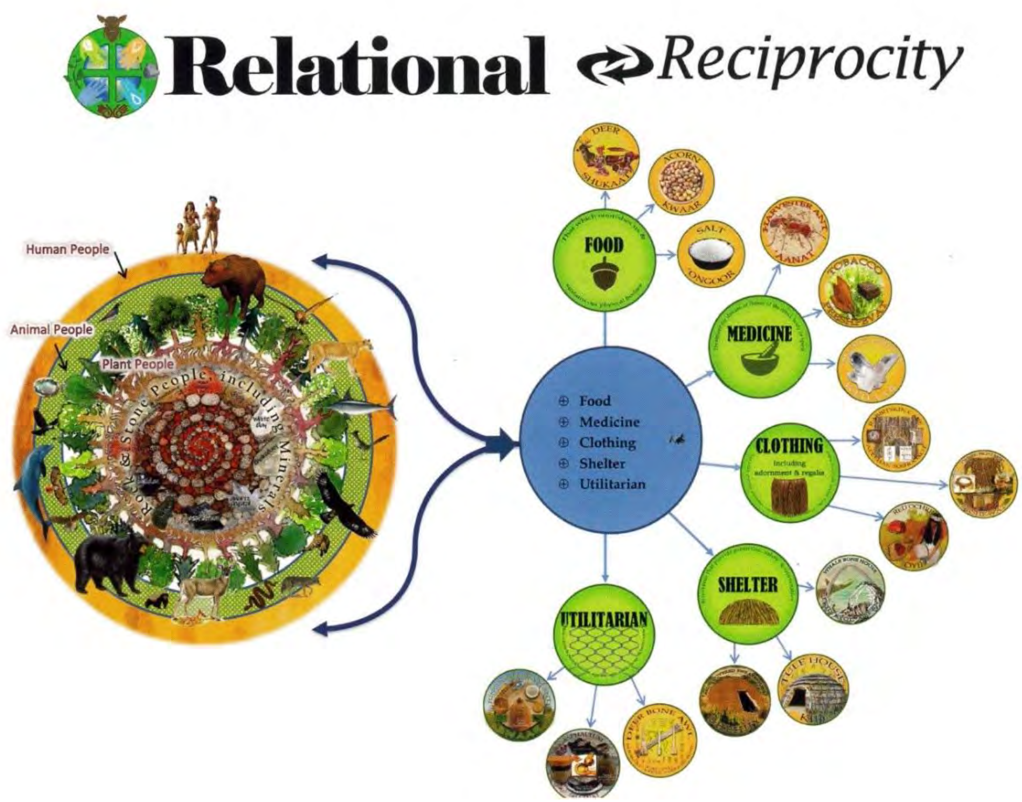

Figure 34. Relationships to relatives (Torres n.d.a)

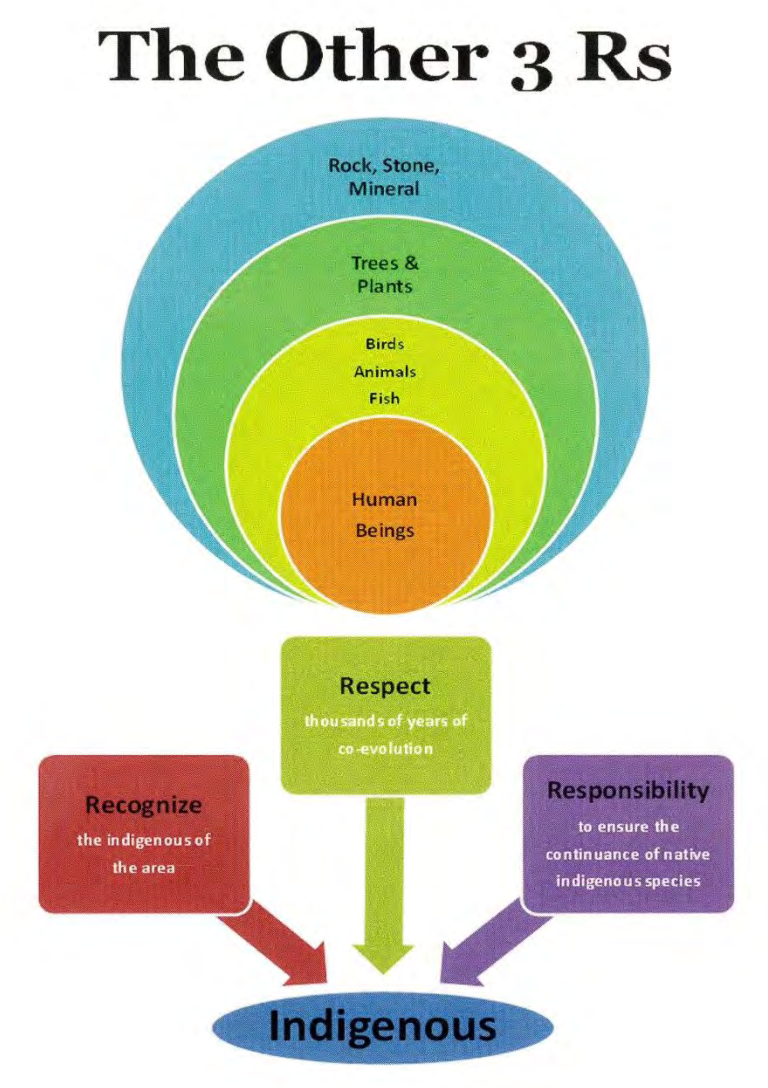

Figure 35. The other three Rs (Torres n.d.b).

PUVUNGNA

The location of the creation of the Gabrielino (Gabrieleño; Tongva; Kizh) and the Acjachemen was at *Puvungna*, an important ceremonial center located north of the Los Cerritos Wetlands Complex area. Portions of the National Register for Historic Places (NRHP)-listed *Puvungna* Indian Villages lay on the campuses of California State University, Long Beach, the Veterans Affairs Long Beach Healthcare System (VALBHS), and Rancho Los Alamitos Historic Ranch and Gardens (see Appendix C, Figure C - 10). In Tongva *puvu* = big ball of people, *ngna* = place of (personal communication, Craig Torres).

According to Boscana (1846:32, 33), in versions of the coastal creation story documented from the Acjachemen (Juañeno) but also applicable to the Gabrielino (Gabrieleño; Tongva; Kizh), two influential deities, Ouiot, the monster-chief, and Chingichngish, the supreme-creator god, emerged, at different times, at the village of *Puvungna* with Ouiot being burned there and Chingichngish dying there. Millikan and Hildebrandt (1997:15) summarize of the roles of Ouiot and Chingichngish in the origin stories among the Juaneño, Luiseño, and Gabrielino:

> [T]hree successive sets of power entities or beings were involved with the creation of the world and institution of religious life. The first generation, a brother/sister set of entities took the form of sky and earth. They created the second generation, the First People, entities whose essences are now found in certain animals, certain ritual objects, and certain rocks, hills, and mountains. One of those entities, Ouiot (Wiyut), became the "captain" or "father" of all the First People. Following the death of Ouiot, the First People assumed their present forms and humans as we know them were created. Chingichngish, the third generation of power entities, appeared among people for a short time as a teacher. He remains active in the background of existence, as the source of both positive power and punishment for behavior.

After Ouiot was killed, a very large gathering of Ouiot's people cremated his body at *Puvungna*. After the ceremonies, Chingichngish appeared and taught the people laws and established the rites and ceremonies needed for the preservation of life (Boscana 1846:33). He also taught the people what to wear, how to heal the sick, how to build the ceremonial structure (*yovaar*), how to rear the children, and how to live according to his laws (Boscana 1846:33-34). The *toloache* ritual, which involved the ingestion of the intoxicating *Datura meteloides* (also known as Jimson weed), was also associated with the Chingichngish belief system.

Although Boscana identified the Chingichngish belief system as having begun at *Puvungna*, others have recorded its origination from either Santa Catalina Island or San Clemente Island (Kroeber 1925:621-622). A Luiseño informant told Dubois (1908) that the Chingichngish religion came from the north, then to Santa Catalina and San Clemente Islands, to San Juan Capistrano, to San Luis Rey, and finally to the San Diego Kumeyaay/Diegueno territory. The spread of this belief system likely followed the same routes that goods and other cultural ideas followed. Some scholars argue that the Chingichngish belief system originated post-contact based on its similarities to Christian themes and motifs (Bean and Vane 1978:699; Lepowsky 2004).

The village site was still known historically as it was occupied at least until 1805 as evident by baptisms of individuals from the village at San Gabriel Mission and San Juan Capistrano (Harrington 1934:149).

In the original NRHP nomination of the *Puvungna* Indian Villages, archaeological sites CA-LAN- 234, CA-LAN-235 and CA-LAN-306 were identified as being the best representative sites to represent *Puvungna* on the register (Dixon 1973). Both CA-LAN- 234 and CA-LAN-235 are identified as being located on the CSU, Long Beach and VA campuses and CA-LAN-306 is located at Rancho Los Alamitos. However, Dixon mentions that the location of *Puvungna* moved through time, on the small hill that overlooks swamps and marshes. As a result, the Gabrieleño/Tongva San Gabriel Band of Mission Indians has identified that the location of *Puvungna* includes: CA-LAN-102, CA-LAN-231 thru 236, CA-LAN-270 and 271, CA-LAN-273 thru 275, CA-LAN-306, CA-LAN- 699 thru 705, CA-LAN-830 and 831, CA-LAN-1000 thru 1007. Most of these are located on CSULB campus, the furthest away being CA-LAN-270 (known as the Los Altos site) which is located 1 mile north of campus (3.9 miles north-northwest of the Los Cerritos Wetlands Complex).

The portion of *Puvungna* that is located on the CSULB campus continues to be used by the Gabrielino/Tongva, Acjachemen and greater Native American community. Community gatherings, ceremonies, classes, and other cultural activities are held on site (
Figure 36 and Figure C - 11). Ancestor poles, wooden poles in honor of Gabrielino and Acjachemen Tribal members that have passed away, dot the area.

Figure 36. Prayer pole decorated for solstice at *Puvungna* at CSULB.

Figure 37. Discussions at *Puvungna* at CSULB with Tongva walk participants, July 20, 2019.

Figure 38. Reburial at *Puvungna* at CSULB in 2016 (left to right) Steve Villa, CSU Chancellor Timothy White, CSULB President Jane Close Conoley, NAGPRA Coordinator Cindy Alvitre, CSULB's Director of American Indian Studies Craig Stone and NAGPRA Chair Louis Robles Jr. (Daily 49'er 2016).

The reburial of Gabrielino ancestors, repatriated from museums under the Native American Graves Protection and Repatriation Act (NAGPRA) have recently occurred within the boundaries of the *Puvungna* village site outside the Southern LCW Project area as well (Figure C - 10).

MOTUUCHEYNGNA

As previously stated, *Motuucheyngna* village has been identified as being located to the east and outside the Southern LCW Project area on what is now called Heron Point, a residential community that was built in the early 2000s, located on Landing Hill (Appendix C, Figure C - 10; Cleland et al. 2007). *Motuuchey* was identified by Harrington informant Jose de la Santos Juncos as being located at “El Puerto de los Alemanes [Port of the Germans]” also known as Anaheim Landing. *Motuuchey* was reported to mean flea in Gabrielino (Harrington 1986:R104 F24).

In 1997, the Hellman Properties LLP proposed a mixed residential development located on Landing Hill. The city of Seal Beach had prepared an EIR for the Hellman Ranch Specific Plan which identified that the archaeological sites that were located within the Southern LCW Restoration Project area would be adversely affected and thus a testing and data recovery plan was created and carried out by EDAW in 2001. During construction grading in 2002, two Native American remains were identified within the boundaries of ORA-264 by the Native American monitor (Cleland et al. 2007:5). Construction was halted by the CCC until a Supplemental Mitigation Plan (SMP) could be drafted. At total of 6 sites were tested and data recovered (CA-ORA-260-264 and ORA-1472). Work outlined within the SMP was conducted from 2003 to 2005. Thirty-five individuals were removed. The ancestors and all cultural items were reburied within a cultural easement located within the Heron Point parcel.

Radiocarbon and obsidian hydration dates taken at all of the sites tested showed that the area was first occupied by at least 6380 cal BP (4430 B.C.), the Millingstone 2 period with the last occupation occurring at 530 cal BP (1420 A.D.) (Cleland et al. 2007:52). Sites CA-ORA-260-264, CA-ORA-850-852, and ORA-1472 are considered the *Motuucheyngna* Village and was identified as a sacred land to the Native American Heritage Commission in 2019 by the Gabrieleño/Tongva San Gabriel Band of Mission Indians.

As part of the SMP, a Cultural Preservation Area was created over the area of the highest density of burials with tribal access to it in perpetuity. The Hellman Ranch Trail was created that links Heron Point to Gum Grove Park. Interpretative signage and a gathering circle were also created (Figure C - 9 and Figure C - 8). Members of the Gabrielino(Gabrieleño, Tongva) and greater Native American community have used the gathering circle as a meeting place.

Figure 39. Sign along the Hellman Ranch trail.

Figure 40. Overview of gathering place created along the trail connecting Heron Point and Gum Grove Park

CONNECTION BETWEEN LOS CERRITOS WETLANDS COMPLEX, *PUVUNGNA* AND *MOTUUCHEYNGNA*

The investigation of the ethnographic record did not identify any specific information on the Los Cerritos Wetlands or connections between these three locations; however, four tribal interviewees did state that the three places were probably connected based on the documented settlement patterns and knowledge of the trade routes in the area. As summarized in the Tribal Feedback section above, Ms. Bogany stated that the Los Cerritos Wetlands Complex was the connector from the ocean to *Puvungna* and *Motuucheyngna*. Mr. Rocha also talked about how the Gabrielino used the rivers, in particular the San Gabriel River, in this instance to connect to other villages throughout Gabrielino Territory. Mr. Rocha said:

> I don't have no information on the villages, exactly. But I know that the river itself was made, uh, made a route for trade and commerce within the Native community. You could canoe or kayak from one point to another relatively pretty easy. Within a span of two and a half hours you could be here from the heart of San Gabriel Valley, by canoe. So, there are a lot of resources that grow here and only here, like the pickleweed, were relatively desired by the other Native communities. You know, this was a big source of trade as well. Like I said, the water, those were our freeways back in the day, you know? Even the freeways run along them now show the same route and usefulness, basically, but just on a different kind of media. So, if we look at it from that point of view, yeah, the water is how they connected us as a community with the other communities: the water community and Earth communities. It played a big role, a huge role, I would say; absolutely, yes. As much as you would need a transponder to take a freeway nowadays, yeah, that's how important they were to us, in comparison.

Mr. Torres concurred:

> And so I don't know how some of the villages are connected, but I can guarantee you that they were connected to each other. You know, if you're looking at sources of life, like the food sources and any other source that was abundant in one area, you know people were trading it because people weren't isolated. You look at the trade networks that connected us from the islands going all the way up to Mojave and who knows how far south. But that tells you right there that people were trading. So, if they were trading that far you know the villages connected up here were trading extensively. Because that's part of your survival. I mean that's just common sense to me is like, you know, you don't stand isolated, alone, and live in your community by yourself. You're constantly trading with other people, so yeah, the communities were definitely connected. In what ways? I don't-

> know,- but that's where archaeology will tell you whatever you're finding in the site, that's what the people were trading. And so (clears throat), it's important to think about that because I'm always telling people that when you look at a map of California Indians and you see these nice little outlines, you know, that's not the way our people were organized. It's more like a connect the dots where you have one village connected to another, to another, to another, and it extends further out based on intermarriage, trade relationships, ceremony—all these things that were connecting people way out in the desert, way down south. So, definitely these communities were connected to each other.

During Tribal consultation conducted by the CCC for the Coastal Development Permit for the Los Cerritos Wetland Oil Consolidation and Restoration Project (State Clearinghouse Number 2016041083), a number of representatives attested to the sacredness of the Los Cerritos Wetlands and its connection to *Puvungna* and *Motuucheyngna.*

In 2017, tribal representatives of the Gabrieleno-Tongva San Gabriel Band of Mission Indians, as well as a member of the Acjachemen Tribe described the project site as "sacred lands that are part of a larger area of connected tribal sites that constitute a Tribal Cultural Landscape that may be eligible for listing by the National Register as a Tribal Cultural Property. This Tribal Cultural Landscape includes several significant tribal sites and resources in close proximity to the project site, including the site of *Puvungna*, the Rancho Los Alamitos (Long Beach area), Hellman Ranch property [i.e. the Heron Point residential community] (immediately on the other side of the San Gabriel River, in Seal Beach) (CCC 2018: 125).

In 2018, representatives of the Gabrieleño Band of Mission Indians – Kizh Nation stated that the Los Cerritos Wetlands area is a sacred land, just as all land, water and animals are sacred (CCC 2018: 125).

EVALUATING THE *PUVUNGNA* CULTURAL LANDSCAPE

Following National Register Bulletin 38

APPROACH

National Register Bulletin 38 provides guidelines for identifying TCPs and determining whether they meet the National Register Criteria for Evaluation (36 CFR 60.4). This part of the report applies these guidelines to the *Puvungna* Traditional Cultural Landscape.

THE *PUVUNGNA* CULTURAL LANDSCAPE AS A "PROPERTY"

National Register Bulletin 38 states that the first step in evaluating a traditional cultural place for National Register eligibility is to determine if the entity under consideration is a "property."

The definition of a "property" is as follows (National Register 1990:9):

> (T)he National Register does not include intangible resources themselves. The entity evaluated must be a tangible property -- that is, a district, site, building, structure, or object.

The *Puvungna* Traditional Cultural Landscape is clearly a "property" -- physical real estate made up of publicly and privately owned parcels.

NATIONAL REGISTER ELIGIBILITY CRITERIA

National Register Bulletin 38 says that determining whether the property has "integrity" is the second step in evaluation. In order to be eligible for inclusion in the NRHP, a property must have "integrity of location, design, setting, materials, workmanship, feeling, and association" (36 CFR Part 60). There are two distinct aspects of integrity that must be shown for the property to be included in the National Register.

(1) Does the property have an integral relationship to traditional cultural practices or beliefs?

(2) Is the condition of the property such that the relevant relationships survive?

INTEGRITY OF RELATIONSHIP

Assessing the integrity of the relationship between a property and the beliefs or practices that may give it significance involves understanding how the group that holds the beliefs or carries out the practices is likely to view the property. If the property is known or likely to be regarded by a traditional cultural group as important in the retention or transmittal of a belief, or to the performance of a practice, the property can be considered to have an integral relationship with the belief or practice, and vice-versa.

Although this study did not document any new information on the connection between the Los Cerritos Wetlands Complex, and the villages of *Puvungna* and *Motuucheyngna* the PTCL is important in the maintenance of Gabrielino and Acjachemen identity and the instruction of future generations in their cultural history. Through hard fought protests and negotiations with the landowners of CSULB, Rancho Los Alamitos and Heron Point, Gabrielino and Acjachemen tribal members have access and use these spaces and places for community gatherings, ceremony and other traditional practices. Although access to the Los Cerritos Wetlands Complex have been cut within the last 50+ years, tribal members share their family's use of the area for traditional food and cultural practices as well as its connection to *Puvungna* and *Motuucheyngna*. Further, as discussed above, Tribal interviewees and Tribal representatives, during consultation with the CCC, see the PTCL as significant to their Tribes. Based on these elements, the integrity of the relationship exists.

INTEGRITY OF CONDITION

The question of physical alteration to a property is addressed as follows (National Register 1990:10).

> Like any other kind of historic property, a property that once had traditional cultural significance can lose such significance through physical alteration of its location, setting, design, or materials.

As has happened to many swaths of land in Southern California, the surface of the PTCL has changed over time and is definitely not the same as when Ouiot created the *'Amuupavetam* or when Chingichngish came and instructed the Gabrielino and Acjachemen on how to live.

Bulletin 38 emphasizes that (National Register 1990:10):

> … the integrity of traditional cultural properties must be considered with reference to the views of traditional practitioners; if its integrity has not been lost in their eyes, it probably has sufficient integrity to justify further evaluation.

Tribal interviewees and Tribal representatives, during consultation with the CCC, have stated that the PTCL is still significant to their community, even with all the changes.

NATIONAL REGISTER CRITERIA

The third step prescribed by Bulletin 38 is to evaluate a property against the National Register Criteria (36 CFR 60.4). The PTCL is clearly associated with significant events in the traditional history and cultural life of the Gabrielino and Acjachemen Tribes. As previously discussed, the villages of *Puvungna* (represented by CA-LAN- 234, CA-LAN-235 and CA-LAN-306) is already listed on the National Register because it is the place of emergence of the Gabrielino and Acjachemen into this world. However, that nomination identified only three sites to represent *Puvungna* and did not connect it to other sites, both habitation and subsistence sites, that are part of the manifestation of the *Puvungna* use area. The Gabrieleño/Tongva San Gabriel Band of Mission Indians has identified CA-LAN-102, CA-LAN-231 thru 236, CA-LAN-270 and 271, CA-LAN-273 thru 275, CA-LAN-306, CA-LAN- 699 thru 705, CA-LAN-830 and 831, CA-

LAN-1000 thru 1007 as part of the *Puvungna* Village sites and has described the connection between *Puvungna*, *Motuucheyngna* (aka *Puvungna* East) and the Los Cerritos Wetlands Complex. All of these qualify PTCL for inclusion in the National Register under Criterion A.

Although it is not necessary for a property to meet more than one of the National Register Criteria in order to be eligible for the NRHP, it could be argued that the PTCL is eligible under Criterion B for its association with historically significant "people," in this case *Ouiot* and *Chingichngish*, the creator and an important leader in Gabrielino and Acjachemen history.

Criteria Considerations

Step four in the evaluation process, according to Bulletin 38, is to determine whether any of the National Register "criteria considerations" apply. These "considerations" describe circumstances under which a property that might otherwise be eligible is *not* eligible. In effect they are criteria of *ineligibility,* but each allows for exceptions under which properties that might appear ineligible under the considerations are in fact *eligible* (Parker and King 1993:32).

Consideration A says that a "religious property" -- one owned by a religious institution or used for religious purposes – "requires additional justification" in determining eligibility "because of the necessity to avoid any appearance by government about the merit of any religion or belief." Bulletin 38 notes that applying this consideration can be "fraught with the potential for ethnocentrism and discrimination," noting that "(a)pplying the 'religious exclusion' without careful and sympathetic consideration to properties of significance to a traditional cultural group can result in discriminating against the group by effectively denying the legitimacy of its history and culture" (National Register 1990:13).

Although many Native American cultures, including the Gabrielino and Acjachemen, see "religion" as inextricably interwoven with culture and history, the PTCL is not a religious property and thus is not disqualified under Criteria Consideration A.

Considerations B (relocated properties), C (birthplaces and graves), D (cemeteries), E (reconstruction), F (commemoration) and G (significance achieved within the last fifty years) do not apply to the PTCL.

Summary

The PTCL meets the criteria of eligibility for inclusion in the National Register of Historic Places and has sufficient integrity to justify being regarded as eligible for the Register. The area is recommended eligible for the National Register as a Traditional Cultural Property. Since it is recommended for the National Register, it is automatically recommended as eligible for the CRHR.

CALIFORNIA REGISTER EVALUATION

To be eligible for the CRHR a resource must:

1. be associated with events that have made a significant contribution to the broad patterns of history;
2. be associated with the lives of significant persons of the past;
3. embody distinctive characteristics of type, period, or method of construction or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity those components may lack individual distinction; or
4. yielded or may likely yield information important in history or prehistory.

In addition to having significance using the above criteria, resources must have "integrity of location, design, setting, materials, workmanship, feeling, and association" to the period of significance. The period of significance is the date or span of time within which significant events transpired, or significant individuals made their important contributions.

Integrity is the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance. Alterations to a resource or changes in its use over time may have historical, cultural, or architectural significance. Simply, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance.

Six new cultural resources and three previously recorded sites are located within the Southern LCW Restoration Project area.

ISOLATES

Two prehistoric isolates, **2021_08_05_SD.1-I** (one piece of obsidian debitage) and **2021_08_28_DRM_1.I** (prehistoric isolate consisting of 1 prehistoric exfoliated granitic unifacial mano and an exfoliated chalcedony scraper), were identified within the Southern LCW Restoration Project area. Extended Phase I testing in September/October 2022 confirmed that these resources lie upon imported fill and have no associated subsurface cultural deposits. Isolates are not eligible for listing on the CRHR and need no further consideration.

NEWLY RECORDED SITES

2021_08_06_SD.1 is a historic-age refuse site consisting of two piles of wood planks and boards, a pile of broken concrete, and some metal scraps. The wood and concrete exhibited no diagnostic features and did not extend subsurface. Based on the fieldwork, recordation, and background research conducted on this site, the site is recommended as not eligible for inclusion on the CRHR. No information has been found to suggest that this site is directly associated with events or persons that are significant in local, state, or national history (CRHR Criteria 1 and 2). There are no elements recorded for the site that would qualify as significant under CRHR Criterion 3. All data was collected when this resource was recorded, exhausting its potential to provide important information about prehistory within the region, state, or nation (CRHR Criterion 4). No further work is needed.

2021_08_06_SD.2 is a historic-age refuse site consisting of deteriorated red bricks, a pile of tile fragments, and a historic soda fired ceramic pipe sherd. The bricks, tile fragments and ceramic sherd do not exhibit diagnostic features and the site did not extend subsurface. Based on the fieldwork, recordation, and background research conducted on this site, the site is recommended as not eligible for inclusion on the CRHR. No information has been found to suggest that this site is directly associated with events or persons that are significant in local, state, or national history (CRHR Criteria 1 and 2). There are no elements recorded for the site that would qualify as significant under CRHR Criterion 3. All data was collected when this resource was recorded, exhausting its potential to provide important information about prehistory within the region, state, or nation (CRHR Criterion 4). No further work is needed.

2021_08_06_SD.3 is a prehistoric site consisting of a lithic scatter of a quartz flake, a modified tool of pink quartzite, and a gray quartzite scraper. Although the site contains two tools that may be indicative of resource processing site, the artifacts lay on the surface of documented fill consisting of sediments from the dredging of the San Gabriel River (Appendix M, Figure M - 1).

Extended Phase I testing in September/October 2022 found one lithic flake and four potential lithic flakes below surface but these were in context with modern plastic trash debris. No intact prehistoric cultural deposit was found associated with the resource. Presence of modern debris below the surface confirms that the surface artifacts are in secondary context

Based on the fieldwork, recordation, background research, and phase I testing conducted on this site, the site is recommended as not eligible for inclusion on the CRHR. No information has been found to suggest that this site is directly associated with events or persons that are significant in local, state, or national history (CRHR Criteria 1 and 2). There are no elements recorded for the site that would qualify as significant under CRHR Criterion 3. All data was collected when this resource was recorded exhausting its potential to provide important information about prehistory within the region, state, or nation (CRHR Criterion 4). No further work is needed.

HELLMAN CHANNEL
Theme: Water conveyance system-Drainage
Period of Significance: ca. 1928-1976

This channel is associated with the historic theme of a water conveyance system (drainage ditch) located within the boundaries of the e Hellman Ranch which functioned as a successful cattle ranch and farming enterprise for multiple decades. The Hellman Channel is an unlined gravity fed system which is considered unremarkable in its construction or design. While this channel is associated with the Hellman Ranch, it was constructed eight years after the passing of the ranch's owner, I.W. Hellman in 1920. It is believed that this drainage ditch was constructed primarily for the support of the oil wells which were active nearby.

This segment of the Hellman Channel still retains most of its integrity of Location, Design, Materials, Workmanship, and Feeling. While the channel is no longer used in conjunction with the operations of the former Hellman Ranch, it still retains is use as a drainage ditch, therefore it retains some of its integrity of Association. There is notable loss of the channel's integrity of Setting due to visible development of residences along the southern boundary of the Los Cerritos Wetlands.

Based on the fieldwork, recordation, and background research conducted on this site, the site is recommended as not eligible for independent inclusion on the NRHP or CRHR. No information has been found to suggest that this site is directly associated with events or persons that are significant in local, state, or national history (NRHP Criteria A and B or the CRHR Criteria 1 and 2). There are no elements recorded for the site that would qualify as significant under NRHP Criterion C or the CRHR Criterion 3. All data was collected when this resource was recorded, exhausting its potential to provide important information about prehistory within the region, state, or nation (NRHP Criterion on D or the CRHR Criterion 4). No further work is needed.

PREVIOUSLY RECORDED SITES

P-30-000256 (LANDING HILL #1) was recorded as a prehistoric habitation site with milling stones located on Landing Hill. The site was surface collected for many years prior to being recorded and much of it has been destroyed by development (McKinney 1969a based on information from Redwine 1959). The portion of the site within the LCW Project area was revisited and no cultural resources were identified. Based on the fieldwork, recordation, and background research conducted on this site, the site is recommended as not eligible for inclusion on the CRHR. No information has been found to suggest that this site is directly associated with events or persons that are significant in local, state, or national history (CRHR Criteria 1 and 2). There are no elements recorded for the site that would qualify as significant under CRHR Criterion 3. No intact cultural deposits were identified, thus it does not have the potential to provide important information about prehistory within the region, state, or nation (CRHR Criterion 4). No further work is needed.

P-30-000258 (Landing Hill #3) and P-30-000260 The portions of P-30-000258 (habitation site) and P-30-000260 (seasonal camp) within the Southern LCW Project area were not surveyed as they were covered by dense vegetation. As a result, both sites could not be evaluated for listing on the CRHR. It is recommended that these sites be avoided until such time they can be evaluated for the CRHR.

CONCLUSIONS

This study was conducted to determine the potential impacts to cultural resources during the Southern Los Cerritos Wetlands Restoration Project (Project) as well as to document the Los Cerritos Wetlands Traditional Cultural Landscape, as named in the PEIR and now known as the Puvungna Traditional Cultural Landscape (PTCL). The Los Cerritos Wetlands Authority (LCWA) is the lead agency under the California Environmental Quality Act (CEQA).

This Project is located within the southern portion of the Los Cerritos Wetlands Complex, on the border of Los Angeles and Orange counties, and affords the opportunity to restore salt marsh, seasonal wetlands, and other freshwater wetlands within an approximately 503-acre area. The Los Cerritos Wetlands Complex adjoins the lower reach of the San Gabriel River where, prior to channelization, the mouth of the San Gabriel River migrated back and forth across the coastal plain. Historically, the complex covered approximately 2,400 acres and stretched approximately two miles inland, varying from freshwater and brackish wetlands in its inland areas to salt marsh closer to the ocean.

For this study, Cogstone requested a supplementary cultural records search from the South Central Coastal Information Center extending the search radius to three miles around the Los Cerritos Complex, completed background research and attempted consultation with historic societies, performed limited pedestrian survey including site recordation, and collected oral histories from members of Gabrielino (Gabrieleño; Tongva; Kizh) Tribes. These efforts gathered data for a cultural resources assessment of the Project area, prehistoric and historic documentation of the Los Cerritos Wetlands, and an CRHR/NRHP eligibility evaluation of the *Puvungna* Traditional Cultural Landscape (PCTL; see Appendix C, Figure C - 11) as a traditional cultural property (TCP).

Nine cultural resources are located within the Southern LCW Restoration Project area. Six of these are newly recorded as part of this Project, and three were previously recorded. The newly recorded resources consist of two prehistoric cultural isolates (2021_08_05_SD.1-I and 2021_08_28_DRM_1.I) that were tested in September/October 2022 and confirmed to not have accompanying intact cultural deposits, two historic-aged refuse sites (2021_08_06_SD.1 and 2021_08_06_SD.2), a prehistoric lithic scatter site (2021_08_06_SD.3) also tested in September/October 2022 and found not to contain intact cultural deposits, and the Hellman Channel. Three previously recorded sites include P-30-000256 (Landing Hill #1), P-30-000258 (Landing Hill #3), and P-30-000260. All newly identified resources were recorded using DPR 523 series forms. Cultural isolates are not eligible for inclusion on the CRHR and need no further consideration. The remaining newly identified resources were evaluated for CRHR eligibility and are recommended as not eligible for listing in the CRHR. The Hellman Channel was also evaluated for NRHP eligibility and is recommended as not eligible for listing in the NRHP. No further work is recommended for any of these resources.

The previously recorded, P-30-000256 (Landing Hill #1) was revisited, surveyed, and revaluated using DPR 523 series forms. As no cultural resources were found during this visit, this site is also recommended as not eligible for listing in the CRHR, and no further work is recommended. The remaining two previously recorded sites, P-30-000258 (Landing Hill #3), and P-30-000260, are covered by dense vegetation and could not be visited or reevaluated as part of this Project. These sites should be avoided until they can be evaluated for CRHR listing eligibility.

Oral histories collected from members of the Gabrielino (Gabrieleño; Tongva; Kizh) Tribes, and other data collected and reviewed for this Project, indicate that the PTCL qualifies as a TCP under the four-part guidelines contained within National Register Bulletin 38. The guidelines consist of whether the potential TCP is a property; is an integral relationship between the group and the property; is in a condition to sustain the relationship; meets at least one of the criteria for listing in the NRHP; meet any of the criteria conditions that would make an otherwise eligible property not eligible for listing the NRHP.

The landscape is physical real estate comprised of public and private land and therefore qualifies as a “property.” The property is integral to the beliefs of the Gabrielino (Gabrieleño; Tongva; Kizh) and Acjachemen Tribes and in a condition that these relationships survive. The PTCL satisfies NRHP eligibility Criterion A as it is clearly associated with significant events in the traditional history and cultural life of the Gabrielino (Gabrieleño; Tongva; Kizh) and Acjachemen Tribes. The PTCL is not a religious property nor does it meet any of the other National Register Eligibility Considerations that would disqualify an otherwise eligible property. Thus, the PTCL is recommended as eligible for the CRHR/NRHP.

In lieu of new or additional mitigation measures, the Los Cerritos Wetlands Authority should continue Native American consultation with the Gabrielino (Gabrieleño; Tongva; Kizh) and Acjachemen Tribes on an ongoing basis in order to mitigate any negative effects on the PTCL. This collaboration will inform action from management and tribal perspectives.

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APPENDIX A. QUALIFICATIONS

DESIREÉ RENEÉ MARTINEZ
Task Manager

EDUCATION

1999 M.A., Anthropology (Archaeology), Harvard University, Cambridge
1995 B.A., Anthropology, University of Pennsylvania, Philadelphia

SUMMARY OF QUALIFICATIONS

Ms. Martinez is a Registered Professional Archaeologist (RPA) with 24 years of experience in archaeological fieldwork, research, and curation. She has expertise in the planning, implementation, and completion of all phases of archaeological work and has participated in archaeological investigations as a principal investigator, crew member, and tribal monitor. She exceeds the national standards in archaeology set by the Secretary of Interior's *Standards and Guidelines for Archaeology and Historic Preservation.* She is accepted as a Principal Investigator for prehistoric and historic archaeology by the State Office of Historic Preservation. Her experience also includes compliance with CEQA, NEPA, NHPA Sec. 106, NAGPRA, SB 18, AB 52, California General Order 131-D exemption, and other cultural resource laws. Ms. Martinez has managed technical assessments and prepared cultural resources sections for EIR and EIS documents.

SELECTED EXPERIENCE

Deep Soil Mixing Pilot Project, Community of Pacific Palisades, Los Angeles County, CA. As part of an on-call contract with the Los Angeles Bureau of Engineering (LABOE), Cogstone provided cultural and paleontological resources monitoring as well as managed Native American monitoring during ground-disturbing activities. The City of Los Angeles was the lead agency under the California Environmental Quality Act (CEQA). Monitoring for the Project was conducted in compliance with the Contingency Plan conditions for the Coastal Development Permit (CDP) from the California Coastal Commission (CCC). No cultural or paleontological resources were identified. No further work was necessary. Sub to ICF. Task Manager. 2020

Veterans Affairs Long Beach Health Systems, Cultural Resources Services and Native American Monitoring, Long Beach, Los Angeles County, CA. Managed a variety of public works and infrastructure improvements on the VALBHS campus. Services have included archaeological surveys, testing, archaeological monitoring, providing and managing Gabrielino (Tongva) Native American monitoring, and compliance reporting. Native American monitoring was provided on a rotating basis from several Gabrielino (Tongva) tribes as per a Memorandum of Agreement between the VALBHS, State Historic Perseveration Office. Projects on the campus have included: an intensive-level archaeological survey utilizing ground-penetrating radar and magnetometry to identify subsurface cultural debris, accurately map abandoned utilities, and locate a historic trash pit within the APE; archaeological and Native American monitoring of construction activities of the Fisher House and Golf Course project area. Principal Investigator for Archaeology. 2014-2018

California State University, Long Beach, On-Call Archaeological Services, Physical Planning and Facilities Management, Long Beach, Los Angeles County, CA. Cogstone managed archaeological and Native American monitoring of excavations or trenching for public works and buildings projects. Improvements to athletic fields, recycling center, parking lots, roads, outdoor dining, racetrack, liberal arts, and performing arts buildings. Task Manager/Principal Investigator for Archaeology. 2015-2017

Kitts Highway Pathway Lighting Project, Naval Weapons Station Seal Beach, City of Seal Beach, Orange County, CA. Cogstone conducted cultural resources monitoring and managed Native American monitoring during the construction of an additional room and outdoor storage area. No cultural resources were observed or recovered. Upon completion of construction, a Cultural Resources Monitoring Compliance Report was produced. Principal Investigator for Archaeology. 2017

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

JOHN GUST
Principal Investigator for Archaeology

EDUCATION

2016 Ph.D., Anthropology, University of California, Riverside (UCR)
2011 M.A., Anthropology, UCR
2007 M.A., Applied Geography, University of Colorado, Colorado Springs (UCCS)
2002 B.A., Anthropology, minor in Geography/Environmental Studies, UCCS

SUMMARY OF QUALIFICATIONS

Dr. Gust is a Registered Professional Archaeologist (RPA) with 10 years of experience in field archaeology. He meets the qualifications required by the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* and his field expertise includes pedestrian surveys, excavation monitoring, resource recording, and historic artifact analysis. Dr. Gust has managed a variety of projects at Cogstone in the water, development, residential, transportation, telecommunications, and public works sectors. Dr. Gust is a member of the Society for California Archaeology, Society for American Archaeology, and the American Anthropological Association.

SELECTED EXPERIENCE

San Gabriel River Commuter Bikeway and Big Dalton Wash Commuter Bikeway, City of Baldwin Park, Los Angeles County, CA. Cogstone conducted a cultural and historic built environment resources assessment to determine the potential impacts to cultural and historical resources for the proposed construction of approximately five miles of new bikeway/pedestrian pathway. Services included pedestrian surveys, records searches, a Sacred Lands File search from the NAHC, preparation of DPR 523 forms, NRHP eligibility assessments, and reporting. The project required a Section 408 permit from the USACE due to the proximity of the federally managed San Gabriel River and tributaries. All work performed complied with Section 106 of the NHPA. The City of Baldwin Park acted as lead agency under CEQA. Sub to Infrastructure Engineering Corporation. Principal Investigator for Archaeology. 2020-2021

University of California Natural Reserve System San Joaquin Marsh Reserve Water Conveyance and Drainage Improvement Project, City of Irvine, Orange County, CA. Cogstone conducted a cultural and paleontological resources assessment to determine the potential impacts to cultural and paleontological resources for the proposed long-term water management improvements and habitat value of the Marsh Reserve. Services included pedestrian survey, records searches, Sacred Lands File search from the NAHC, background research, subsurface testing, and reporting. Due to the proximity of the project to the San Diego Creek, the project required a Clean Water Act Section 404 permit from the United States Army Corps of Engineers (USACE) and Section 106 NHPA compliance. University of California acted as the lead agency under CEQA and USACE acted as lead agency under NEPA. Sub to Moffat & Nichol. Principal Investigator for Archaeology. 2020-2021

Long Beach Municipal Urban Stormwater Treatment (MUST) Project, Los Angeles County, CA. In 2017, Cogstone prepared a cultural and paleontological resources assessment for the proposed construction of a stormwater facility. The project intended to improve the water quality of existing urban runoff to the Los Angeles River, and ultimately to the Long Beach Harbor. Services included pedestrian surveys, records searches, background research, built environment assessment, Native American consultation, and reporting. In 2020, Cogstone produced a Paleontological Resources Management Plan to propose effective mitigation of potential impacts to paleontological resources resulting from proposed construction of MUST and its associated Wetlands project. Sub to Michael Baker. Principal Investigator for Archaeology. 2020

SHANNON LOPEZ

Architectural Historian

EDUCATION

2018 M.A., History (with an emphasis in architecture), California State University, Fullerton

2012 B.A., History, Minor in Asian-Pacific Studies, California State University, Dominguez Hills

SUMMARY OF QUALIFICATIONS

Ms. Lopez is a qualified historian and she meets the Secretary of the Interior's *Standards and Guidelines for Architectural History.* Ms. Lopez is experienced in architectural history research and surveys along with photo documentation and recording of built environment resources for local and federal projects. Ms. Lopez is acknowledged as an approved Architectural Historian by Caltrans. She has extensive knowledge with Native American consultation, consultation with city and county historical societies, and analysis of primary and secondary sources. Additionally, she is an approved Reader at the Huntington Library by the Los Angeles Office of Historic Resources.

SELECTED EXPERIENCE

San Gabriel River Commuter Bikeway and Big Dalton Wash Commuter Bikeway, City of Baldwin Park, Los Angeles County, CA. Cogstone conducted a cultural and historic built environment resources assessment to determine the potential impacts to cultural and historical resources for the proposed construction of approximately five miles of new bikeway/pedestrian pathway. Services included pedestrian surveys, records searches, a Sacred Lands File search from the NAHC, preparation of DPR 523 forms, NRHP eligibility assessments, and reporting. The project required a Section 408 permit from the USACE due to the proximity of the federally managed San Gabriel River and tributaries. All work performed complied with Section 106 of the NHPA. The City of Baldwin Park acted as lead agency under CEQA. Sub to Infrastructure Engineering Corporation. Architectural Historian. 2020-2021

141st and Normandie Townhomes Project, City of Gardena, Los Angeles County, CA. Cogstone identified and evaluated the potential impacts to cultural, historic built environment, and paleontological resources for the proposed construction of 50 new, three-story townhomes, which will range in size from 1,252 to 1,689 square feet. Services included pedestrian survey, built environment evaluation, records searches, Sacred Lands File search from the NAHC, background research, and reporting. The City of Gardena acted as lead agency under CEQA. Sub to De Novo Planning. Architectural Historian. 2020

Los Angeles Harbor College, City of Los Angeles, Los Angeles County, CA. Cogstone conducted a study to determine the potential impacts to cultural resources for the proposed demolition, renovation, and construction at the college. Three of the building scheduled for demolition were considered historic in age and required evaluation under CEQA. Cogstone conducted a records search, historical society outreach, a pedestrian survey, and produced a Historic Resources Evaluation Report. Sub to PlaceWorks. Architectural Historian & Author. 2020

Long Beach Municipal Urban Stormwater Treatment (MUST) Project, Los Angeles County, CA. In 2017, Cogstone prepared a cultural and paleontological resources assessment for the proposed construction of a stormwater facility. The project intended to improve the water quality of existing urban runoff to the Los Angeles River, and ultimately to the Long Beach Harbor. Services included pedestrian surveys, records searches, background research, built environment assessment, Native American consultation, and reporting. In 2020, Cogstone produced a Paleontological Resources Management Plan to propose effective mitigation of potential impacts to paleontological resources resulting from proposed construction of MUST and its associated Wetlands project. Sub to Michael Baker. Architectural Historian. 2020

KIM SCOTT

Geoarchaeologist

EDUCATION

2000 B.S., Geology with paleontology emphasis, University of California, Los Angeles
2013 M.S., Biology with paleontology emphasis, California State University, San Bernardino
2015 Immersion course in geomorphology/geoarchaeology, National Park Service

SUMMARY OF QUALIFICATIONS

Scott has more than 20 years of experience in California paleontology and sedimentary geology. She has extensive paleontology experience in the field and lab in surveying, monitoring, fossil salvage, taphonomy, locality mapping, fossil preparation, and report writing. She is experienced in preparing stratigraphic sections, determining paleoenvironment, and analyzing soils and geological maps for buried site potential. Scott serves as company safety officer and is the author of the company safety and paleontology manuals.

SELECTED EXPERIENCE

Faith Home/Garner Road Connection Project, Caltrans District 10, Stanislaus County, CA. Cogstone identified and evaluated cultural, paleontological, and historic resources present in or adjacent to the construction of a four-lane one-mile expressway. Cogstone produced an Archaeological Survey Report (ASR), Historic Properties Survey Report (HPSR), Historic Resources Evaluation Report (HRER), and Paleontological Identification and Evaluation Report (PIR-PER). Services included intensive level pedestrian surveys, mapping, records searches, DPR forms, and Native American consultation. Sub to Environmental Intelligence. Principal Investigator for Paleontology and Geoarchaeologist. 2017-2020

Interstate 605 and Katella, Caltrans District 12, City of Los Alamitos, Orange County, CA. The Orange County Transportation Authority with the California Department of Transportation District 12 and the City of Los Alamitos, proposed to update the I-605 and Katella Avenue interchange. Cogstone performed the survey, prepared a combined Paleontological Identification Report and Paleontological Evaluation Report, an Archaeological Survey Report with a geoarchaeological section on the potential for buried sites, a Historical Property Survey Report, and a Historical Resources Evaluation Report. Sub to WSP USA, Inc. Principal Investigator for Paleontology and Geoarchaeologist. 2018

State Route 57, Orangewood to Katella, Caltrans District 12, Cities of Orange and Anaheim, Orange County, CA. California Department of Transportation District 12, with assistance from the cities of Anaheim and Orange, proposed to widen and restripe portions of the northbound side of the freeway from Orangewood Avenue to Katella Avenue. Cogstone performed the survey, prepared a combined Paleontological Identification Report and Paleontological Evaluation Report, an Archaeological Survey Report with geoarchaeological section, and a Historical Property Survey Report. Sub to Michael Baker International. Principal Investigator for Paleontology and Geoarchaeologist. 2018

State Route 138 and Avenue G interchange, Caltrans District 7, unincorporated Los Angeles County, CA. The City of Lancaster, in conjunction with the California Department of Transportation District 7, proposed to improve the existing interchange of State Route 138 and Avenue G interchange in addition to widening of Avenue G to the east and west of the existing interchange. Cogstone performed the survey, prepared a combined Paleontological Identification Report and Paleontological Evaluation Report, an Archaeological Survey Report with geoarchaeological section, and a Historical Resources Compliance Report. Sub to Michael Baker International. Principal Investigator for Paleontology and Geoarchaeologist. 2017

LOGAN FREEBERG
GIS Supervisor

EDUCATION

2018 Geographic Information Systems (GIS) Certificate, California State University, Fullerton
2003 B.A., Anthropology, University of California, Santa Barbara

SUMMARY OF QUALIFICATIONS

Mr. Freeberg has over 18 years of experience in cultural resource management and has extensive experience in field surveying, data recovery, monitoring, and excavation of archaeological and paleontological resources associated with land development projects in the private and public sectors. He has conducted all phases of archaeological work, including fieldwork, laboratory analysis, research, and reporting. Mr. Freeberg also has a strong grounding in conventional field and laboratory methods and is skilled in the use of ArcGIS.

SELECTED EXPERIENCE

Purple Line Extension (Westside Subway), Sections 1 and 2, Metropolitan Transit Authority (METRO), Los Angeles, CA. The project involves construction of seven stations from the existing Purple Line at Wilshire/Western Avenue along Wilshire Boulevard to the Veterans Administration Hospital in Westwood for 8.6 miles. Manages all paleontological services for Sections 1 and 2 of the subway project including budgets, WEAP training, monitoring, fossil recovery, lab work, analysis, and reporting. Sub to JV West (Stantec/Jacobs JV) (Section 1), AECOM (Section 2). GIS Supervisor. 2020-*ongoing*

San Gabriel River Commuter Bikeway and Big Dalton Wash Commuter Bikeway, City of Baldwin Park, Los Angeles County, CA. Cogstone conducted a cultural and historic built environment resources assessment to determine the potential impacts to cultural and historical resources for the proposed construction of approximately five miles of new bikeway/pedestrian pathway. Services included pedestrian surveys, records searches, a Sacred Lands File search from the NAHC, preparation of DPR 523 forms, NRHP eligibility assessments, and reporting. The project required a Section 408 permit from the USACE due to the proximity of the federally managed San Gabriel River and tributaries. All work performed complied with Section 106 of the NHPA. The City of Baldwin Park acted as lead agency under CEQA. Sub to Infrastructure Engineering Corporation. GIS Supervisor. 2020-2021

Los Angeles World Airports (LAWA) Ongoing Technical Support for Environmental, Mitigation Reporting, and Sustainability Issues Associated with LAWA Construction Projects, LAX, Los Angeles County, CA. Cogstone conducted cultural and paleontological resources monitoring during proposed consolidation and modernization of existing facilities. The project involved redeveloping multiple facilities including hangars and associated structures for Delta Airlines and United Airlines, among others. Upon completion of monitoring, Cogstone prepared Cultural and Paleontological Resources Monitoring Compliance Reports. The City of Los Angeles acted as lead agency for the project. Sub to CDM Smith. GIS Supervisor. 2020-2021

Bell Gardens Water Reservoir Project, City of Bell Gardens, Los Angeles County, CA. Cogstone conducted a cultural and paleontological resources assessment to determine the potential impacts to cultural and paleontological resources during improvements which included a new two-million-gallon reservoir, booster pump station, well to be drilled, and other components. Services included record searches, Sacred Lands File search from the Native American Heritage Commission, and an intensive pedestrian survey of the 1.7-acre project area. Sub to Infrastructure Engineers. GIS Supervisor. 2019-2020

APPENDIX B. MITIGATION MEASURES FROM THE PEIR

Mitigation Measure CUL-1: Cultural Resources Personnel Professional Qualifications Standards. Cultural resources consulting staff shall meet, or be under the direct supervision of an individual meeting, the minimum professional qualifications standards (PQS) set forth by the Secretary of the Interior (SOI) (codified in 36 Code of Federal Regulations [CFR] Part 61; 48 FR 44738-44739).

Mitigation Measure CUL-2: Historic Resources Assessment. For each near-term, mid-term, and long-term project, LCWA shall retain an SOI-qualified architectural historian (Qualified Architectural Historian) to conduct a historic resources assessment including: a records search at the South Central Coastal Information Center; a review of pertinent archives and sources; a pedestrian field survey; recordation of all identified historic resources on California Department of Parks and Recreation 523 forms; and preparation of a technical report documenting the methods and results of the assessment. The report(s) shall be submitted to LCWA for review and approval prior to LCWA's approval of project plans or publication of subsequent CEQA documents. The Qualified Architectural Historian shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its completion. A Historic Resources Assessment shall not be required for any project site that has already undergone the same or similar assessment as part of the program as long as the assessment is deemed adequate by the Qualified Architectural Historian for the purposes of the project currently under consideration.

Mitigation Measure CUL-3: Historic Resources Evaluation. Prior to LCWA's approval of project plans or the publication of subsequent CEQA documents for any project site containing unevaluated historic resources, a Qualified Architectural Historian shall determine if the project has the potential to result in adverse impacts to identified historic resources. For any historic resource that may be adversely impacted, the Qualified Architectural Historian shall evaluate the resource for listing in the California Register under Criteria 1-4 in order to determine if the resource qualifies as a historical resource. If a historic resource is found eligible, the Qualified Architectural Historian shall determine if the project would cause a substantial adverse change in the significance of the resource. If a substantial adverse change would occur (i.e., the project would demolish the resource or materially alter it in an adverse manner), the Qualified Architectural Historian shall develop appropriate mitigation measures to be incorporated into subsequent CEQA documents. These measures may include, but would not be limited to, relocation, HABS/HAER/HALS documentation, development and implementation of an interpretative and commemorative program, or development and implementation of a salvage plan. All evaluations and resulting technical reports shall be completed and approved by LWCA prior to LCWA's approval of project plans or publication of subsequent CEQA documents. The Qualified Architectural Historian shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its acceptance by LCWA

Mitigation Measure CUL-4: Archaeological Resources Assessment. For each near-term, mid-term, and long-term project that involves ground disturbance, LCWA shall retain an SOI-qualified archaeologist (Qualified Archaeologist) to conduct an archaeological resources assessment including: a records search at the South Central Coastal Information Center; a Sacred Lands File search at the Native American Heritage Commission; updated geoarchaeological review incorporating previously unavailable data (such as geotechnical studies); a pedestrian field survey; recordation of all identified archaeological resources on California Department of Parks and Recreation 523 forms; and preparation of a technical report. The technical report shall: document the methods and results of the study; provide an assessment of the project's potential to encounter subsurface archaeological resources and human remains based on a review of the project plans, depth of proposed ground disturbance, and available project-specific geotechnical reports; and provide recommendations as to whether additional studies are warranted (i.e., Extended Phase I presence/absence testing or resource boundary delineation, Phase II testing and evaluation). The report(s) shall be submitted to LCWA for review and approval prior to approval of project plans or publication of subsequent CEQA documents. The Qualified Archaeologist shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its completion. An Archaeological Resources Assessment shall not be required for any project site that has already undergone the same or similar assessment as part of the program as long as the assessment is deemed adequate by the Qualified Archaeologist for the purposes of the project currently under consideration.

Mitigation Measure CUL-5: Extended Phase I Archaeological Investigation. Prior to LCWA's approval of project plans or the publication of subsequent CEQA documents for any project with a high potential to encounter subsurface archaeological resources as determined by the project-specific archaeological resources assessment conducted under Mitigation Measure CUL-4: Archaeological Resources Assessment, a Qualified Archaeologist shall conduct an Extended Phase I investigation to identify the presence/absence of subsurface archaeological resources. Prior to the initiation of field work for any Extended Phase I investigation, the Qualified Archaeologist shall prepare a work plan outlining the investigation's objectives, goals, and methodology (e.g., field and lab procedures, collection protocols, curation and reporting requirements, Native American input/monitoring, schedule, security measures). For investigations related to Native American archaeological resources, monitoring shall be required in accordance with Mitigation Measures CUL-13: Native American Monitoring. All work plans shall outline the protocols and procedures to be followed in the event that human remains and associated funerary objects or grave goods (i.e., artifacts associated with human remains) are encountered in accordance with Mitigation Measure CUL-18: Human Remains Discoveries. Disposition of archaeological materials recovered during Extended Phase I investigations shall be in accordance with Mitigation Measure CUL-15: Curation and Disposition of Cultural Materials. Disposition of human remains and any associated funerary objects or grave goods shall be in accordance with Mitigation Measure CUL-18: Human Remains Discoveries. Projects occurring within the same timeframe may be covered by one overarching work plan. All investigations and resulting technical reports shall be completed and approved by LCWA prior to LCWA's approval of project plans or publication of subsequent CEQA documents. The Qualified Archaeologist shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its acceptance by LCWA. An Extended Phase I investigation shall not be required for any project site or resource that has already undergone the same or similar investigation as part of the program as long as the investigation is deemed adequate by the Qualified Archaeologist for the purposes of the project currently under consideration.

Mitigation Measure CUL-6: Phase II Archaeological Investigation. Prior to LCWA's approval of project plans or the publication of subsequent CEQA documents for any project site containing known unevaluated archaeological resources as identified by the project-specific archaeological resources assessment conducted under Mitigation Measure CUL-4: Archaeological Resources Assessment, a Qualified Archaeologist shall determine if the project has the potential to result in adverse impacts to identified archaeological resources (this may include initial Extended Phase I testing to identify the boundaries of resources, if necessary to properly assess potential impacts, following the procedures outlined under Mitigation Measure CUL-5: Extended Phase I Archaeological Investigation). For any archaeological resource that may be adversely impacted, the Qualified Archaeologist shall conduct Phase II testing and shall evaluate the resource for listing in the California Register under Criteria 1-4 in order to determine if the resource qualifies as a historical resource. LCWA shall consider the significance of the resource to Native American groups prior to requiring any Phase II subsurface testing. If the resource does not qualify as a historical resource, it shall then be considered for qualification as a unique archaeological resource. Native American or prehistoric archaeological resources shall also be considered as contributors to the tribal landscape to determine if they contribute to the significance of the landscape. Prior to the initiation of field work for any Phase II investigation, the Qualified Archaeologist shall prepare a work plan outlining the investigation's objectives, goals, and methodology (e.g., research design, field and lab procedures, collection protocols, data requirements/thresholds, evaluation criteria, curation and reporting requirements, Native American input/monitoring, schedule, security measures). The Qualified Archaeologist and LCWA shall coordinate with participating Native American Tribes during preparation of Phase II work plans related to Native American archaeological resources to ensure cultural values ascribed to the resources, beyond those that are scientifically important, are considered in the evaluation, including those related to the tribal cultural landscape. For investigations related to Native American archaeological resources, Native American Tribal coordination and monitoring shall be required in accordance with Mitigation Measures CUL-12: Native American Coordination and CUL-13: Native American Monitoring. All work plans shall outline the protocols and procedures to be followed in the event that human remains and associated funerary objects or grave goods (i.e., artifacts associated with human remains) are encountered in accordance with Mitigation Measure CUL-18: Human Remains Discoveries. Disposition of archaeological materials recovered during Extended Phase I or Phase II investigations shall be in accordance with Mitigation Measure CUL-15: Curation and Disposition of Cultural Materials. Disposition of human remains and any associated funerary objects or grave good shall be in accordance with Mitigation Measure CUL-18: Human Remains Discoveries. Projects occurring within the same timeframe may be covered by one overarching work plan. All investigations and resulting technical reports shall be completed and approved by LWCA prior to LCWA's approval of project plans or publication of subsequent CEQA documents. The Qualified Archaeologist shall file a copy of the final report(s) with the South Central Coastal Information Center within 30 days of its acceptance by LCWA.

Mitigation Measure CUL-7: Avoidance and Preservation in Place of Archaeological Resources. In the event historical resources or unique archaeological resources or resources that contribute to the significance of the tribal cultural landscape are identified, avoidance and preservation in place shall be the preferred manner of mitigating impacts to such resources. Preservation in place maintains the important relationship between artifacts and their archaeological context and also serves to avoid conflict with traditional and religious values of groups who may ascribe meaning to the resource. Preservation in place may be accomplished by, but is not limited to, avoidance, incorporating the resource into open space, capping, or deeding the site into a permanent conservation easement. If avoidance is determined by the LCWA to be infeasible in light of factors such as the nature of the find, proposed project design, costs, and other considerations, then that resource shall be subject to Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan**.** If avoidance and preservation in place of a resource is determined by LCWA to be feasible, then that resource shall be subject to Mitigation Measure CUL-9: Archaeological Resources Monitoring and Mitigation Plan

Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan. A Qualified Archaeologist shall prepare a Phase III Archaeological Resources Data Recovery and Treatment Plan for significant archaeological resources (i.e., resources that qualify as historical resources or unique archaeological resources or that contribute to the significance of the tribal cultural landscape) that will be adversely impacted by a project. Consistent with *CEQA Guidelines* Section 15126.4, data recovery shall not be required for a historical resource if LCWA determines that testing or studies already completed have adequately recovered the scientifically consequential information for resources eligible under California Register Criterion 4. The Qualified Archaeologist and LCWA shall consult with interested Native American Tribes for recovery/treatment of Native American archaeological resources during preparation of the plan(s) to ensure cultural values ascribed to the resources, beyond those that are scientifically important, are considered in assessing treatment, including those related to the tribal cultural landscape. Projects occurring within the same timeframe may be covered by one overarching plan. The plan(s) shall be submitted to LCWA for review and approval prior to the start of field work for data recovery efforts for resources that are eligible under California Register Criterion 4 (data potential). Data recovery field work shall be completed prior to the start of any project-related ground disturbance. Treatment for archaeological resources that are eligible under California Register Criterion 1 (events), Criterion 2 (persons), or Criterion 3 (design/workmanship) shall be completed within 3 years of completion of the project. Each plan shall include:

a. *Research Design.* The plan shall outline the applicable cultural context(s) for the region, identify research goals and questions that are applicable to each resource or class of resources, and list the data needs (types, quantities, quality) required to answer each research question. The research design shall address all four California Register Criteria (1–4) and identify the methods that will be required to inform treatment, such as subsurface investigation, documentary/archival research, and/or oral history, depending on the nature of the resource. The research design shall also include consideration of Native American or prehistoric archaeological resources as contributors to the tribal cultural landscape.

b. *Data Recovery for Resources Eligible under Criterion 4.* The plan shall outline the field and laboratory methods to be employed, and any specialized studies that will be conducted, as part of the data recovery effort for resources that are eligible under California Register Criterion 4 (data potential). If a resource is eligible under additional criteria, treatment beyond data recovery shall be implemented (see CUL-6c).

c. *Treatment for Resources Eligible under Criteria 1, 2, or 3.* In the event a resource is eligible under California Register Criterion 1 (events), Criterion 2 (persons), or Criterion 3 (design/workmanship), then resource-specific treatment shall be developed to mitigate project-related impacts to the degree feasible. This could include forms of documentation, interpretation, public outreach, ethnographic and language studies, publications, and educational programs, depending on the nature of the resource, and may require the retention of additional technical specialists. Treatment measures shall be generally outlined in the plan based on existing information on the resource. Once data recovery is completed and the results are available to better inform resource-specific treatment, the treatment measures shall be formalized and implemented. Treatment shall be developed by the Qualified Archaeologist in consultation with LCWA and Native American Tribal representatives for resources that are Native American in origin, including those related to the tribal cultural landscape.

d. *Security Measures.* The plan shall include recommended security measures to protect archaeological resources from vandalism, looting, and non-intentionally damaging activities during field work.

e. *Procedures for Discovery of Human Remains and Associated Funerary Objects or Grave Goods.* The plan shall outline the protocols and procedures to be followed in the event *that* human remains and associated funerary objects or grave goods are uncovered. Protocols and procedures shall be in accordance with Mitigation Measure CUL-18: Human Remains Discoveries.

f. *Reporting Requirements.* Upon completion of data recovery for resources eligible under Criterion 4, the Qualified Archaeologist shall document the findings in an Archaeological Data Recovery Report. The draft Archaeological Data Recovery Report shall be submitted to the LCWA within 360 days after completion of data recovery, and the final Archaeological Data Recovery Report shall be submitted to LCWA within 60 days after the receipt of LCWA comments. The Qualified Archaeologist shall submit the final Archaeological Data Recovery Report to the South Central Coastal Information Center within 30 days of its acceptance by LCWA. Upon completion of all other treatment for resources eligible under Criteria 1, 2, or 3, the Qualified Archaeologist shall document the resource-specific treatment that was implemented for each resource and verification that treatment has been completed in a technical document (report or memorandum). The document shall be provided to LCWA within 30 days after completion of treatment.

g. *Curation or Disposition of Cultural Materials.* The plan shall outline the requirements for final *disposition* of all cultural materials collected during data recovery. Disposition of all archaeological materials shall be in accordance with Mitigation Measure CUL-15: Curation and Disposition of Cultural Materials**.** Disposition of human remains and any associated funerary objects or grave goods shall be in accordance with Mitigation Measure CUL-18: Human Remains Discoveries**.**

h. *Protocols for Native American Coordination and Monitoring.* The plan shall outline the role and responsibilities of Native American Tribal representatives in *accordance* with Mitigation Measure CUL-12: Native American Coordination**.** It shall outline communication protocols, timelines for review of archaeological resources documents, and provisions for Native American monitoring. The plan shall include provisions for full-time Native American monitoring of all data recovery field work for resources that are Native American in origin, including those related to the tribal cultural landscape, in accordance with Mitigation Measure CUL-13: Native American Monitoring**.**

Mitigation Measure CUL-9: Archaeological Resources Monitoring and Mitigation Plan. For each near-term, mid-term, and long-term project that involves ground disturbance, a Qualified Archaeologist shall prepare an Archaeological Resources Mitigation and Monitoring Plan taking into account the final LCWA-approved project design plans, depths/locations of ground disturbance, proximity to known archaeological resources, and potential to encounter subsurface archaeological resources. Projects occurring within the same timeframe may be covered by one overarching plan. The Qualified Archaeologist and LCWA shall coordinate with participating Native American Tribes during preparation of the plan(s). Each plan shall include:

a. *Establishment of Environmentally Sensitive Areas.* The plan shall outline areas that will be designated Environmentally Sensitive Areas (including maps), if needed. Significant or unevaluated *archaeological* resources that are being avoided and are within 50 feet of the construction zone shall be designated as Environmentally Sensitive Areas. The resources shall be *delineated* with exclusion markers to ensure avoidance. These areas shall not be marked as archaeological resources, but shall be designated as "exclusion zones" on project plans and protective fencing in order to discourage unauthorized disturbance or collection of artifacts that are scientifically important, are considered, including those related to the tribal cultural landscape.

b. *Provisions for Archaeological Monitoring.* The plan shall outline requirements for archaeological monitoring and the archaeological monitor(s) role and responsibilities in accordance with Mitigation Measure CUL-11: Archaeological Resources Monitoring. Ground disturbance in locations/depths that have been previously monitored as part of the program shall not be subject to additional monitoring.

c. *Procedures for Discovery of Archaeological Resources.* Procedures to be implemented in the event of an archaeological discovery shall be fully defined in the plan and shall be in accordance with Mitigation Measure CUL- 14: Archaeological Resources Discoveries. Procedures outlined shall include stop-work and protective measures, notification protocols, procedures for significance assessments, and appropriate treatment measures. The plan shall state avoidance or preservation in place is the preferred manner of mitigating impacts to historical resources, unique archaeological resources, and contributors to the significance of the tribal cultural landscape, but shall provide procedures to follow should avoidance be infeasible in light of factors such as the nature of the find, project design, costs, and other considerations. If, based on the recommendation of a Qualified Archaeologist, it is determined that a discovered archaeological resource constitutes a historical resource or unique archaeological resource or is a contributor to the significance of the tribal cultural *landscape*, then *avoidance* and preservation in place shall be the preferred manner of mitigating impacts to such a resource in accordance with Mitigation Measure CUL-7: Avoidance and Preservation in Place of Archaeological Resources. In the event that preservation in place is determined to be infeasible and data recovery through excavation is the only feasible mitigation available, an Archaeological Resources Data Recovery and Treatment Plan shall be prepared and implemented following the procedures outlined in Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan. LCWA shall consult with appropriate Native American representatives in determining treatment of resources that are Native American in origin to ensure cultural values ascribed to the resources, beyond those that are scientifically important, are considered, including those related to the tribal cultural landscape

d. *Procedures for Discovery of Human Remains and Associated Funerary Objects or Grave Goods.* The plan shall outline the protocols *and* procedures to be followed in the event that *human* remains and associated funerary objects or grave goods are uncovered. Protocols and procedures shall be in accordance with Mitigation Measure CUL-18: Human Remains Discoveries.

e. *Reporting Requirements.* The plan shall outline provisions for weekly and final reporting. The Qualified Archaeologist shall prepare weekly status reports detailing activities and locations observed (including maps) and summarizing any discoveries for the duration of monitoring to be submitted to LCWA via email for each week in which monitoring activities occur. The Qualified Archaeologist shall prepare a draft Archaeological Resources Monitoring Report and submit it to LCWA within 180 days after completion of the monitoring program or treatment for significant discoveries should treatment extend *beyond* the cessation of monitoring. The final Archaeological Resources Monitoring Report shall be submitted to LCWA within 60 days after receipt of LCWA comments. The Qualified Archaeologist shall also submit the final Archaeological Resources Monitoring Report to the South Central Coastal Information Center.

f. *Curation or Disposition of Cultural Materials.* The plan shall outline the requirements for final disposition of all cultural materials collected during data recovery. Disposition of all archaeological materials shall be in accordance with Mitigation Measure CUL-15: Curation and Disposition of Cultural Materials. Disposition of human remains and any associated funerary objects or grave goods shall be in accordance with Mitigation Measure CUL-18: Human Remains Discoveries.

g. *Protocols for Native American Coordination and Monitoring.* The plan shall outline requirements for Native American coordination and monitoring, and the Native American monitor(s) role and responsibilities in accordance with Mitigation Measures CUL-12: Native American Coordination and CUL-13: Native American Monitoring**.**

Mitigation Measure CUL-10: Construction Worker Cultural Resources Sensitivity Training. For each near term, mid-term, and long-term project that involves ground disturbance, LCWA shall retain a Qualified Archaeologist to implement a cultural resources sensitivity training program. The Qualified Archaeologist, or their designee, and a Native American representative shall instruct all construction personnel of the importance and significance of the area as a tribal cultural landscape, the types of archaeological resources that may be encountered, the proper procedures to be enacted in the event of an inadvertent discovery of archaeological resources or human remains, confidentiality of discoveries, and safety precautions to be taken when working with cultural resources monitors. In the event that construction crews are phased, additional trainings shall be conducted for new construction personnel. LCWA or their contractors shall ensure construction personnel are made available for and attend the training. LCWA shall retain documentation demonstrating attendance

Mitigation Measure CUL-11: Archaeological Resources Monitoring. For each near-term, mid-term, and long-term project, full-time archaeological monitoring of ground disturbance (i.e., demolition, pavement removal, pot-holing or auguring, boring, drilling, grubbing, vegetation removal, brush clearance, weed abatement, grading, excavation, trenching, or any other activity that has potential to disturb soil) shall be conducted in areas and at depths where there is a potential to encounter archaeological materials or human remains, including excavations into existing artificial fill and native soils, based on the project-specific archaeological resources assessment prepared under Mitigation Measure CUL-4: Archaeological Resources Assessment. Ground disturbance in locations/depths that have been previously monitored as part of the program shall not be subject to additional monitoring. The archaeological monitor(s) shall be familiar with the types of resources that could be encountered and shall work under the direct supervision of a Qualified Archaeologist. The number of archaeological monitors required to be on site during ground-disturbing activities is dependent on the construction scenario, specifically the number of pieces of equipment operating at the same time, the distance between these pieces of equipment, and the pace at which equipment is working, with the goal of monitors being able to effectively observe soils as they are exposed. Generally, work areas more than 500 feet from one another will require additional monitors. The archaeological monitor(s) shall keep daily logs detailing the types of activities and soils observed, and any discoveries. Archaeological monitor(s) shall have the authority to halt and re-direct ground disturbing activities in the event of a discovery until it has been assessed for significance and treatment implemented, if necessary, based on the recommendations of the Qualified Archaeologist in coordination with LCWA, and the Native American representatives in the event the resource is Native American in origin, and in accordance with the protocols and procedures outlined in Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan**.** Reporting of archaeological monitoring shall be conducted in accordance with the provisions outlined in Mitigation Measure CUL-9: Archaeological Resources Monitoring and Mitigation Plan

Mitigation Measure CUL-12: Native American Coordination. LCWA shall seek input from participating Native American Tribes during the preparation of documents required under Mitigation Measures CUL-5: Extended Phase I Archaeological Investigation**,** CUL-6: Phase II Archaeological Investigation**,** CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan**,** Mitigation Measure CUL 9: Archaeological Resources Monitoring and Mitigation Plan, and CUL-14: Archaeological Resources Discoveries**,** including but not limited to work plans, research designs, treatment plans, and associated technical reports. LCWA shall provide participating Native American Tribes with electronic copies of draft documents and afford them 30 days from receipt of a document to review and comment on the document. Native American comments will be provided in writing for consideration by LCWA. LCWA shall document comments and how the comments were/were not addressed in a tracking log

Mitigation Measure CUL-13: Native American Monitoring. For each near-term, mid-term, and long-term project, full-time Native American monitoring of ground disturbance (i.e., demolition, pavement removal, pot-holing or auguring, boring, drilling, grubbing, vegetation removal, brush clearance, weed abatement, grading, excavation, trenching, or any other activity that has potential to disturb soil) shall be conducted in areas and at depths where there is a potential to encounter archaeological materials or human remains, including excavations into existing artificial fill and native soils, based on the project-specific study prepared under Mitigation Measure CUL-4: Archaeological Resources Assessment. LCWA shall retain a Native American monitor(s) from a California Native American Tribe that is culturally and geographically affiliated with the program area (according to the California Native American Heritage Commission) to conduct the monitoring. If more than one Tribe is interested in monitoring, LCWA shall contract with each Tribe that expresses interest and prepare a monitoring rotation schedule. LCWA shall rotate monitors on an equal and regular basis to ensure that each Tribal group has the same opportunity to participate in the monitoring program. If a Tribe cannot participate when their rotation comes up, they shall forfeit that rotation unless LCWA can make other arrangements to accommodate their schedule. The number of Native American monitors required to be on site during ground disturbing activities is dependent on the construction scenario, specifically the number of pieces of equipment operating at the same time, the distance between these pieces of equipment, and the pace at which equipment is working, with the goal of monitors being able to effectively observe soils as they are exposed. Generally, work areas more than 500 feet from one another require additional monitors. Native American monitors shall have the authority to halt and re-direct ground disturbing activities in the event of a discovery until it has been assessed for significance. The Native American monitor(s) shall also monitor all ground disturbance related to subsurface investigations and data recovery efforts conducted under Mitigation Measures CUL-5: Extended Phase I Archaeological Investigation**,** CUL-6: Phase II Archaeological Investigation**,** and CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan for any resources that are Native American in origin, according to the rotation schedule, including those related to the tribal cultural landscape.

Mitigation Measure CUL-14: Archaeological Resources Discoveries. In the event archaeological resources are encountered during construction of the proposed program, all activity in the vicinity of the find shall cease (within 100 feet), and the protocols and procedures for discoveries outlined in Mitigation Measure CUL-9: Archaeological Resources Monitoring and Mitigation Plan shall be implemented. The discovery shall be evaluated for potential significance by the Qualified Archaeologist. If the Qualified Archaeologist determines that the resource may be significant (i.e., meets the definition for historical resource in *CEQA Guidelines* subdivision 15064.5(a) or for unique archaeological resource in PRC subdivision 21083.2(g) or is a contributor to the tribal cultural landscape), the Qualified Archaeologist shall develop an Archaeological Resources Data Recovery and Treatment Plan for the resource following the procedures outlined in Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan**.** When assessing significance and developing treatment for resources that are Native American in origin, including those related to the tribal cultural landscape, the Qualified Archaeologist and LCWA shall consult with the appropriate Native American representatives. The Qualified Archaeologist shall also determine if work may proceed in other parts of the project site while data recovery and treatment is being carried out. LCWA shall consult with the State Lands Commission Staff Attorney regarding any cultural resources discoveries on state lands.

Mitigation Measure CUL 15: Curation and Disposition of Cultural Materials. LCWA shall curate all Native American archaeological materials, with the exception of funerary objects or grave goods (i.e., artifacts associated with Native American human remains). LCWA shall consult with Native American representatives regarding the final disposition of Native American archaeological materials and on the selection of the curation facility, with preference given to tribal museums. LCWA shall first consider repositories that are accredited by the American Association of Museums and that meet the standards outlined in 36 CFR 79.9. If a suitable accredited repository is not identified, then LCWA shall consider non-accredited repositories as long as they meet the minimum standards set forth by 36 CFR 79.9. If a suitable non-accredited repository is not identified, then LCWA shall donate the collection to a local California Native American Tribe(s) (Gabrielino or Juañeno) for educational purposes. Disposition of Native American human remains and associated funerary objects or grave goods shall be determined by the landowner in consultation with LCWA and the Most Likely Descendant in accordance with Mitigation Measure CUL 18: Human Remains Discoveries. LCWA shall curate all historic-period archaeological materials that are not Native American in origin at a repository accredited by the American Association of Museums that meets the standards outlined in 36 CFR 79.9. If no accredited repository accepts the collection, then LCWA may curate it at a non-accredited repository as long as it meets the minimum standards set forth by 36 CFR 79.9. If neither an accredited nor a non-accredited repository accepts the collection, then LCWA shall offer the collection to a public, non-profit institution with a research interest in the materials, or to a local school or historical society in the area for educational purposes. If no institution, school, or historical society accepts the collection, LCWA may retain it for on-site display as part of its interpretation and educational elements. The final disposition of cultural resources recovered on state lands under the jurisdiction of the California State Lands Commission must be approved by the Commission. Prior to start of each project, LCWA shall obtain a curation agreement and shall be responsible for payment of fees associated with curation for the duration of the program.

Mitigation Measure CUL16: Future Native American Input. LCWA shall consult with participating California Native American Tribes, to the extent that they wish to participate, during future design of project-level components, plant and native plant selections or palettes, and development of content for educational and interpretative elements, such as signage and Visitors Center displays.

Mitigation Measure CUL17: Tribal Access Plan. Prior to the start of construction, LCWA shall develop a written access plan to preserve and enhance tribal members' access to, and use of, the restoration Project area for religious, spiritual, or other cultural purposes. This plan will allow access to the extent LCWA has the authority to facilitate such access, and be consistent with existing laws, regulations, and agreements governing property within the program area. The access plan may place restrictions on access into certain areas, such as oil operations and other exclusive easements the LCWA does not have access rights to. This access plan shall be developed in coordination with participating California Native American Tribes, to the extent that they wish to participate.

Mitigation Measure CUL-18: Human Remains Discoveries: If human remains are encountered, then LCWA or its contractor shall halt work in the vicinity (within 100 feet) of the discovery and contact the appropriate County Coroner in accordance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5, which requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. If the County Coroner determines the remains are Native American, then the Coroner will notify the California Native American Heritage Commission (NAHC) within 24 hours in accordance with Health and Safety Code subdivision 7050.5(c), and Public Resources Code Section 5097.98. The California Native American Heritage Commission shall then identify the person(s) thought to be the Most Likely Descendant (MLD). The MLD may, with the permission of the land owner, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The MLD shall complete their inspection and make their recommendation within 48 hours of being granted access by the landowner to inspect the discovery. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials. LCWA and the landowner shall discuss and confer with the MLD on all reasonable options regarding the MLD's preferences for treatment. Until LCWA and the landowner have conferred with the MLD, the contractor shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity and is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities take into account the possibility of multiple burials. If the NAHC is unable to identify an MLD, or the MLD identified fails to make a recommendation, or the landowner rejects the recommendation of the MLD and the mediation provided for in Subdivision (k) of Section 5097.94, if invoked, fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall inter the human remains and items associated with Native American human remains with appropriate dignity on the facility property in a location not subject to further and future subsurface disturbance.

APPENDIX C. MAPS AND FIGURES

Figure C - 1. Topographic provinces (after Lightfoot and Parrish 2009)

Figure C - 2. Geomorphic provinces (after Lightfoot and Parrish 2009)

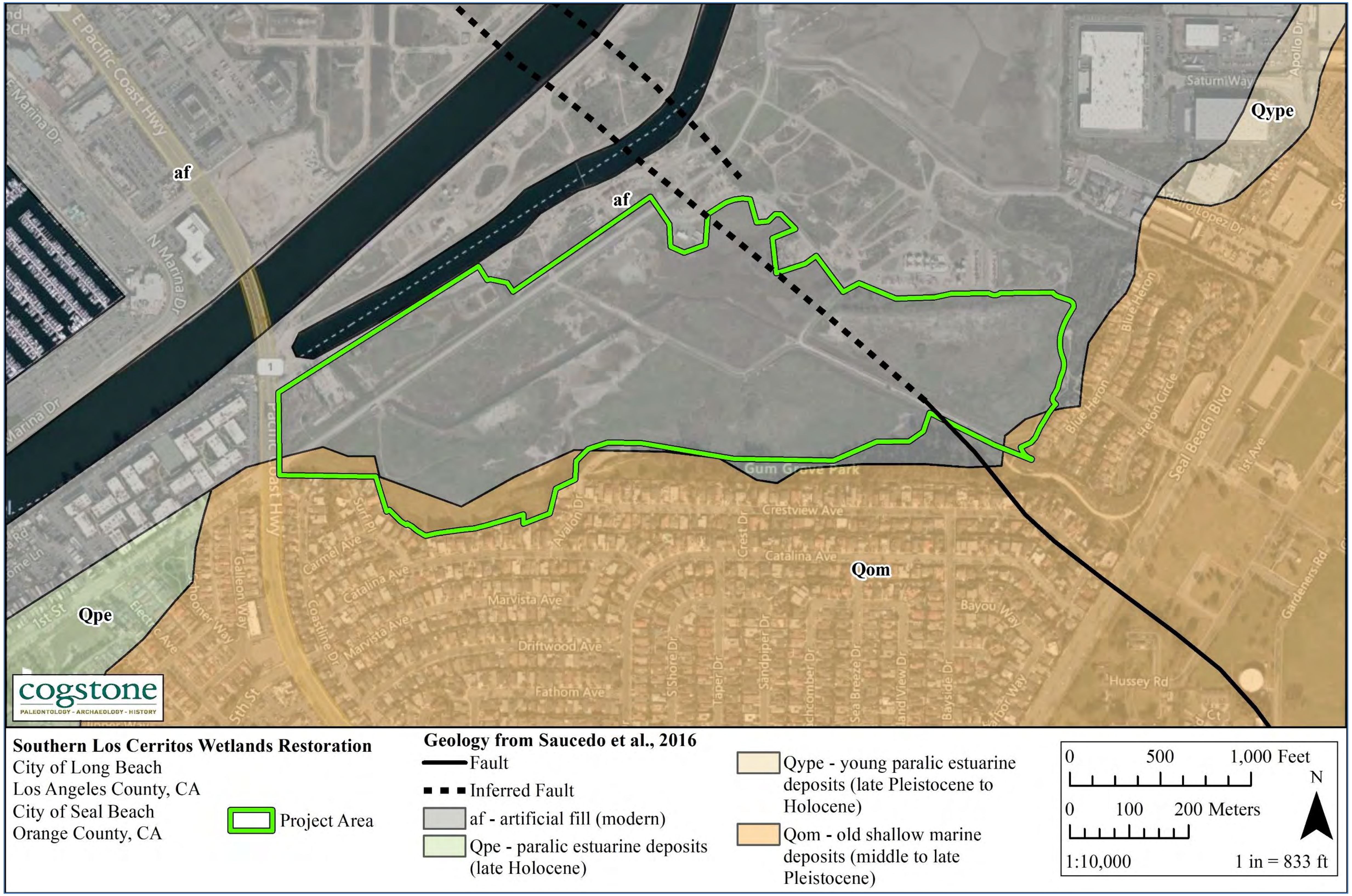
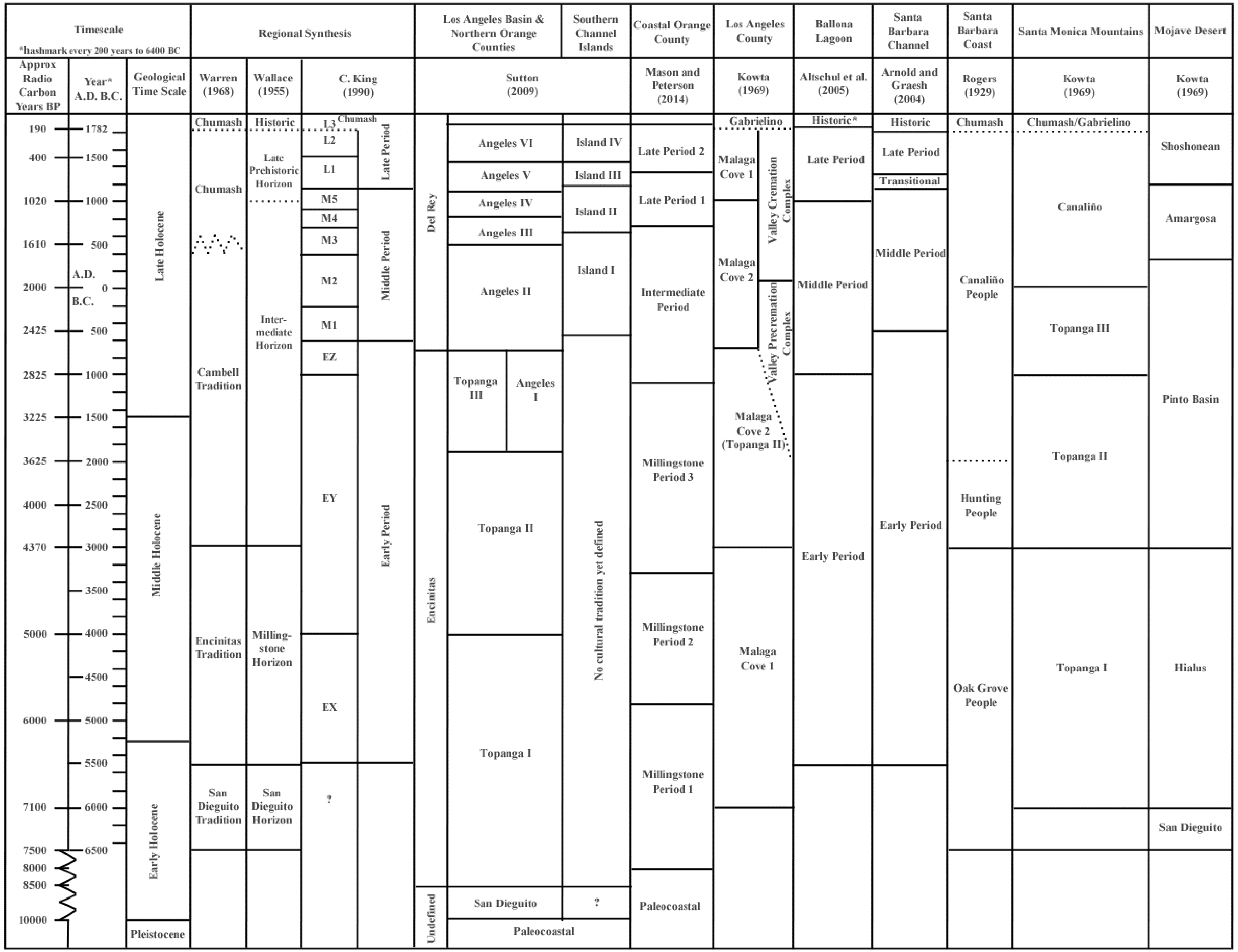


Figure C - 3. Geology of the Southern LCW Project area



*Historical Period:
AD 1800-1850 &
Protohistoric Period:
AD1769-1800

Figure C - 4. Southern California Timeline

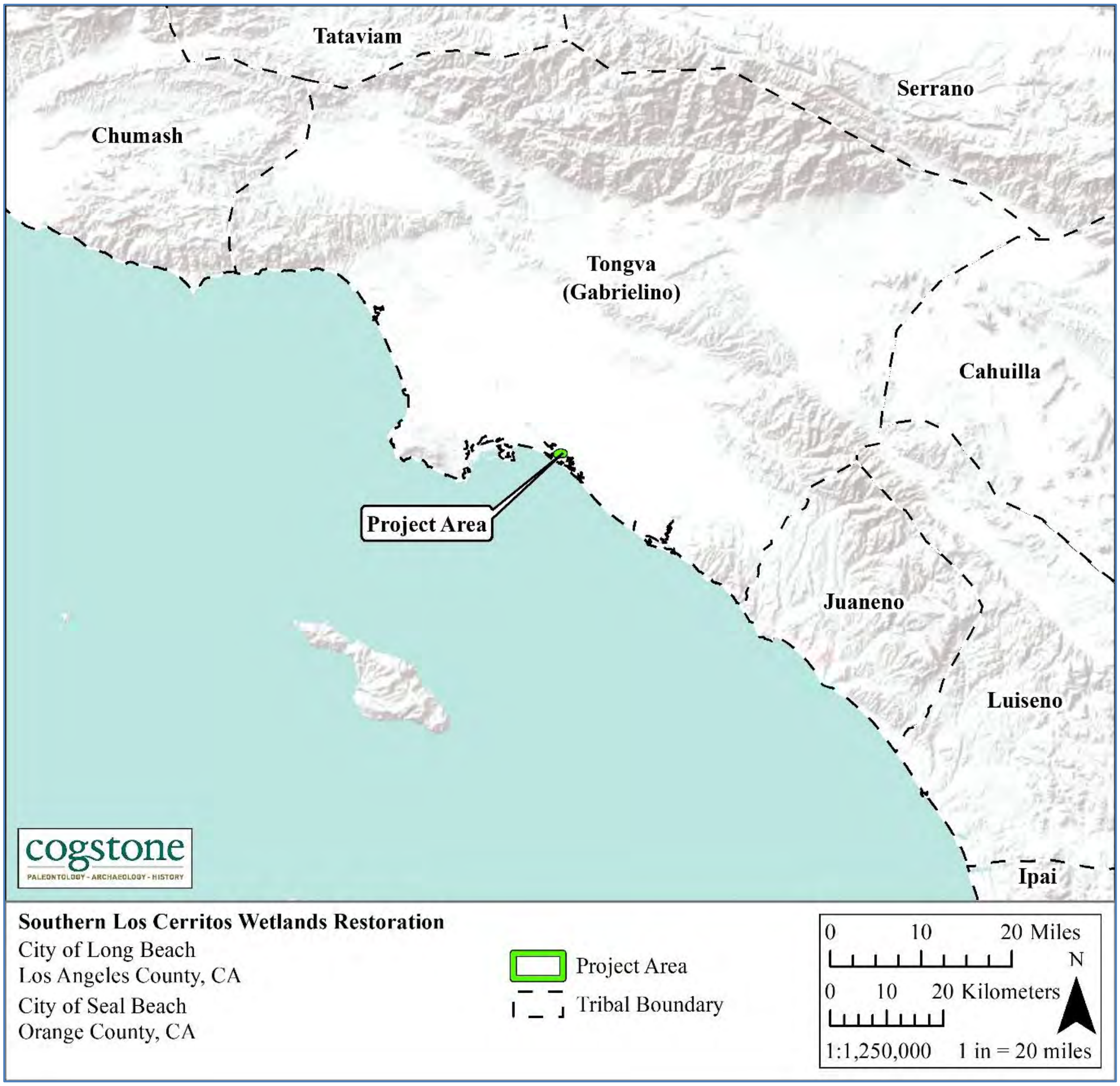


Figure C - 5. Gabrielino (Tongva) Territory (after McCawley 1996)

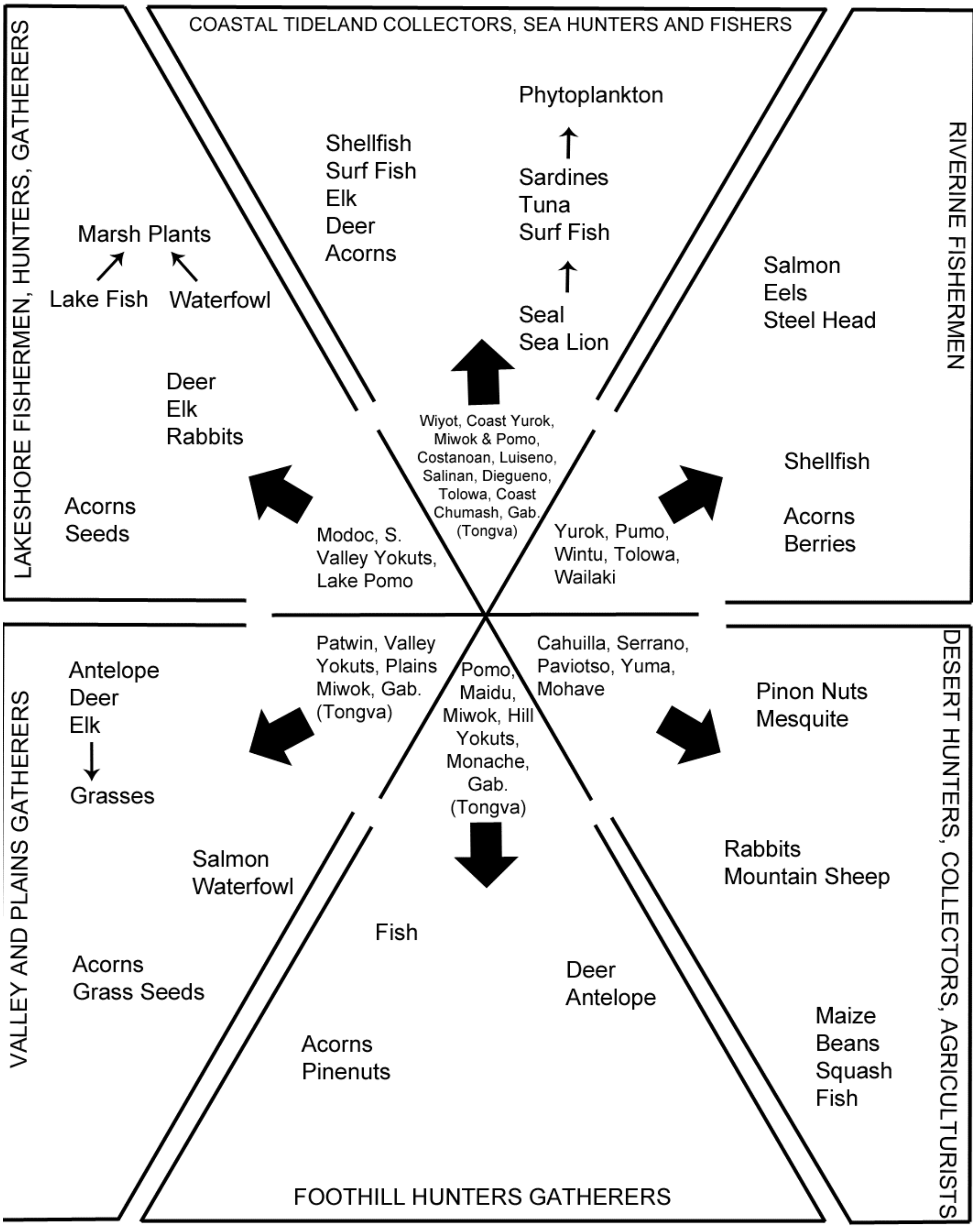


Figure C - 6. Resources used by Native American tribes by ecological zones (based on Heizer and Elsasser 1980: Figure 32)

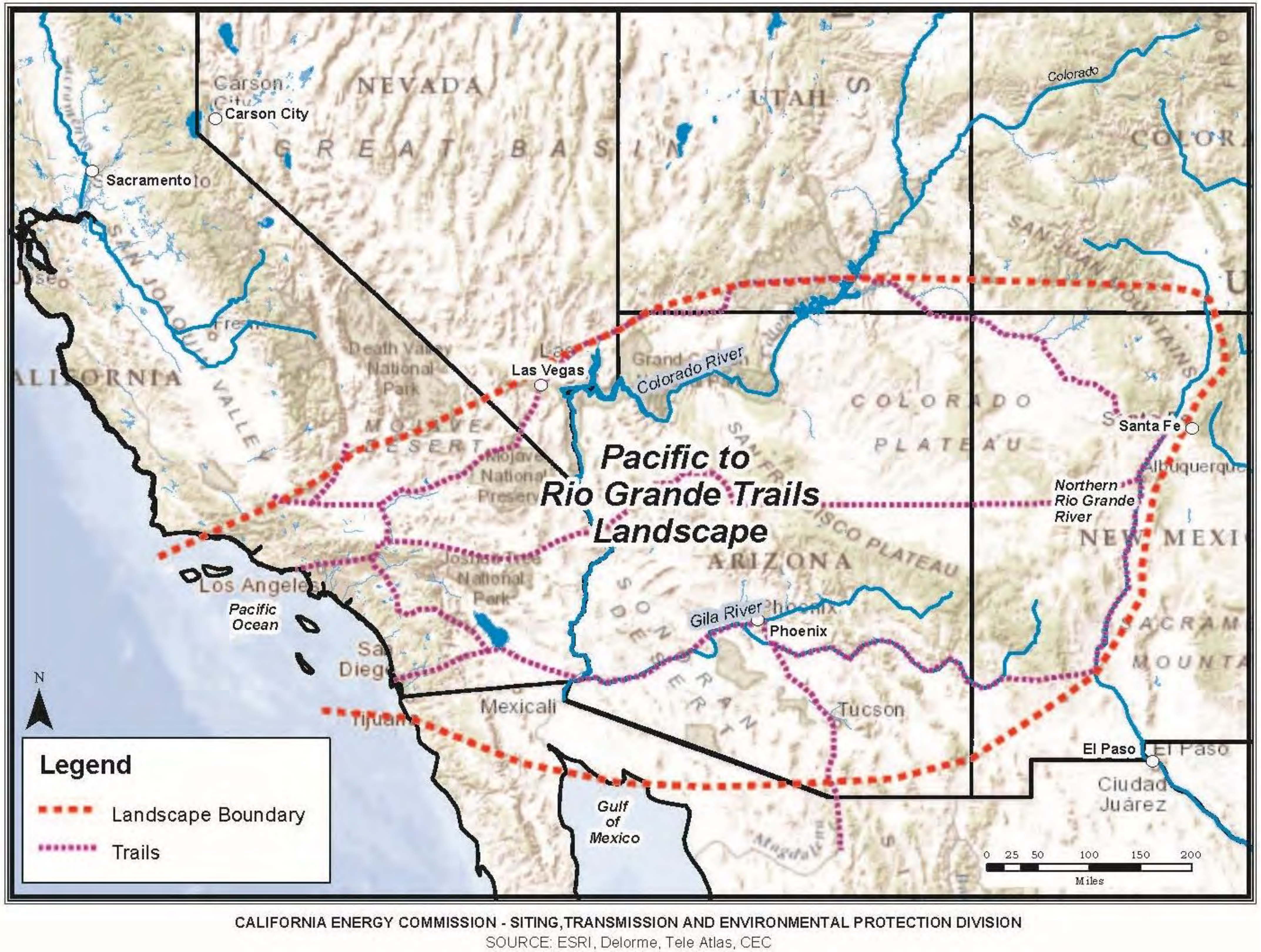


Figure C - 7. Pacific Rio Grande Trails Landscape (Gates et al. 2013: Figure 4)

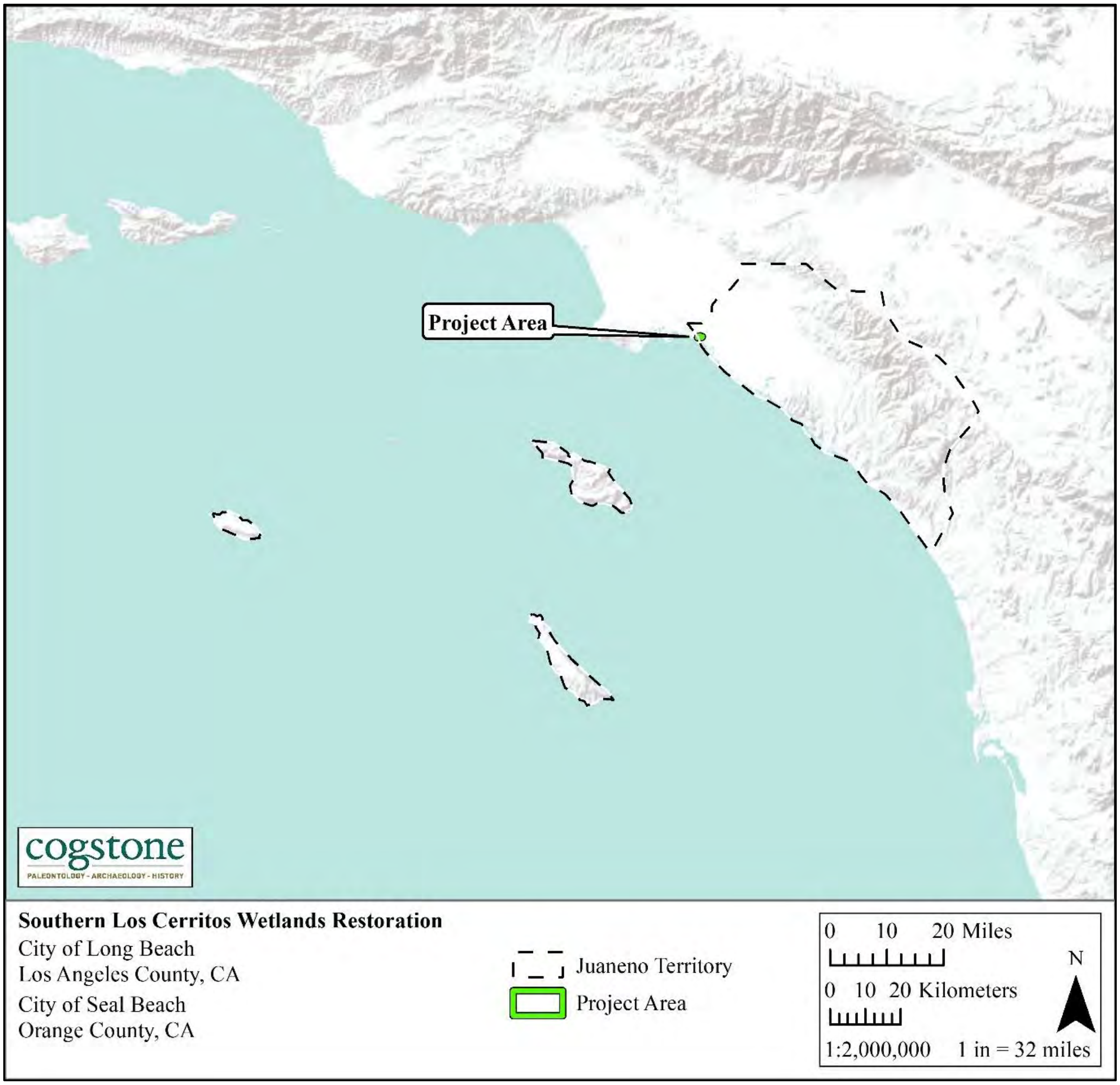


Figure C - 8. Juaneño territory map (data courtesy of Juaneño Band of Mission Indians, Acjachemen Nation)

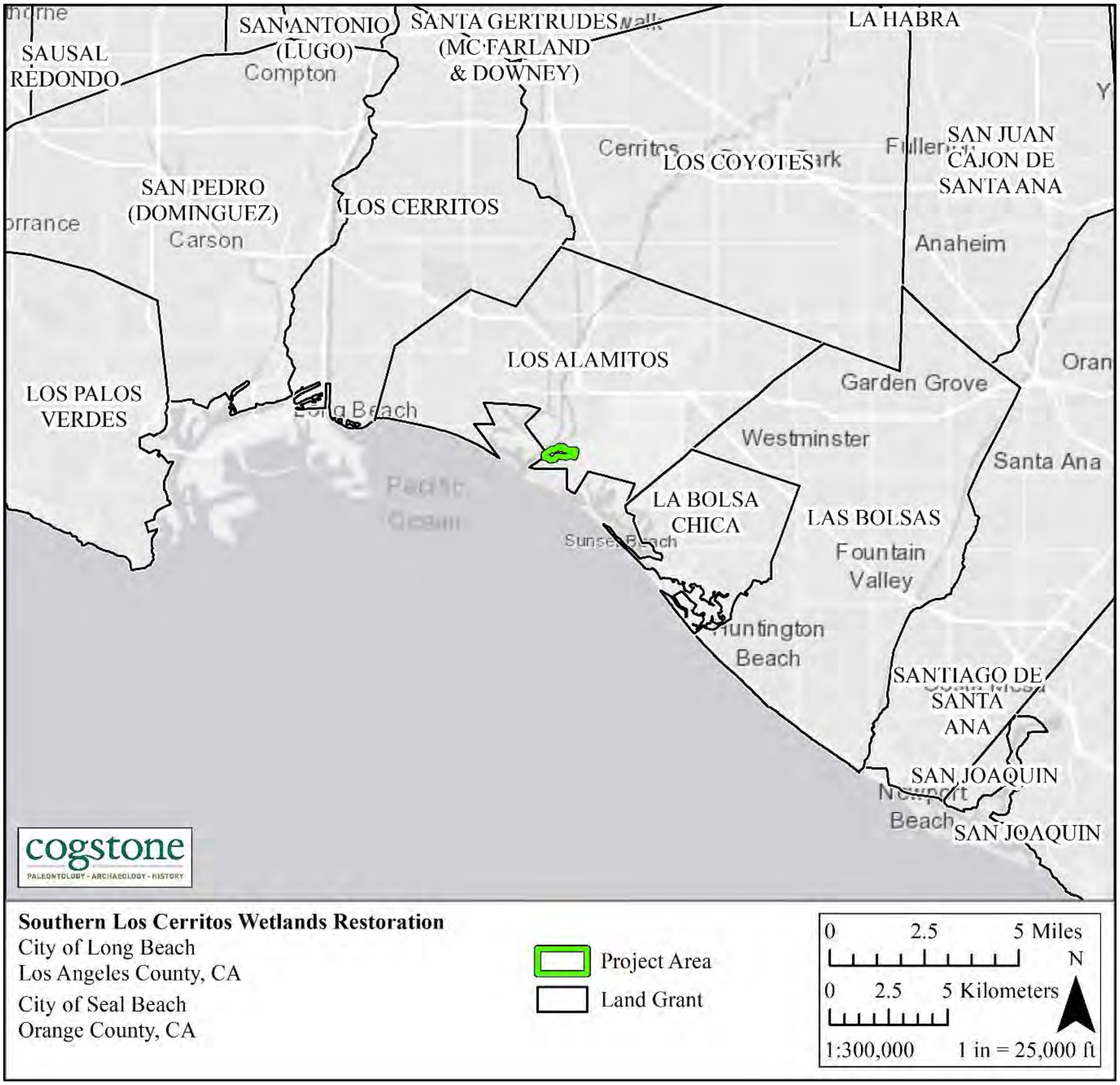


Figure C - 9. Land grant map

Figure C - 10. Location of villages within the *Puvungna* Traditional Cultural Landscape

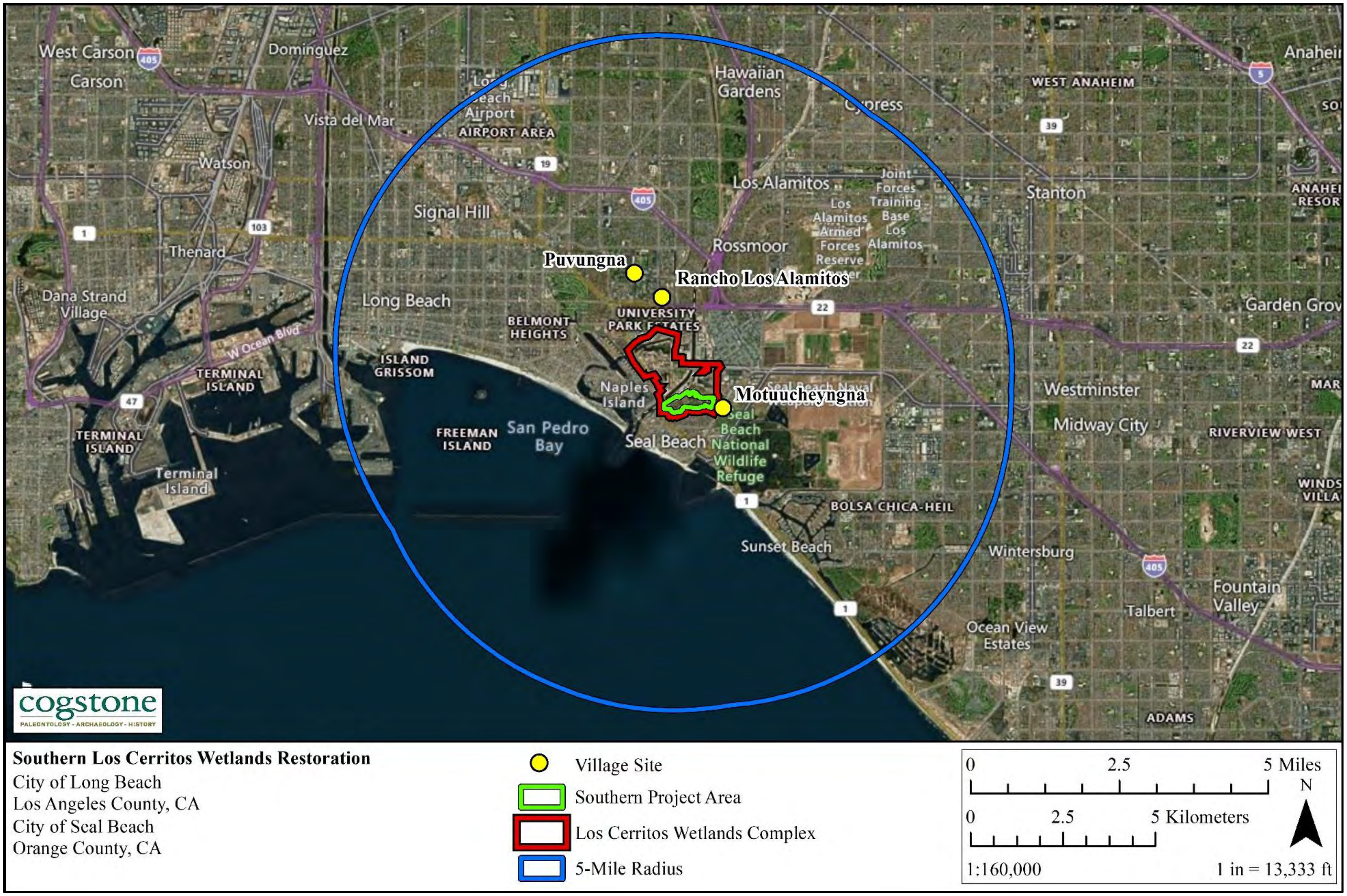


Figure C - 11. Extent of *Puvungna* Traditional Cultural Landscape

APPENDIX D. USDA HISTORIC AERIAL PHOTOGRAPHS

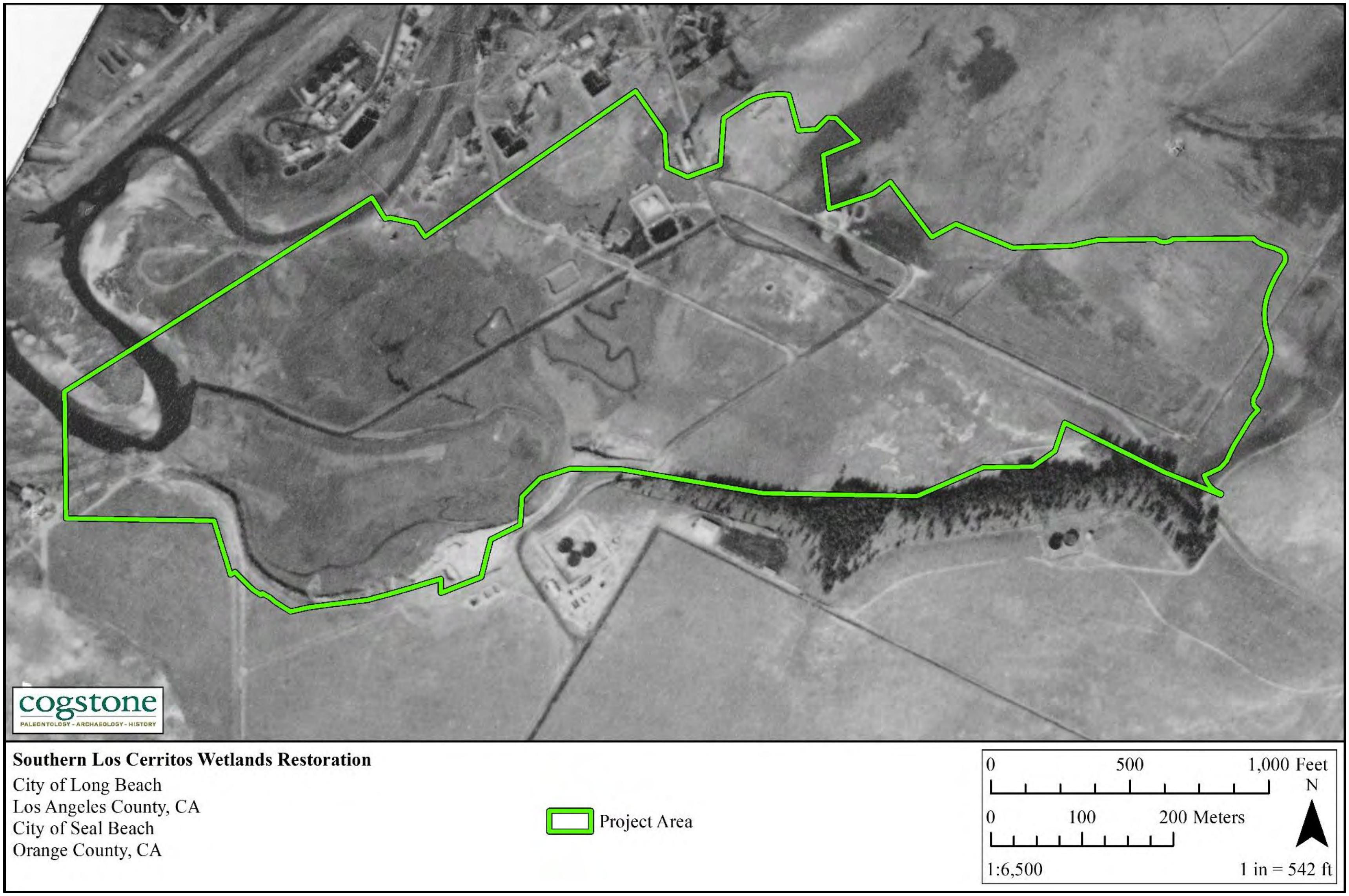


Figure D - 1. 1927 USDA Historic Aerial Photograph (Courtesy of UCSB: FrameFinder)

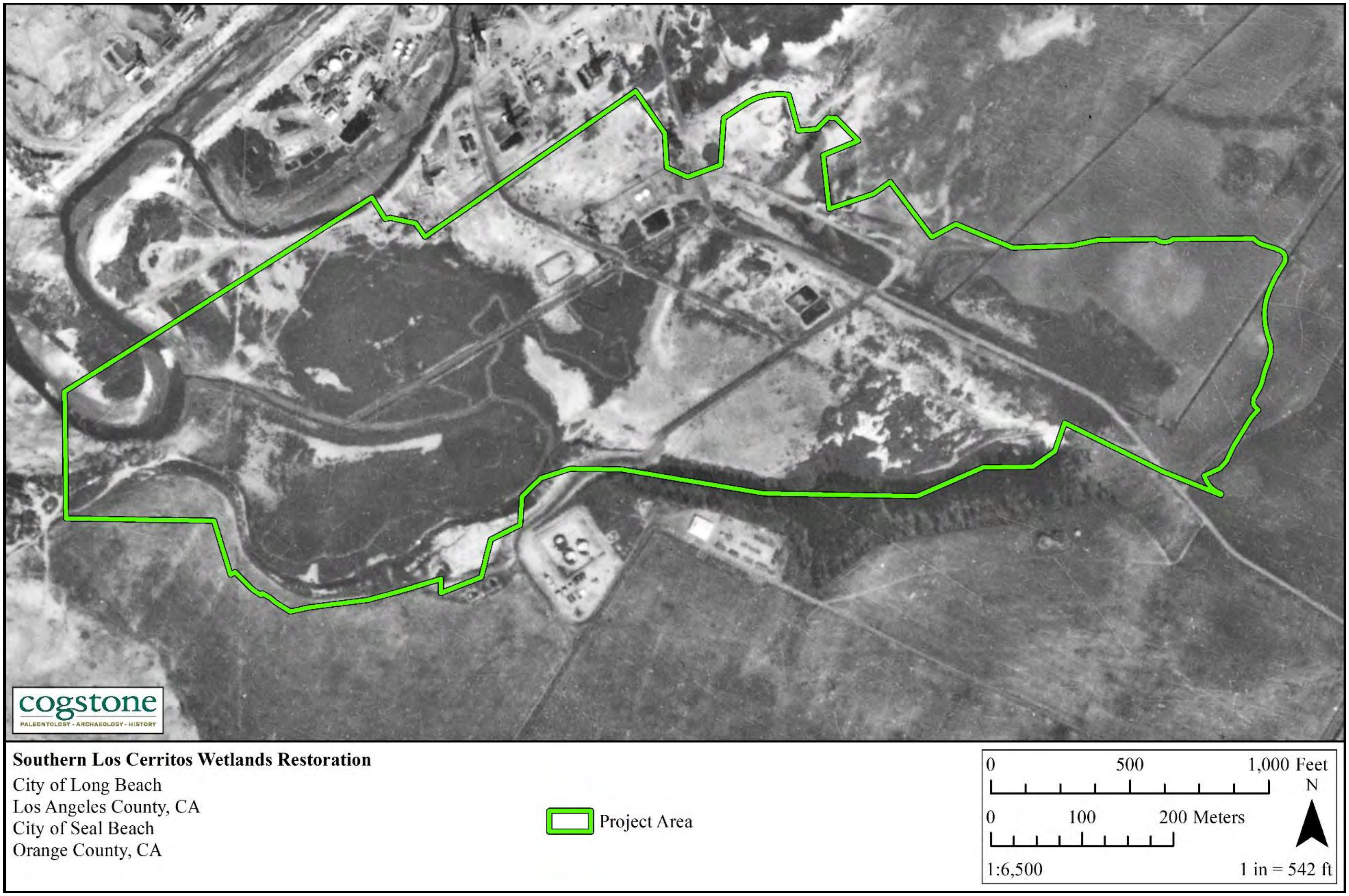


Figure D - 2. 1928 USDA Historic Aerial Photograph (Courtesy of UCSB: FrameFinder)

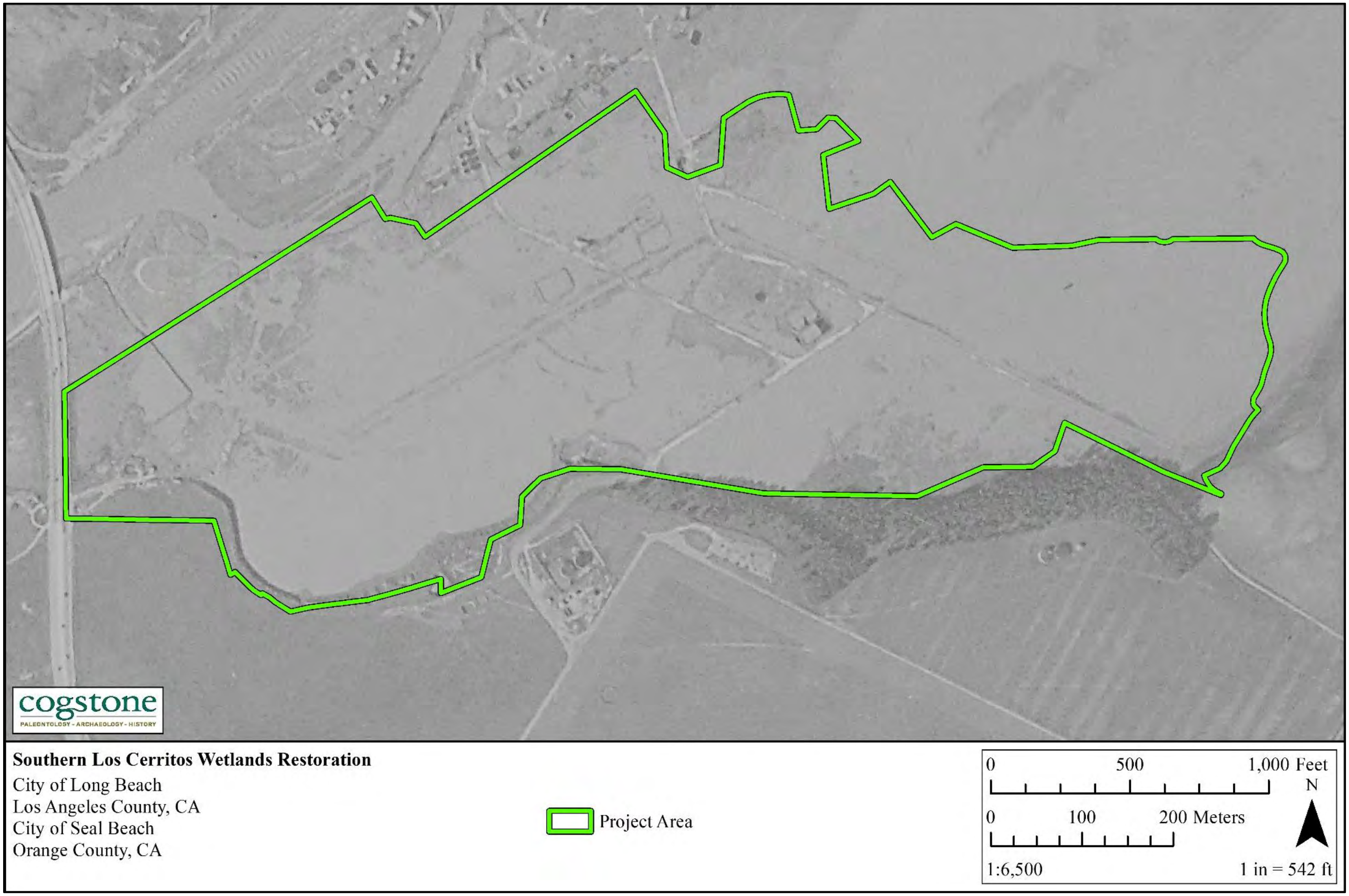


Figure D - 3. 1938 USDA Historic Aerial Photograph (Courtesy of UCSB: FrameFinder)

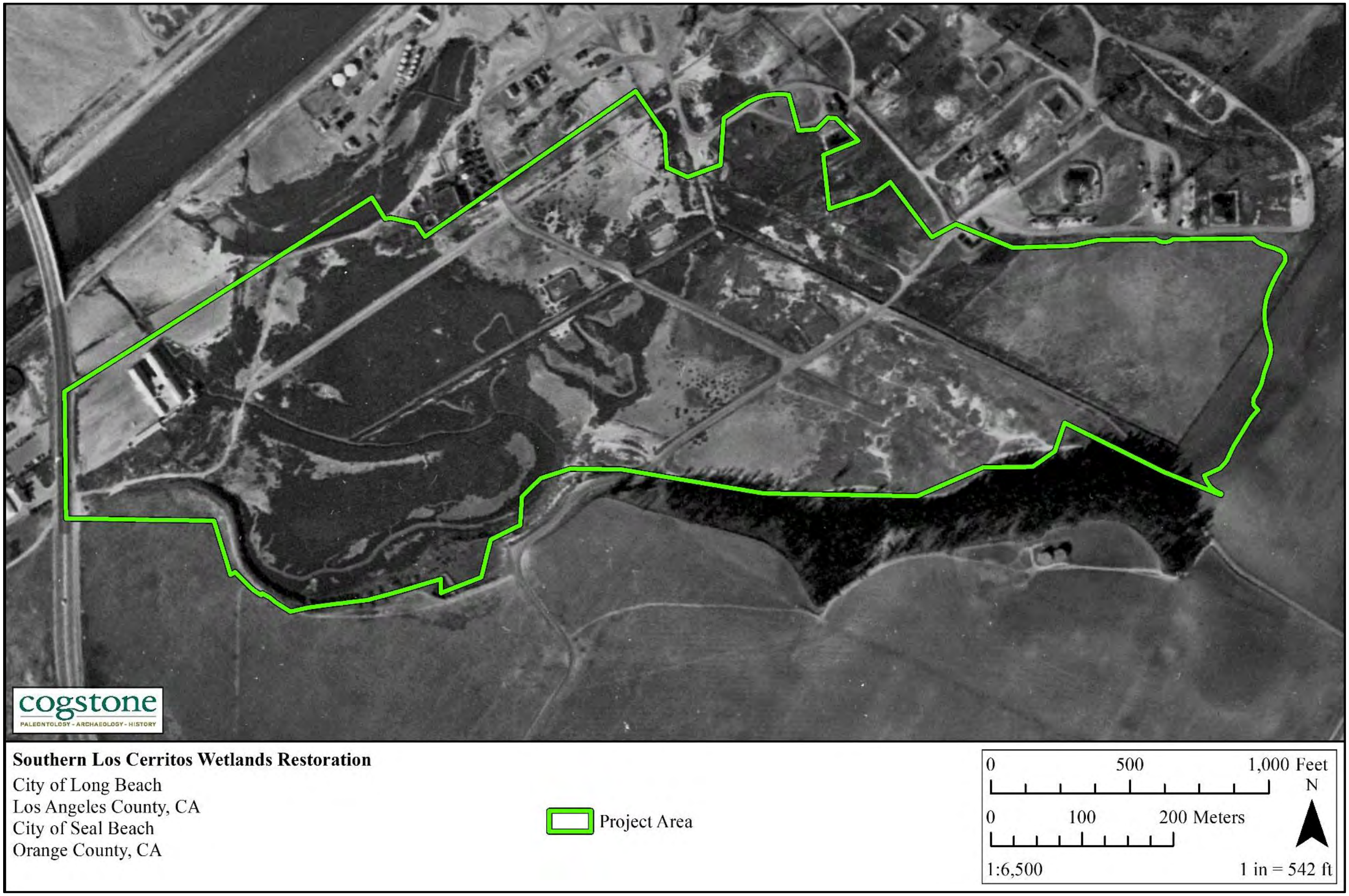


Figure D - 4. 1952 USDA Historic Aerial Photograph (Courtesy of UCSB: FrameFinder)

Figure D - 5. 1962 USDA Historic Aerial Photograph (Courtesy of UCSB: FrameFinder)

Figure D - 6. 1965 USDA Historic Aerial Photograph (Courtesy of UCSB: FrameFinder)

Figure D - 7. 1974 USDA Historic Aerial Photograph (Courtesy of UCSB: FrameFinder)

Figure D - 8. 1994 USDA Historic Aerial Photograph (Courtesy of UCSB: FrameFinder)

Figure D - 9. 2001 USDA Historic Aerial Photograph (Courtesy of UCSB: FrameFinder)

APPENDIX E. PREVIOUS CULTURAL RESOURCE STUDIES

Table E – 1. Previous Studies within a One-mile radius of the Los Cerritos Wetlands Complex

Report Number	Author(s)	Title	Year	Distance from the Southern LCW Project area
LA-00012	Crabtree, Robert H.	Environmental Data Base for The [sic] in the City of Long Beach, California	1973	0 - 1 Mile
LA-00057	Leonard, Nelson N. III	A Reconnaissance and Evaluation of the Archaeological Resources of the Veterans Administration Hospital Long Beach, California	1974	0 - 1 Mile
LA-00491	Dixon, Keith A.	Inventory of Archaeological Resources, CSULB Campus	1977	0 - 1 Mile
LA-00503	Dixon, Keith A.	Archaeological Resources and Policy Recommendations of Long Beach	1974	0 - 1 Mile
LA-00522	Cooley, Theodore G.	Test Level Investigations Conducted on Sites CA-LAN-274 and 275.	1979	0 - 1 Mile
LA-00939	Allen, Lawrence P.	The Sims Pond Site, CA-LAN-702, Alamitos Bay, Los Angeles County, California	1980	0 - 1 Mile
LA-01488	Mason, Roger D. and Wayne H. Bonner	Archaeological and Paleontological Report on the Channel Point Property	1985	0 - 1 Mile
LA-02114	McKenna, Jeanette A.	Archaeological Investigations of the Proposed California Shores Property, Long Beach, California	1990	Within Project area
LA-02399	Winman, Lois J. and E. Gary Stickel	Los Angeles-Long Beach Harbor Areas Cultural Resource Survey	1978	0 - 1 Mile
LA-02794	Dixon, Keith A.	Reviving an Archaeological Project at Rancho Los Alamitos	1972	0 - 1 Mile
LA-02795	Desautels, Roger J., K. Dixon, and M. Rosen	Correspondence Between R. Desautels, K. Dixon, and M. Rosen	1979	0 - 1 Mile
LA-02864	Dixon, Keith A.	Comment on Second Incomplete Draft of Implementation Guidelines for the Preservation of Archaeological Resources in Campus Development Project, California State University, Long Beach; Work in Progress as of July 1993	1993	0 - 1 Mile

Report Number	Author(s)	Title	Year	Distance from the Southern LCW Project area
LA-03583	Bucknam, Bonnie M.	The Los Angeles Basin and Vicinity: A Gazetteer and Compilation of Archaeological Site Information	1974	0 - 1 Mile
LA-03853	Anonymous	Phase 1 Archaeological Survey and Cultural Resources Assessment of the Point View Project Study Area, City of Rancho Palos Verdes, Los Angeles County, California	1996	0 - 1 Mile
LA-04091	Milliken, Randell and William R. Hildebrandt	Assessment of Archaeological Resources at the Rancho Los Alamitos Historic Ranch and Gardens	1997	0 - 1 Mile
LA-04157	McLean, Deborah K., Ivan Strudwick, and William McCawley	Cultural Resources Assessment for the Marketplace Restaurant and Retail Site, City of Long Beach, Los Angeles County, Ca.	1997	Within Project area
LA-04266	Brooks, Sheilagh T.	A Deeply-buried Human Skull and Recent Stratigraphy at the Present Mouth of the San Gabriel River, Seal Beach, California	1960	0 - 1 Mile
LA-04269	Zahniser, Jack L.	Archaeological Salvage Excavations at 4-LAN-306 (known As *Puvungna*) Summer, 1973	1974	0 - 1 Mile
LA-04270	Underwood, Jackson	Archaeological Testing for the Information Booth Project, California State University, Long Beach	1993	0 - 1 Mile
LA-04274	Underwood, Jackson	Archaeological Survey and Testing for the Pipeline Project California State University, Long Beach	1993	0 - 1 Mile
LA-04275	Underwood, Jackson	Archaeological Testing at the Central Plant Site, California State University, Long Beach	1993	0 - 1 Mile
LA-04276	Underwood, Jackson	Archaeological Testing of Phase I, the Pedestrian Walkway, Parking Structure B California State University, Long Beach	1993	0 - 1 Mile
LA-04277	Underwood, Jackson	Archaeological Testing at the Ticket Booth Site, California State University, Long Beach	1993	0 - 1 Mile
LA-04355	Widell, Cherilyn E.	A Cultural Resources Management Plan for the California State University, Long Beach	1994	0 - 1 Mile

Report Number	Author(s)	Title	Year	Distance from the Southern LCW Project area
LA-05215	McKenna, Jeanette A.	A Cultural Resources Investigation of the Proposed Long Beach Ocean Desalination Project, Long Beach, Los Angeles County, California	2001	0 - 1 Mile
LA-05727	Cottrell, Marie G.	A Report of Test Excavations: CA-LAN-702	1975	0 - 1 Mile
LA-05890	Strudwick, Ivan H., W. McCawley, D.K.B. McLean, and B.L. Strum	Cultural Resource Survey of the Bixby Ranch Parcel Near Alamitos Bay, Los Angeles County, California	1996	Within Project area
LA-06089	McCormick, Steven and Ferraro, David D.	Literature Review, Field Reconnaissance, and Grading Monitoring of an Abandoned Oil Field in Long Beach, California	2002	0 - 1 Mile
LA-06107	Shepard, Richard S.	Phase I Cultural Resources Assessment: Los Alamitos Pump Station Project in Long Beach, Los Angeles County, and Seal Beach, Orange County, California	2003	Within Project area
LA-06160	Baksh, Michael, Christopher J. Doolittle, David D. Earle, Donn R. Grenda, and William McCawley	*Puvungna*: A Review of the Ethnohistoric, Archaeological, and Ethnographic Issues Surrounding a Gabrielino Rancheria Near Alamitos Bay, Los Angeles County, California Draft	1994	0 - 1 Mile
LA-06163	Cottrell, Marie G.	Archaeological Test Excavations at CA-LAN-702	1975	0 - 1 Mile
LA-08487	Strudwick, Ivan H.	Cultural Resource Survey of the Alamitos Electrical Generating Station Fuel Oil Tank Farm, City of Long Beach, Los Angeles County, California	2004	0 - 1 Mile
LA-08489	Duke, Curt and Judith Marvin	Cultural Resource Assessment: Cingular Wireless Facility No. Sm 118-03, Long Beach, Los Angeles County, California	2003	0 - 1 Mile

Report Number	Author(s)	Title	Year	Distance from the Southern LCW Project area
LA-08494	Shepard, Richard S.	Archaeological Survey Report: Minor Widening of Pacific Coast Highway (PCH, State Route 1) at 2nd Street in the City of Long Beach, Southern Los Angeles County, California	2004	0 - 1 Mile
LA-08497	Raab, Mark L. and Matthew Boxt	A Research Design and Implementation Guidelines for the Preservation of Archaeological Resources in Campus Development Projects, California State University, Long Beach: Work in Progress As of 27 October, 1993	1993	0 - 1 Mile
LA-08498	Raab, Mark L. and Matthew Boxt	A Cultural Resources Management Plan for the California State University, Long Beach, Work in Progress As of 3-19-1994	1994	0 - 1 Mile
LA-09839	Taniguchi, Christeen	Historic Architectural Survey Report: Long Beach VA Hospital Seismic Corrections Project, Long Beach, Los Angeles County, CA	2006	0 - 1 Mile
LA-09840	Wills, Carrie	Phase I Cultural Resources Assessment, Long Beach VA Hospital Seismic Corrections Project, Long Beach, Los Angeles County, California	2006	0 - 1 Mile
LA-10483	Fulton, Terri	Cultural Resources Assessment for the Alamitos Bay Marina Rehabilitation Project, City of Long Beach, Los Angeles County, California	2009	0 - 1 Mile
LA-10527	Weinman, Lois J.	Los Angeles-Long Beach Harbor Areas Regional Cultural History, Los Angeles County, California	1978	0 - 1 Mile
LA-11137	Trinh, Phoung	LOP Facsimile Transmittal SPL-2009-00807-PHT	2009	0 - 1 Mile
LA-12224	Mason, Roger, Cary Cotterman, and Josh Smallwood	Phase I Archaeological Survey and Phase II Historic Building Evaluations for the Seismic Corrections, Mental Health and Community Living Center Project Depart of Veterans Affairs Medical Center, Long Beach, Los Angeles County, California	2011	0 - 1 Mile

Report Number	Author(s)	Title	Year	Distance from the Southern LCW Project area
LA-12808	Chasteen, Carrie, Tiffany Clark, Richard Hanes, and Michael Mirro	Cultural Resources Study of the Wilmington Oil and Gas Field, Los Angeles County, California in Support of Analysis of Oil and Gas Well Stimulation Treatments in California Environmental Impact Report	2014	0 - 1 Mile
LA-12960	McKenna, Jeanette A.	Cultural Resources Overview: The City of Long Beach Southeast Area Specific Plan, Los Angeles County, California	2016	Within Project area
OR-00481	Van Horn, David M.	Archaeological Survey Report: the 9 Acre LA Dept. of Water and Power Property Located at the Corner of 1st and Ocean Ave. in the City of Seal Beach	1979	0 - 1 Mile
OR-00493	Anonymous	Archaeological Survey Report: the Hellman Property in Seal Beach	1980	Within Project area
OR-00619	Frierman, Jay D.	Field Assessment of CA-ORA-322; Naval Weapons Station, Seal Beach	1981	0 - 1 Mile
OR-00639	Anonymous	Archaeological Test Report on the Hellman Property Located in Seal Beach	1981	Within Project area
OR-00790	Brock, James P.	Cultural Resource Assessment of Two Study Areas in the Seal Beach National Wildlife Refuge	1985	0 - 1 Mile
OR-01049	Redwine, Peter	Landing Hill	1958	Within Project area
OR-01272	Stickel, Gary E.	A Baseline Archaeological Study for the City of Seal Beach California	1991	0 - 1 Mile
OR-01290	De Barros, Philip and Roger D. Mason	Cultural Resources Survey Report for the Unocal Property at 99 Marina Drive Seal Beach, California	1993	0 - 1 Mile
OR-01301	Kelsey, Harry and Nicholas Magalousis	Historical Review and Archaeological Report for the Unocal On-shore Facility at 99 Marina Drive in Seal Beach California in Two Parts	1993	0 - 1 Mile
OR-01348	De Barros, Philip and Roger D. Mason	Addendum to Cultural Resources Survey Report for the Unocal Property at 99 Marina Drive Seal Beach, California	1993	0 - 1 Mile

Report Number	Author(s)	Title	Year	Distance from the Southern LCW Project area
OR-01414	Van Horn, David M.	The 20+ Acre Site of Proposed New Residential Housing on the Naval Weapons Station, Seal Beach	1981	0 - 1 Mile
OR-01421	Smith, Brian F. and Larry J. Pierson	Remediation Project at Buildings 10, 69, and 923 at the Naval Weapons Station, Seal Beach.	1995	0 - 1 Mile
OR-01482	Mason, Roger and Larry Carbone	Archaeological Resources Protection Plan for Installation Restoration Sites 4,8,9, Swmu 56 at Naval Weapons Station, Seal Beach, Orange County, California	1996	0 - 1 Mile
OR-01568	Clevenger, Joyce M.	Extended Phase I Exploratory Survey for the Milcon P-902 Naval Weapons Station Seal Beach, Orange County, California	1997	0 - 1 Mile
OR-01581	Whitney-Desautels, Nancy A.	Cultural Resource Assessment of the Hellman Ranch, Seal Beach	1997	0 - 1 Mile
OR-01599	Clevenger, Joyce M., Kathleen Crawford, and Andrew Pigniolo	Archaeological, Historical, and Architectural Phase 1 Overview Survey, Phase II Evaluation Survey and Historic and Archaeological Resource Protection (harp) Plan of Naval Weapons Station, Seal Beach, California	1993	0 - 1 Mile
OR-01607	Bissell, Ronald M.	Archaeological Monitoring of Trenching for Improvements on and Near the Softball Facility, Seal Beach Naval Weapons Station, Orange County, California	1997	0 - 1 Mile
OR-01608	Stickel, Gary E.	A Research Design and Investigation Program for Test Level Evaluations of Archaeological Sites Located on the Hellman Ranch, City of Seal Beach, California	1996	Within Project area
OR-01609	York, Andrew L., James H. Cleland, and Michael Baksh	A Research Design for the Evaluation of Archaeological Sites Within the Hellman Ranch Specific Plan Area	1997	Within Project area
OR-01610	Stickel, Gary E.	An Archaeological Site Survey of the Hellman Ranch, City of Seal Beach, California	1996	0 - 1 Mile

Report Number	Author(s)	Title	Year	Distance from the Southern LCW Project area
OR-01643	York, Andrew, James H. Cleland, and Michael G. Baksk	A Research Design for the Evaluation of Archaeological Sites Within the Hellman Ranch Specific Plan Area	1997	0 - 1 Mile
OR-01816	Stickel, Gary E.	A Research Design and Investigation Program for Test Level Evaluations of Archaeological Sites Located on the Hellman Ranch, City of Seal Beach, California	1996	Within Project area
OR-01866	Clevenger, Joyce M.	Phase I Archaeological Survey of a Parcel Proposed for an Experimental Anaerobic Bioremediation Program Naval Weapons Station, Seal Beach	1996	0 - 1 Mile
OR-01897	Unknown	Historic Properties Overview and Evaluations on the Naval Weapons Station, Seal Beach	1997	0 - 1 Mile
OR-01931	Davy, Douglas M.	Archaeological Resources Protection Plan, Decommissioning of the Research, Testing, and Evaluation Area, Naval Weapons Station, Seal Beach, Orange County, California	1997	0 - 1 Mile
OR-01958	Clevenger, Joyce and Kathleen Crawford	Phase I - Overview Survey and Phase II - Archaeological, Historical, and Architectural Eligibility Study of Cultural Resources on the Naval Weapons Station, Seal Beach	1995	0 - 1 Mile
OR-01960	Mason, Roger and Richard Cerreto	Archaeological Resource Protection Plan for the Background Study Sampling Areas at Naval Weapons Station, Seal Beach, Orange County, California	1995	0 - 1 Mile
OR-01969	Clevenger, Joyce, and Kathleen Crawford	Final Historic and Archaeological Resources Protection (harp) Plan for the Naval Weapons, Station, Seal Beach	1997	0 - 1 Mile
OR-01989	Berryman, Judy, and Roy Pettus	Archaeological Resources Protection Plan for the Site Inspection Work Plan at the Research, Testing, and Evaluation Area, Naval Weapons Station, Seal Beach, Orange County, California	1995	0 - 1 Mile

Report Number	Author(s)	Title	Year	Distance from the Southern LCW Project area
OR-02033	Mason, Roger D.	Research Design for Evaluation of Coastal Archaeological Sites in Northern Orange County, California	1987	0 - 1 Mile
OR-02070	Bissell, Ronald M.	Archaeological Monitoring at Installation Restoration (IR) Site 73, Naval Weapons Station (NAVWPNSTA), Seal Beach, California (CH2M Hill Prime Contract No. N6871-96-d-2299)	2000	0 - 1 Mile
OR-02072	Bissell, Ronald M.	Archaeological Services at Naval Weapons Station (NAVWPNSTA), Seal Beach, California (CH2M Hill Prime Contract No. N6871-96-d-2299), Relative to Sampling at Installation Restoration (IR) Sites 12, 16, 25, 37, 38, 42, 44/45, Aoc 6, Swmu 24, 56, 57, Osr, an	2000	0 - 1 Mile
OR-02284	Mason, Roger and Cerreto, Richard	Archaeological Resources Protection Plan for Installation Restoration Sites 5, 8, 12, 16, 21, 40, 44, and 46 at Naval Weapons Station, Seal Beach Orange County, Ca	1995	0 - 1 Mile
OR-02286	Bissell, Ronald M.	Archaeological Monitoring at Repair Site #21, Naval Weapons Station (NAVWPNSTA) Seal Beach, Ca	2000	0 - 1 Mile
OR-02604	Duke, Curt	Cultural Resource Assessment at & T Wireless Services Facility No. 13001a Orange County, California	2002	0 - 1 Mile
OR-02687	Miller, Jason A.	Archaeological Monitoring of Trenching for the Main Telephone Cable Feed Vault on the Seal Beach Naval Weapons Station, California	2000	0 - 1 Mile
OR-02688	Baillie, David	Replacement of a Segment of Clay Sewer Pie, Naval Weapons Station, Seal Beach, Orange County, California	2002	0 - 1 Mile
OR-02774	Shepard, Richard S.	Phase I Cultural Resources Assessment: Los Alamitos Pump Station Project in Long Beach, Los Angeles County, and Seal Beach, Orange County, California	2003	Within Project area

Report Number	Author(s)	Title	Year	Distance from the Southern LCW Project area
OR-03172	Tang, Bai "Tom" and Casey Tibbet	Historic Resources Evaluation Report Seal Beach Bike Trail Project City of Seal Beach, Orange County 12-ORA-1-pm 31.11/32.72-kp 50.07/52.66 Ea Oc 3700	2004	0 - 1 Mile
OR-03173	Willey, Lorraine M., and Jackson Underwood	Archaeological Testing of a Portion of Site CA-ORA-322/1118 Gardeners Road and Bolsa Avenue Naval Weapons Station Seal Beach, California	2003	0 - 1 Mile
OR-03379	Chatters, James Carl	Final Archaeological Data Recovery Report for a Portion of Prehistoric Archaeological Site CA-ORA-322/1118 to Mitigate Impacts of Soil Removal Remediation	2003	0 - 1 Mile
OR-03391	York, Andrew L., James H. Cleland, Lorraine Willey, and Charlane Gross	Mitigation Plan for Significant Cultural Resource Discoveries Hellman Ranch Specific Plan Area Seal Beach, California	2003	0 - 1 Mile
OR-03562	Monica Strauss	Negative Archaeological Monitoring Report for the 400 Marina Drive Development Project, City of Seal Beach, CA	2009	0 - 1 Mile
OR-03714	Bonner, Wayne H.	Cultural Resources Survey and Historic Architectural Assessment Results for Sprint Telecommunications Facility Candidate OG54XC414D (Browning), 1971 Irvine Boulevard, Tustin, Orange County, California	2004	0 - 1 Mile
OR-03715	Bonner, Wayne H.	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate LA 02899D (Fire Station), 120 1/2 West Walnut Street, Station #5, Santa Ana, Orange County, California	2008	0 - 1 Mile

Report Number	Author(s)	Title	Year	Distance from the Southern LCW Project area
OR-03735	Bai "Tom" Tang	Due-Diligence Historical Archaeological Resources Review, City of Seal Beach Sewer Capital Improvement Projects, City of Seal Beach, Orange County, California	2008	0 - 1 Mile
OR-03762	Ehringer, Candace	Negative Archaeological Monitoring Report for the Hellman Ranch Tank Farm Replacement Project, City of Seal Beach, California	2009	Within Project area
OR-03821	Tang, Bai and Michael Hogan	Identification and Evaluation of Historic Properties City of Seal Beach Sewer Capital Improvement Projects (Southern Portion/Downtown Area) City of Seal Beach, Orange County, California	2009	0 - 1 Mile
OR-03828	Cleland, James, Andrew York, and Lorraine Willey	Piecing Together the Prehistory of Landing Hill: A Place Remembered	2007	0 - 1 Mile
OR-03870	Mason, Roger	Historic Property Survey Report for the West Orange County Connection, Phase II - I-405/I605 HOV Connector Project, Orange County, California	2009	0 - 1 Mile
OR-03922	Bonner, Wayne	Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate LA33981-E (Faith Christian Assembly), 13820 Seal Beach Boulevard, Seal Beach, Orange County, California	2010	0 - 1 Mile
OR-04002	Underwood, Jackson	Work Plan for Presence/Absence Archaeological Testing of a Portion of Site CA-ORA-322/1118 Gardeners Road and Bolsa Avenue Naval Weapons Station, Seal Beach, California	2002	0 - 1 Mile
OR-04023	Underbrink, Susan	Cultural Resources Records Search and Survey Report for the Ocean Place Project, Seal Beach, Orange County, California	2005	0 - 1 Mile

Report Number	Author(s)	Title	Year	Distance from the Southern LCW Project area
OR-04030	Whitaker, Adrian R.	Evaluation of a Redeposited Site (CA-ORA-1711) for the Marine Corps Reserve Training Center, Project P-063, Naval Weapons Station, Seal Beach, Orange County, California	2011	0 - 1 Mile
OR-04031	Padon, Beth	Subject: Phase I Archaeological Study Report for Alumni Center at the University of California Irvine Campus	2011	0 - 1 Mile
OR-04034	Bucknam, Bonnie M.	The Los Angeles Basin and Vicinity: A Gazetteer and Compilation of Archaeological Site Information	1974	0 - 1 Mile
OR-04035	Weinman, Lois J., and E. Gary Stickel	(also LA2399) Los Angeles-Long Beach Harbor Areas Cultural Resource Survey	1978	0 - 1 Mile
OR-04047	Lehman, Jane	Seal Beach Railroad Right of Way Property, Seal Beach Blvd. - 17th Street - 16th Street - Electric Ave., Seal Beach, CA	2007	0 - 1 Mile
OR-04089	Whittenberg, Lee	Section 106 Compliance Information City of Seal Beach Water Tank Fence Replacement Project, Seal Beach Naval Weapons Station	2001	0 - 1 Mile
OR-04105	Wlodarski, Robert J.	Cultural Resources Records Search and Archaeological Survey Results for the proposed Clear Wireless, LLC, Site CA-ORC5863A (OG03XC029C) located at 211 8th Street, Seal Beach, Orange County, California 90740	2010	0 - 1 Mile
OR-04143	Baillie, David	Sprinkler System Replacement at CA-ORA-322/1118, Reference #5758 Ser. N45W/0153	2004	0 - 1 Mile
OR-04172	Chasteen, Carrie	Historic Property Survey Report San Diego Freeway (I-405) Improvement Project SR-73 to I-605, Orange and Los Angeles Counties	2011	0 - 1 Mile
OR-04189	Gundrum, Darrell	Naval Weapons Station Seal Beach Proposal to Improve Security and Access Control Measures at Two Installation Gates: Gate 1 and Gate 9	2005	0 - 1 Mile

Report Number	Author(s)	Title	Year	Distance from the Southern LCW Project area
OR-04223	Flynn, Chris	Notification of Finding of No Adverse Effect with Standard Conditions for the Bridge Deck Maintenance and Sealing at 30 Locations Throughout Orange County, California	2011	0 - 1 Mile
OR-04307	Baille, David	Reevaluation of the National Register Eligibility Status of Naval Weapons Station Seal Beach, Orange County and Naval Weapons Station Seal Beach, Detachment Fallbrook, San Diego County	2003	0 - 1 Mile
OR-04346	Bissell, Ronald	Discovery Plan, Archaeological Services at Naval Weapons Station (NAVWPNSTA), Seal Beach, California for the Upgrade of Main Telephone Cable Feed Vault	2000	0 - 1 Mile
OR-04505	Brunzell, David	Cultural Resources Assessment of the Seal BH 1 Project, Seal Beach, Orange County, California (BCR Consulting Project No. TRF1427)	2015	0 - 1 Mile
OR-04553	Bonner, Wayne H.	Phase I Survey Marina Drive, Seal Beach	1999	0 - 1 Mile

APPENDIX F. PREVIOUSLY RECORDED CULTURAL RESOURCES

Table F – 1. Previously Recorded Cultural Resources within a 3-mile radius of the Los Cerritos Wetlands Complex

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
19-000102	CA-LAN-102	Prehistoric Archaeological Site	Shell Midden	1966	Unevaluated	1 - 2 miles
19-000231	CA-LAN-231	Prehistoric Archaeological Site	Shell, Dark Soil	1961	Unevaluated	1 - 2 miles
19-000232	CA-LAN-232	Prehistoric Archaeological Site	Shell, Dark Soil	1961	Unevaluated	1 - 2 miles
19-000233	CA-LAN-233	Prehistoric Archaeological Site	Shell, Dark Soil	1961	Unevaluated	1 - 2 miles
19-000234	CA-LAN-234	Prehistoric Archaeological Site	*Puvungna* Village Site, Surface Shell, Chipping Waste	1960	NR: 1D	2 - 3 miles
19-000235	CA-LAN-235	Prehistoric Archaeological Site	*Puvungna* Village Site, Surface Shell, Chipping Waste	1960	NR: 1D	2 - 3 miles
19-000236	CA-LAN-236	Prehistoric Archaeological Site	Shell, Dark Soil	1961	Unevaluated	2 - 3 miles
19-000271	CA-LAN-271	Prehistoric Archaeological Site	Shell Midden	1959	Unevaluated	1 - 2 miles
19-000272	CA-LAN-272	Prehistoric Archaeological Site	Partial Burial	1961	Unevaluated	0 - 0.25 mile
19-000273	CA-LAN-273	Prehistoric Archaeological Site	Shell Midden	1961	Unevaluated	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
19-000274	CA-LAN-274	Prehistoric Archaeological Site	Shell Midden	1961	Unevaluated	1 - 2 miles
19-000275	CA-LAN-275	Prehistoric Archaeological Site	Shell Midden	1961	Unevaluated	1 - 2 miles
19-000306	CA-LAN-306	Prehistoric Archaeological Site	Gabrielino Village Site	1951, 1964, 1972, 1973, 1997	1D	1 - 2 miles
19-000698	CA-LAN-698	Prehistoric Archaeological Site	Surface Shell, Chipping Waste	1974	Unevaluated	2 - 3 miles
19-000699	CA-LAN-699	Prehistoric Archaeological Site	Shell, Chipping Waste	1974	Unevaluated	2 - 3 miles
19-000700	CA-LAN-700	Prehistoric Archaeological Site	Shell Midden	1974	Unevaluated	2 - 3 miles
19-000701	CA-LAN-701	Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1974	Unevaluated	2 - 3 miles
19-000702	CA-LAN-702	Prehistoric Archaeological Site	Shell Midden	1974	Unevaluated	1 - 2 miles
19-000703	CA-LAN-703	Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1974	Unevaluated	2 - 3 miles
19-000705	CA-LAN-705	Prehistoric Archaeological Site	Shell Midden	1974	Unevaluated	2 - 3 miles
19-001000	CA-LAN-1000	Prehistoric Archaeological Site	Shell Midden	1979; 1994	Unevaluated	2 - 3 miles
19-001001	CA-LAN-1001	Prehistoric Archaeological Site	Shell Midden	1979	Unevaluated	2 - 3 miles
19-001002	CA-LAN-1002	Prehistoric Archaeological Site	Shell Midden	1979	Unevaluated	2 - 3 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
19-001003	CA-LAN-1003	Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1979, 1994	Recommended - not a resource	2 - 3 miles
19-001004	CA-LAN-1004	Prehistoric Archaeological Site	Shell Midden	1979, 1994	Recommended - not a resource	2 - 3 miles
19-001005	CA-LAN-1005	Prehistoric Archaeological Site	Shell Midden	1979, 1994	Recommended - not a resource	2 - 3 miles
19-001006	CA-LAN-1006	Prehistoric Archaeological Site	Shell Midden	1979	Unevaluated	1 - 2 miles
19-001007	CA-LAN-1007	Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1979	Unevaluated	1 - 2 miles
19-001821	CA-LAN-001821	Prehistoric Archaeological Site	Habitation Site	1990	Unevaluated	0.25 - 0.5 mile
19-002616		Prehistoric Archaeological Site	Seasonally-Utilized Food Processing/Consumption Station	1997	Unevaluated	2 - 3 miles
19-002629		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977, 1994	Unevaluated	2 - 3 miles
19-002630		Prehistoric Archaeological Site	Seasonally-Utilized Food Processing/Consumption Station	1994	Unevaluated	2 - 3 miles
19-003040		Historic Archaeological Site	Oil Extraction Facility with Tank Farms	2000	Unevaluated	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
19-004780	CA-LAN-4780H	Historic Archaeological Site	Surficial Refuse Scatter	2016	Unevaluated	0.5 - 1 mile
19-004781		Historic Archaeological Site	LSA-LYC1501-S-2	2017	Unevaluated	0 - 0.25 mile
19-004797	CA-LAN-4797H	Historic Archaeological Site	Navy Hospital Refuse Site	2015	Recommended not eligible	2 - 3 miles
19-004805	CA-LAN-4805H	Multi-Component Archaeological Site	Shell Deposit and Historic Glazed Ceramics	2015	Unevaluated	2 - 3 miles
19-120038		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	2 - 3 miles
19-120039		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	2 - 3 miles
19-120040		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	2 - 3 miles
19-120041		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	2 - 3 miles
19-120042		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	2 - 3 miles
19-120043		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	2 - 3 miles
19-120044		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	2 - 3 miles

Primary Number	**Trinomial**	**Resource Type**	**Resource Description**	**Year Recorded**	**NRHP/CRHR Status Code**	**Distance from Project area**
19-120045		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	1 - 2 miles
19-120046		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	2 - 3 miles
19-120047		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	1 - 2 miles
19-120048		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	1 - 2 miles
19-120049		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	1 - 2 miles
19-120050		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	2 - 3 miles
19-120052		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	2 - 3 miles
19-120053		Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1977	Unevaluated	1 - 2 miles
19-178684		Historic Archaeological Site	Rancho Los Alamitos	1981	nominated for NRHP	1 - 2 miles
19-186115		Historic Built Environment	Long Beach Marine Stadium	1993, 1994, 2009	NR: 5S1	0 - 0.25 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
19-186681		Historic Built Environment	200 Nieto Ave.	2002	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
19-186880		Multi-Component Archaeological Site	Alamitos Generating Station Fuel Oil Tank Farm	2004	Unevaluated for NRHP; Recommended not eligible for CRHR	0.5 - 1 mile
19-186926		Historic Built Environment	Los Alamitos Pump Station	2003	Unevaluated	0 - 0.25 mile
19-187654		Historic Built Environment	HRI #152957, 212 Quincy Ave.	2003	Recommend eligible of NRHP, Criterion B	2 - 3 miles
19-187656		Historic Built Environment	HRI #150929, 5901 East 7th St.		Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
19-187657		Historic Built Environment	Bixby Ranch Field Office, 6433 Westminster Ave.	1996, 2016	Recommended eligible for NRHP under Criterion A/CRHR under Criterion 1	0.5 - 1 mile
19-188776		Historic Built Environment	3933 E. Broadway	2002, 2006, 2010	Recommended not eligible for NRHP/CRHR	2 - 3 miles

Primary Number	**Trinomial**	**Resource Type**	**Resource Description**	**Year Recorded**	**NRHP/CRHR Status Code**	**Distance from Project area**
19-189429		Historic Built Environment	5320 E 2nd St, Lorbeer Building	2009	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
19-189860		Historic Built Environment	SCE Transmission Tower M-1 T-2, APN #7238-030-802	2010	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
19-189879		Historic Built Environment	1627 Stevely Ave.	2010	Recommended not eligible for NRHP/CRHR	2 - 3 miles
19-189880		Historic Built Environment	6979 E. El Cedral St.	2010	Recommended not eligible for NRHP/CRHR	2 - 3 miles
19-189881		Historic Built Environment	6979 E. El Cedral Street	2010	Recommended not eligible for NRHP/CRHR	2 - 3 miles
19-189882		Historic Built Environment		2010	Recommended not eligible for NRHP/CRHR	2 - 3 miles
19-189883		Historic Built Environment	1921 N. Hidden Lane	2010	Recommended not eligible for NRHP/CRHR	2 - 3 miles
19-189884		Historic Built Environment	1967 N. Hidden Lane	2011	Recommended not eligible for NRHP/CRHR	2 - 3 miles

Primary Number	**Trinomial**	**Resource Type**	**Resource Description**	**Year Recorded**	**NRHP/CRHR Status Code**	**Distance from Project area**
19-189885		Historic Built Environment	2015 N. Hidden Lane	2011	Recommended not eligible for NRHP/CRHR	2 - 3 miles
19-189886		Historic Built Environment	7140 E. Atherton Street	2010	Recommended not eligible for NRHP/CRHR	2 - 3 miles
19-189887		Historic Built Environment	7100 E. Atherton Dr.	2010	Recommended not eligible for NRHP/CRHR	2 - 3 miles
19-189888		Historic Built Environment	1819 Lees Avenue	2010	Recommended not eligible for NRHP/CRHR	2 - 3 miles
19-189889		Historic Built Environment	1921 Lees Avenue	2010	Recommended not eligible for NRHP/CRHR	2 - 3 miles
19-189925		Historic Built Environment	1820 N. Studebaker Rd.	2010	Recommended not eligible for NRHP/CRHR	2 - 3 miles
19-189926		Historic Built Environment	2017 Ostrom Ave.	2010	Recommended not eligible for NRHP/CRHR	2 - 3 miles
19-189927		Historic Built Environment	2129 Vuelta Grande Ave.	2010	Recommended not eligible for NRHP/CRHR	2 - 3 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
19-189991		Historic Built Environment	HRI #181096 Hafley House, 5561 E La Pasada St., Long Beach	2011	NR: 1S; 3S	2 - 3 miles
19-190055		Historic Built Environment	Anthony's Shopping Plaza, APN: 7231-013-028, 1800-1818 Palo Verde Ave, Long Beach	2012	Recommended not eligible for NRHP/CRHR	2 - 3 miles
19-190670		Historic Built Environment	Wineke Building, 3233 E Broadway, L.B., APN:7264-004-022	2009	Recommended not eligible for NRHP/CRHR	2 - 3 miles
30-000143	CA-ORA-000143	Multi-Component Archaeological Site	Landing Hill #10	1964, 1965, 1969, 1997	Unevaluated	0.25 - 0.5 mile
30-000256	CA-ORA-000256	Prehistoric Archaeological Site	Habitation debris	1969, 1996	Unevaluated	Within Project area
30-000257	CA-ORA-000257	Prehistoric Archaeological Site	Lithic scatter	1969, 1996	Unevaluated	0 - 0.25 mile
30-000258	CA-ORA-000258	Prehistoric Archaeological Site	Lithic Scatter, Hearths/pits, Habitation Debris	1969, 1996	Unevaluated	Within Project area
30-000259	CA-ORA-000259	Prehistoric Archaeological Site	Lithic Scatter, Habitation Debris	1969, 1996	Unevaluated	0 - 0.25 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-000260	CA-ORA-000260	Prehistoric Archaeological Site	Lithic Scatter, Habitation Debris	1969, 1996	Unevaluated	Within Project area
30-000261	CA-ORA-000261	Prehistoric Archaeological Site	Shell Midden, Groundstone	1969	Unevaluated	0 - 0.25 mile
30-000262	CA-ORA-000262	Prehistoric Archaeological Site	Lithic Scatter, Habitation Debris	1969, 1996	Unevaluated	0 - 0.25 mile
30-000263	CA-ORA-000263	Prehistoric Archaeological Site	Lithic Scatter, Habitation Debris	1969, 1996	Unevaluated	0 - 0.25 mile
30-000264	CA-ORA-000264	Prehistoric Archaeological Site	Lithic Scatter, Burials, Habitation Debris	1969	Unevaluated	0 - 0.25 mile
30-000298	CA-ORA-298	Prehistoric Archaeological Site	Shell Midden	1971	NR: 2S2	1 - 2 miles
30-000322	CA-ORA-000322/H	Multi-Component Archaeological Site	Foundations/structure pads, Privies/dumps/trash scatter, Wells/cisterns, Lithic Scatter, Ceramic Scatter, Habitation Debris	1971, 1988, 1992, 1996, 2000	Nominated for NRHP under Criterion D	0 - 0.25 mile
30-000850	CA-ORA-000850	Prehistoric Archaeological Site	Shell Scatter	pre-1976; 1996	Unevaluated	0 - 0.25 mile
30-000851	CA-ORA-000851	Prehistoric Archaeological Site	Habitation Debris	pre-1976; 1996	Unevaluated	0 - 0.25 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-000852	CA-ORA-000852	Prehistoric Archaeological Site	Habitation Debris	1996	Unevaluated	0 - 0.25 mile
30-001352	CA-ORA-1352	Prehistoric Archaeological Site	Shell	1972	Unevaluated	1 - 2 miles
30-001455	CA-ORA-001455	Prehistoric Archaeological Site	Habitation Debris, Shell Midden	1996, 1997	Unevaluated	0.25 - 0.5 mile
30-001463	CA-ORA-1463	Prehistoric Archaeological Site	Shell Midden, Chipping Waste	1985	Unevaluated	1 - 2 miles
30-001473	CA-ORA-001473	Prehistoric Archaeological Site	Habitation Debris	1996	Unevaluated	0 - 0.25 mile
30-001502		Prehistoric Archaeological Site	Shell, Artifact Scatter	1999; 2010	Recommended eligible for NRHP under Criterion D	1 - 2 miles
30-001503		Prehistoric Archaeological Site	Shell Scatter	1999; 2011	Recommended eligible for NRHP under Criterion D	2 - 3 miles
30-001504		Prehistoric Archaeological Site	Shell Scatter	1999	Unevaluated	2 - 3 miles
30-001505		Prehistoric Archaeological Site	Shell Scatter	1999	Unevaluated	2 - 3 miles
30-001539		Prehistoric Archaeological Site	Shell Scatter	2000	Unevaluated	0.25 - 0.5 mile
30-001540	CA-ORA-001540	Prehistoric Archaeological Site	Habitation Debris	2000	Unevaluated	0.25 - 0.5 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-001541		Prehistoric Archaeological Site	Shell Scatter	2000	Unevaluated	0.25 - 0.5 mile
30-001542	CA-ORA-001542/H	Multi-Component Archaeological Site	Privies/dumps/trash scatter, Habitation Debris	2000	Unevaluated	0.25 - 0.5 mile
30-001543		Historic Built Environment	30-001543-1	2000	Unevaluated	0 - 0.25 mile
30-001544	ORA-001544	Prehistoric Archaeological Site	Lithic Scatter, Habitation Debris	2000	Unevaluated	0 - 0.25 mile
30-001545	ORA-001545	Prehistoric Archaeological Site	Habitation Debris	2000	Unevaluated	0 - 0.25 mile
30-001546	ORA-001546	Prehistoric Archaeological Site	Habitation Debris	2000	Unevaluated	0.25 - 0.5 mile
30-001568		Prehistoric Archaeological Site	Shell Scatter	2000	Unevaluated	2 - 3 miles
30-001570		Prehistoric Archaeological Site	Shell Scatter	2000	Unevaluated	2 - 3 miles
30-001571		Prehistoric Archaeological Site	Shell Scatter	2000	Unevaluated	2 - 3 miles
30-001572		Prehistoric Archaeological Site	Shell Scatter	2000	Unevaluated	2 - 3 miles
30-001644	ORA-001644	Prehistoric Archaeological Site	Habitation Debris	2006	Unevaluated	0.25 - 0.5 mile
30-001711	ORA-001711	Prehistoric Archaeological Site	Habitation Debris	2011	evaluated to not be a resource	0.25 - 0.5 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-001714	CA-ORA-1714	Prehistoric Archaeological Site	Shell, Artifact Scatter	2011; 2015	Recommended eligible for NRHP under Criterion D	2 - 3 miles
30-001746	CA-ORA-1746H	Multi-Component Archaeological Site	Historic Refuse, Shell Scatter	2014	Unevaluated	2 - 3 miles
30-001782		Historic Archaeological Site	Concrete and Wood Piling Bulkhead	2018	Recommended not eligible for NRHP/CRHR	0.25 - 0.5 mile
30-001783		Historic Archaeological Site	Seal Beach Electric Generating Station	2018	Recommended not eligible for NRHP/CRHR	0.25 - 0.5 mile
30-001784		Historic Archaeological Site	Unnamed Historic Road Remnants	2018	Recommended not eligible for NRHP/CRHR	0.25 - 0.5 mile
30-001785		Historic Archaeological Site	Segment of Historic Coast Boulevard Alignment	2018	Recommended not eligible for NRHP/CRHR	0.25 - 0.5 mile
30-100142		Historic Archaeological Isolate	Glass Bottle		Unevaluated	2 - 3 miles
30-100209		Prehistoric Archaeological Isolate	Flake	2014	Unevaluated	2 - 3 miles
30-156069		Historic Built Environment	Old Seal Beach City Hall, 201 8th St.	2011	NR: 1S	0.25 – 0.5 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-162271		Historic Built Environment	HRI #090012, Anaheim Landing	2014; 1980; 1935	CPHI no. 219	0.5 - 1 mile
30-162293		Historic Built Environment	HRI #090904, Seal Beach Red Car, Main St. and Electric Ave.	1985	NR: 7P	0.25 – 0.5 mile
30-176491		Historic Built Environment	Underground utilities, Naval Weapons Station, Seal Beach	1992	Recommended not eligible for NRHP; Unevaluated for CRHR	0 - 0.25 mile
30-176492		Historic Built Environment	Building #16 / Recreation Building, QC	1998	Unknown	0.25 – 0.5 mile
30-176493		Historic Built Environment	Building #22 / Administration Office Bldg., QC	1998	Unknown	0.25 – 0.5 mile
30-176494		Historic Built Environment	Building #24 / Filling Sta-Storage Bldg., QC	ca. 1992	Unknown	0.25 – 0.5 mile
30-176495		Historic Built Environment	Building #26 / EM Barracks Bldg.	ca. 1992	Unknown	0 - 0.25 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176496		Historic Built Environment	Bldg. #38, 70, 74, 103,	1992	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176497		Historic Built Environment	Building #90 / Compressed air plant Bldg.	1992	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176498		Historic Built Environment	Building #92 / Pump House No. 2	1992	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176499		Historic Built Environment	Building #93 / Flammables Storehouse	1992	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176500		Historic Built Environment	Building #98 / Steam-out shed building	1992	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176501		Historic Built Environment	Building #99 / Heating Plant Building	1992	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176502		Historic Built Environment	Building #100/ Compressed Air Bldg.	1992	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176503		Historic Built Environment	Building #101 / Vacuum Dust Removal Bldg.	1992	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176504		Historic Built Environment	Building #102 / Ammo Rework Facility	1992	Unevaluated	1 - 2 miles
30-176505		Historic Built Environment	Water tank No. 2	1992	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176506		Historic Built Environment	Pass and ID Office	1992	Recommended not eligible for NRHP; Unevaluated for CRHR	0 - 0.25 mile
30-176507		Historic Built Environment	Building #201 / General Storehouse	1992	Recommended not eligible for NRHP; Unevaluated for CRHR	0 - 0.25 mile
30-176508		Historic Built Environment	Building #202, Sentry Shelter, Naval Weapons Station, Seal Beach	1992	Recommended not eligible for NRHP; Unevaluated for CRHR	0 - 0.25 mile
30-176509		Historic Built Environment	Building #203 / Fire Station	1999	NR: 6Y	0.25 – 0.5 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176510		Historic Built Environment	Building #204 / Administration Building	ca. 1992	NR: 6Y	0.25 – 0.5 mile
30-176511		Historic Built Environment	Building #205 / Flagpole	ca. 1992	NR: 6Y	0.25 – 0.5 mile
30-176512		Historic Built Environment	Building #206 / Administration Office Bldg.	ca. 1992	NR: 6Y	0 - 0.25 mile
30-176513		Historic Built Environment	Building #207 / Water Storage Tank, QC	1992	NR: 6Y	0 - 0.25 mile
30-176514		Historic Built Environment	Building #208 / PW Pest Cont/Garden Sup Bldg.	ca. 1992	Recommended not eligible for NRHP; Unevaluated for CRHR	0.25 – 0.5 mile
30-176515		Historic Built Environment	Building #210	1992, 2007	Recommended not eligible for NRHP; Unevaluated for CRHR	0 - 0.25 mile
30-176515		Historic Built Environment	Building #213	1992, 2007	Recommended not eligible for NRHP; Unevaluated for CRHR	0.25 – 0.5 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176515		Historic Built Environment	Building #215	1992, 2007	Recommended not eligible for NRHP; Unevaluated for CRHR	0.25 – 0.5 mile
30-176516		Historic Built Environment	Building #211, 214, 216, Quarters A, B, C	1992, 2007	NR: 6Y	0 - 0.25 mile
30-176517		Historic Built Environment	Building #226 / Printing Shop	ca. 1992	NR: 6Y	0.5 - 1 mile
30-176518		Historic Built Environment	Building #227 / Sub-station	ca. 1992	NR: 6Y	0.25 – 0.5 mile
30-176519		Historic Built Environment	Building #229 / QED Comptroller Office Building, QC	ca. 1992	Unknown	0.25 – 0.5 mile
30-176520		Historic Built Environment	Building #230 / PW Office, QC	ca. 1992	NR: 6Y	0.25 – 0.5 mile
30-176521		Historic Built Environment	Building #231 / PW Metal Storage Building	ca. 1992	NR: 6Y	0.25 – 0.5 mile
30-176522		Historic Built Environment	Building #232 /PW Oil Storage Building	ca. 1992	Unknown	0.25 – 0.5 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176523		Historic Built Environment	Building #233 / PW Vehicle Parking Shed	ca. 1992	NR: 6Y	0.5 - 1 mile
30-176524		Historic Built Environment	Building #234 / PW Carpenters Shop Annex	ca. 1992	NR: 6Y	0.25 – 0.5 mile
30-176525		Historic Built Environment	Building #235	ca. 1992	NR: 6Y	0.5 - 1 mile
30-176526		Historic Built Environment	Building #237 / Boiler Housing Bldg.	ca. 1992	NR: 6Y	0.5 - 1 mile
30-176527		Historic Built Environment	Building #238 / Flammables Storehouse	ca. 1992	NR: 6Y	0.5 - 1 mile
30-176528		Historic Built Environment	Building #239 / General Warehouse Building	ca. 1992	NR: 6Y	0.5 - 1 mile
30-176529		Historic Built Environment	Building #240 / Railroad Equip Maintenance Shop	ca. 1992	NR: 6Y	0.25 – 0.5 mile
30-176530		Historic Built Environment	Building #241 / Container Repair Bldg.	ca. 1992	NR: 6Y	0.25 – 0.5 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176531		Historic Built Environment	Building #242 / Gen Storage Shed Bldg., QC	ca. 1992	NR: 6Y	0.25 – 0.5 mile
30-176532		Historic Built Environment	Building #243 / Incinerator Bldg., QC	ca. 1992	NR: 6Y	0.5 - 1 mile
30-176533		Historic Built Environment	Building #244 / Quonset Hut Storehouse	ca. 1992	NR: 6Y	0.25 – 0.5 mile
30-176544		Historic Built Environment	Anderson Street Water Tower, 101 Anderson Street	1976	Nominated for NRHP	1 - 2 miles
30-176752		Historic Built Environment	Parasol Restaurant, 12241 Seal Beach Blvd.	2004	NR: 3CS	2 - 3 miles
30-176778		Historic Built Environment	Taco Surf Restaurant and Cantina, 16281 Pacific Coast Highway	2004	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176803		Historic Built Environment	NASA Saturn S-II Historic District, Naval Weapons Station, Seal Beach	ca. 1998	Unknown	0.5 - 1 mile
30-176840		Historic Built Environment	Administrative Area, Naval Weapons Station, 800 Seal Beach	ca. 1998	Unknown	0.25 – 0.5 mile
30-176841		Historic Built Environment	Baseball Diamond, MWR Support Facilities	ca. 1998	Unknown	0.25 – 0.5 mile
30-176841		Historic Built Environment	Softball Diamond, MWR Support Facilities	ca. 1998	Unknown	0.25 – 0.5 mile
30-176841		Historic Built Environment	Tennis Facility, MWR Support Facilities	ca. 1998	Unknown	0.25 – 0.5 mile
30-176841		Historic Built Environment	Patio, MWR Support Facilities	ca. 1998	Unknown	0.25 – 0.5 mile
30-176841		Historic Built Environment	Restroom, MWR Support Facilities	ca. 1998	Unknown	0.25 – 0.5 mile
30-176841		Historic Built Environment	Lifeguard Stand, MWR Support Facilities	ca. 1998	Unknown	0.5 - 1 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176842		Historic Built Environment	BEQ Complex, 800 Seal Beach Blvd.	ca. 1998	Unknown	0.25 – 0.5 mile
30-176843		Historic Built Environment	Bunker 33, 800 Seal Beach Blvd.	ca. 1998	Unknown	0.25 – 0.5 mile
30-176844		Historic Built Environment	Building 59, Guided Missile Facilities	ca. 1998	NR: 6Y	0.5 - 1 mile
30-176844		Historic Built Environment	Building 137, Guided Missile Facilities	ca. 1998	Unknown	0.5 - 1 mile
30-176844		Historic Built Environment	Building 61, Guided Missile Facilities	ca. 1998	Unknown	0.5 - 1 mile
30-176845		Historic Built Environment	Building 89, Quality Evaluation Labs & Support Facilities	1998	Unknown	0.5 - 1 mile
30-176845		Historic Built Environment	Buildings 432-437, Quality Evaluation Labs & Support Facilities	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176846		Historic Built Environment	Bldg. 78, Missile Facilities by Lapota, Naval Weapons Station, Seal Beach	1998	Unknown	0.5 - 1 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176846		Historic Built Environment	Bldg. 915, Missile Facilities by Lapota	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176846		Historic Built Environment	Bldg. 923 | Missile Facilities by Lapota, Naval Weapons Station, Seal Beach	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176846		Historic Built Environment	Bldg. 906 (orig. demolished), Missile Facilities by Lapota	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176847		Historic Built Environment	Bldg. 264, Naval Weapons Station, Seal Beach	1998	Unknown	0.25 – 0.5 mile
30-176847		Historic Built Environment	Building 85, Naval Weapons Station, Seal Beach	1998	Unknown	0.5 - 1 mile
30-176847		Historic Built Environment	Building 248, Naval Weapons Station, Seal Beach	1998	Unknown	0.5 - 1 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176847		Historic Built Environment	Building 86 (demolished), Naval Weapons Station, Seal Beach	1998	Unknown	0.5 - 1 mile
30-176847		Historic Built Environment	Building 414, Naval Weapons Station, Seal Beach	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176847		Historic Built Environment	Building 921 (demolished), Naval Weapons Station, Seal Beach	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176848		Historic Built Environment	Building 88, Anti-Submarine Warfare Complex	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176848		Historic Built Environment	Building 87, Anti-Submarine Warfare Complex	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176849		Historic Built Environment	Old Ordnance Disposal Area, Naval Weapons Station, Seal Beach	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176850		Historic Built Environment	Buildings 426-431, Small Arched Vault Magazines	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176850		Historic Built Environment	Building 104, Small Arched Vault Magazines	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176850		Historic Built Environment	Building 318, Small Arched Vault Magazines	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176850		Historic Built Environment	Building 599, Small Arched Vault Magazines	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176850		Historic Built Environment	Building 456, Small Arched Vault Magazines	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176851		Historic Built Environment	Building 849, Sentry Shelters	1998	Unknown	0.5 - 1 mile
30-176851		Historic Built Environment	Building 848, Sentry Shelters	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176851		Historic Built Environment	Building 107, Sentry Shelters	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176852		Historic Built Environment	Buildings 224, 246, 247, 249, 251, 252, 253, Prefabricated Buildings	1998	Unknown	0.5 - 1 mile
30-176852		Historic Built Environment	Prefabricated Buildings, Naval Weapons Station, Seal Beach	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176853		Historic Built Environment	Building 236, Public Works Support Facilities	ca. 1998	Unknown	0.5 - 1 mile
30-176853		Historic Built Environment	Building 250, Public Works Support Facilities	ca. 1998	Unknown	0.5 - 1 mile
30-176853		Historic Built Environment	Building 254, Public Works Support Facilities	ca. 1998	Unknown	0.5 - 1 mile
30-176853		Historic Built Environment	Building 260, Public Works Support Facilities	ca. 1998	Unknown	0.5 - 1 mile

Primary Number	**Trinomial**	**Resource Type**	**Resource Description**	**Year Recorded**	**NRHP/CRHR Status Code**	**Distance from Project area**
30-176853		Historic Built Environment	Building 228, Public Works Support Facilities	ca. 1998	Unknown	0.5 - 1 mile
30-176855		Historic Built Environment	Building 259, Converted Lighters	1998	Unknown	0.25 – 0.5 mile
30-176855		Historic Built Environment	Building 306, Converted Lighters	1998	Unknown	0.5 - 1 mile
30-176855		Historic Built Environment	Building 303, Converted Lighters	1998	Unknown	0.5 - 1 mile
30-176855		Historic Built Environment	Building 413 (demolished), Location based on UTM coords.	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176856		Historic Built Environment	Building 317, Wharf Area	1998	Unknown	0.5 - 1 mile
30-176856		Historic Built Environment	Building 321, Wharf Area	1998	Unknown	0.5 - 1 mile
30-176856		Historic Built Environment	Building 311, Wharf Area	1998	Unknown	0.5 - 1 mile
30-176856		Historic Built Environment	Building 349, Wharf Area	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176856		Historic Built Environment	Building 344, mooring, Mapped to aerial	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176856		Historic Built Environment	Building 345, mooring, Mapped to aerial	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176856		Historic Built Environment	Building 352, mooring, Mapped to aerial	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176856		Historic Built Environment	Building 348, Wharf Area	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176857		Historic Built Environment	Buildings 354, 356, 357, 358, 359, 360, Shipboard Electronic Systems Evaluation Facility	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176858		Historic Built Environment	Buildings 401, 422, 423, 424, and Various, Small Arms Range	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176859		Historic Built Environment	Building 420, LORAC Support Structure	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176860		Historic Built Environment	Building 502, Support Facilities by Lapota	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176860		Historic Built Environment	Building 922, Support Facilities by Lapota	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176860		Historic Built Environment	Building 925, Support Facilities by Lapota	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176860		Historic Built Environment	Building 920, Support Facilities by Lapota	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176860		Historic Built Environment	Building 909, Support Facilities by Lapota	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176861		Historic Built Environment	3-Vault Ammunition Magazines by Brooks and Miller, 15 buildings (see record)	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176862		Historic Built Environment	Building 813, Box Vault Magazines by Brooks and Miller	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176862		Historic Built Environment	Building 811, Box Vault Magazines by Brooks and Miller	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176862		Historic Built Environment	Building 859, Box Vault Magazines by Brooks and Miller	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176863		Historic Built Environment	Building 850, 800 Area Non-Magazine Structures	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176863		Historic Built Environment	Building 868, 800 Area Non-Magazine Structures	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176863		Historic Built Environment	Building 877, 800 Area Non-Magazine Structures	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176863		Historic Built Environment	Building 866, Helicopter Landing Pad, 800 Area Non-Magazine Structures	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176863		Historic Built Environment	Buildings 878 & 879, 800 Area Non-Magazine Structures	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176863		Historic Built Environment	Building 867, 800 Area Non-Magazine Structures	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176864		Historic Built Environment	Building 852, Box Vault Magazine by Lapota	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176865		Historic Built Environment	Building 858, Single Arch Magazines by Ivor Lyons	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176865		Historic Built Environment	Building 856, Single Arch Magazines by Ivor Lyons	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-176865		Historic Built Environment	Building 854, Single Arch Magazines by Ivor Lyons	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176866		Historic Built Environment	Building 863, Multi-Arch magazines by Lapota	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176866		Historic Built Environment	Building 865, Multi-Arch Magazines by Lapota	1998	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-176867		Historic Built Environment	Buildings 883 & 884, Single Arch Magazines by Lapota	ca. 1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-176868		Historic Built Environment	Buildings 910 & 911, 3-Vault Missile Magazines	1998	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-177074		Historic Built Environment	Los Alamitos Channel	2011	Unknown	0.5 - 1 mile
30-177289		Historic Built Environment	1860 Saint John Road	2010	NR: 3CD	1 - 2 miles
30-177290		Historic Built Environment	13040 Del Monte Dr.	2011	NR: 3CD	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-177291		Historic Built Environment	1515 Northwood Road	2010	NR: 3CD	1 - 2 miles
30-177292		Historic Built Environment	13100 Oak Hills Dr.	2010	NR: 3CD	1 - 2 miles
30-177293		Historic Built Environment	13040 Oak Hills Dr.	2010	NR: 3CD	1 - 2 miles
30-177294		Historic Built Environment	1040 Foxburg Road	2010	NR: 3CD	1 - 2 miles
30-177295		Historic Built Environment	136 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177296		Historic Built Environment	156 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177297		Historic Built Environment	196 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177298		Historic Built Environment	200 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-177299		Historic Built Environment	212 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177300		Historic Built Environment	216 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177301		Historic Built Environment	213 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177302		Historic Built Environment	217 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177303		Historic Built Environment	214 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177304		Historic Built Environment	218 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177305		Historic Built Environment	215 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-177306		Historic Built Environment	219 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177307		Historic Built Environment	216 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177308		Historic Built Environment	220 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177309		Historic Built Environment	217 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177310		Historic Built Environment	221 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177311		Historic Built Environment	218 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177312		Historic Built Environment	222 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-177313		Historic Built Environment	219 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177314		Historic Built Environment	223 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177315		Historic Built Environment	220 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177316		Historic Built Environment	224 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177317		Historic Built Environment	221 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177318		Historic Built Environment	225 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177319		Historic Built Environment	222 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-177320		Historic Built Environment	226 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177321		Historic Built Environment	223 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177322		Historic Built Environment	227 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177323		Historic Built Environment	224 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177324		Historic Built Environment	228 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177325		Historic Built Environment	225 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177326		Historic Built Environment	229 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	**Trinomial**	**Resource Type**	**Resource Description**	**Year Recorded**	**NRHP/CRHR Status Code**	**Distance from Project area**
30-177327		Historic Built Environment	226 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177328		Historic Built Environment	230 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177329		Historic Built Environment	227 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177330		Historic Built Environment	231 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177331		Historic Built Environment	228 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177332		Historic Built Environment	232 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177333		Historic Built Environment	229 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-177334		Historic Built Environment	233 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177335		Historic Built Environment	230 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177336		Historic Built Environment	234 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177337		Historic Built Environment	231 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177338		Historic Built Environment	235 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177339		Historic Built Environment	232 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177340		Historic Built Environment	236 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-177341		Historic Built Environment	233 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177342		Historic Built Environment	237 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177343		Historic Built Environment	234 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177344		Historic Built Environment	238 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177345		Historic Built Environment	235 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177346		Historic Built Environment	239 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177347		Historic Built Environment	236 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-177348		Historic Built Environment	240 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177349		Historic Built Environment	237 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177350		Historic Built Environment	241 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177351		Historic Built Environment	238 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177352		Historic Built Environment	242 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177353		Historic Built Environment	239 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177354		Historic Built Environment	243 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-177355		Historic Built Environment	240 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177356		Historic Built Environment	244 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177357		Historic Built Environment	241 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177358		Historic Built Environment	245 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177359		Historic Built Environment	242 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177360		Historic Built Environment	246 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177361		Historic Built Environment	243 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-177362		Historic Built Environment	247 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177363		Historic Built Environment	244 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177364		Historic Built Environment	248 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177365		Historic Built Environment	245 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177366		Historic Built Environment	249 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177367		Historic Built Environment	246 College Park Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles
30-177368		Historic Built Environment	250 College Park Drive	2010	Recommended not eligible for NRHP; Unevaluated CRHR	1 - 2 miles

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-177393		Historic Built Environment	11491 Martha Ann Dr.	2010	Recommended not eligible for NRHP; Unevaluated CRHR	2 - 3 miles
30-177445		Historic Built Environment	Main Gate 1 Entrance Wall, Naval Weapons Station Seal Beach	ca. 1999	Unknown	0 - 0.25 mile
30-179841		Historic Built Environment	Quarters H, J-M | Building 212, Naval Weapons Station, Seal Beach	ca. 1999	Unknown	0 - 0.25 mile
30-179841		Historic Built Environment	Quarters H, J-M | Building 217, Naval Weapons Station, Seal Beach	ca. 1999	Unknown	0.25 – 0.5 mile
30-179841		Historic Built Environment	Quarters H, J-M | Building 218, Naval Weapons Station, Seal Beach	ca. 1999	Unknown	0.25 – 0.5 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-179842		Historic Built Environment	Sea Breeze Village, Sewer Lift Station, Naval Weapons Station, Seal Beach	ca. 1999	Unknown	0.25 – 0.5 mile
30-179843		Historic Built Environment	Sea Breeze Village, Maintenance Building, Naval Weapons Station, Seal Beach	ca. 1999	Unknown	0.25 – 0.5 mile
30-179844		Historic Built Environment	Sea Breeze Village, Mailbox Covers, Naval Weapons Station, Seal Beach	ca. 1999	Unknown	0.25 – 0.5 mile
30-179845		Historic Built Environment	Sea Breeze Village, Building Type VI, Naval Weapons Station, Seal Beach	ca. 1999	Unknown	0.25 – 0.5 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-179846		Historic Built Environment	Sea Breeze Village, Building Type V, Naval Weapons Station, Seal Beach	ca. 1999	Unknown	0.25 – 0.5 mile
30-179847		Historic Built Environment	Sea Breeze Village, Building Type IV, Naval Weapons Station, Seal Beach	ca. 1999	Unknown	0.25 – 0.5 mile
30-179848		Historic Built Environment	Sea Breeze Village, Building Type III, Naval Weapons Station, Seal Beach	ca. 1999	Unknown	0.25 – 0.5 mile
30-179849		Historic Built Environment	Sea Breeze Village, Building Type II, Naval Weapons Station, Seal Beach	ca. 1999	Unknown	0.25 – 0.5 mile
30-179850		Historic Built Environment	Sea Breeze Village, Building Type I, Naval Weapons Station, Seal Beach	ca. 1999	Unknown	0.25 – 0.5 mile

Primary Number	Trinomial	Resource Type	Resource Description	Year Recorded	NRHP/CRHR Status Code	Distance from Project area
30-179859		Historic Built Environment	Naval Weapons Station, Seal Beach, 800 Seal Beach Blvd.	ca. 1999	Nominated for NRHP under Criteria A, C, D	0 - 0.25 mile

APPENDIX G. HISTORIC TOPOGRAPHIC MAPS

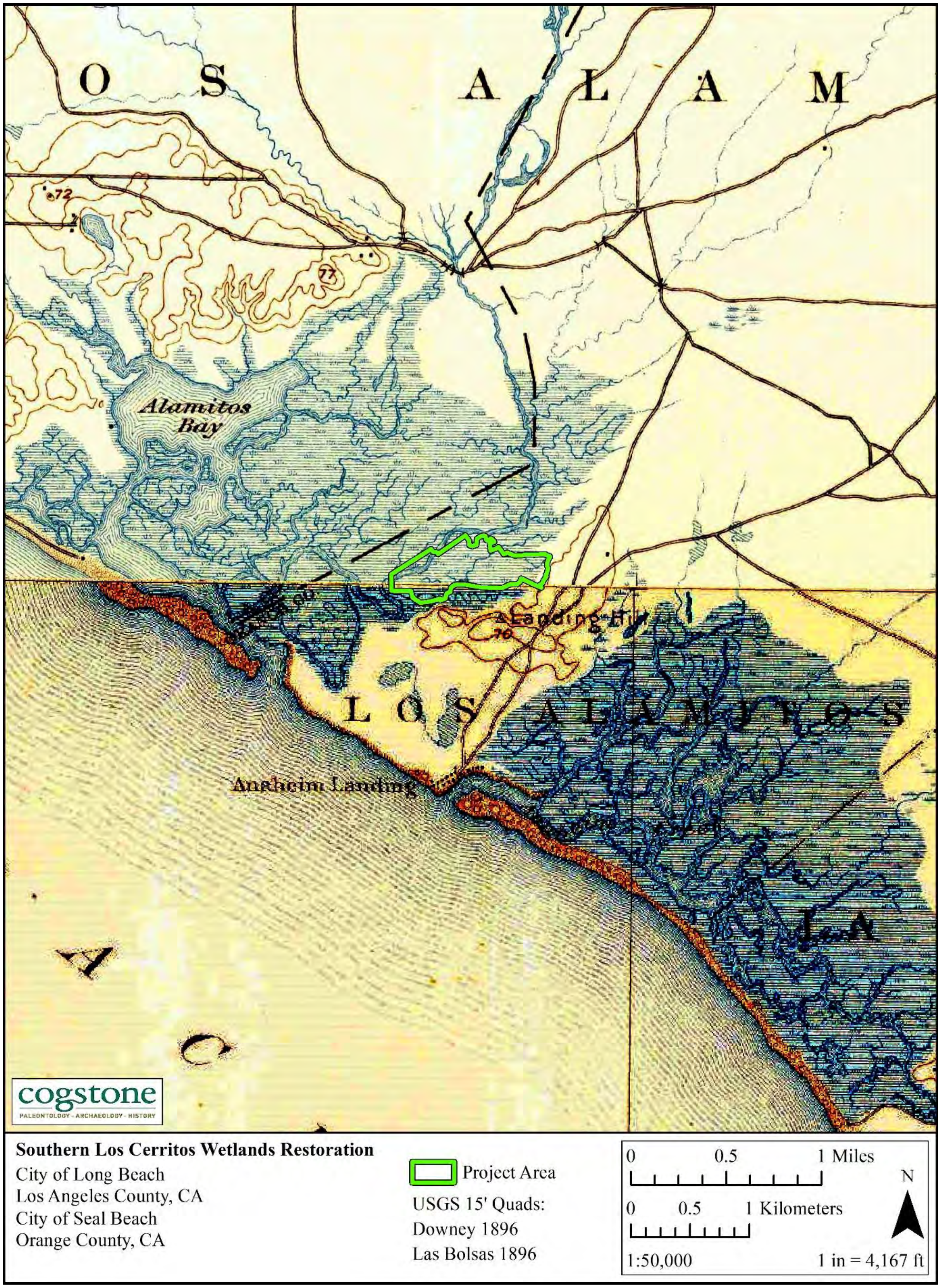


Figure G - 1. 1896 USGS Downey topographic map (1:62,500)

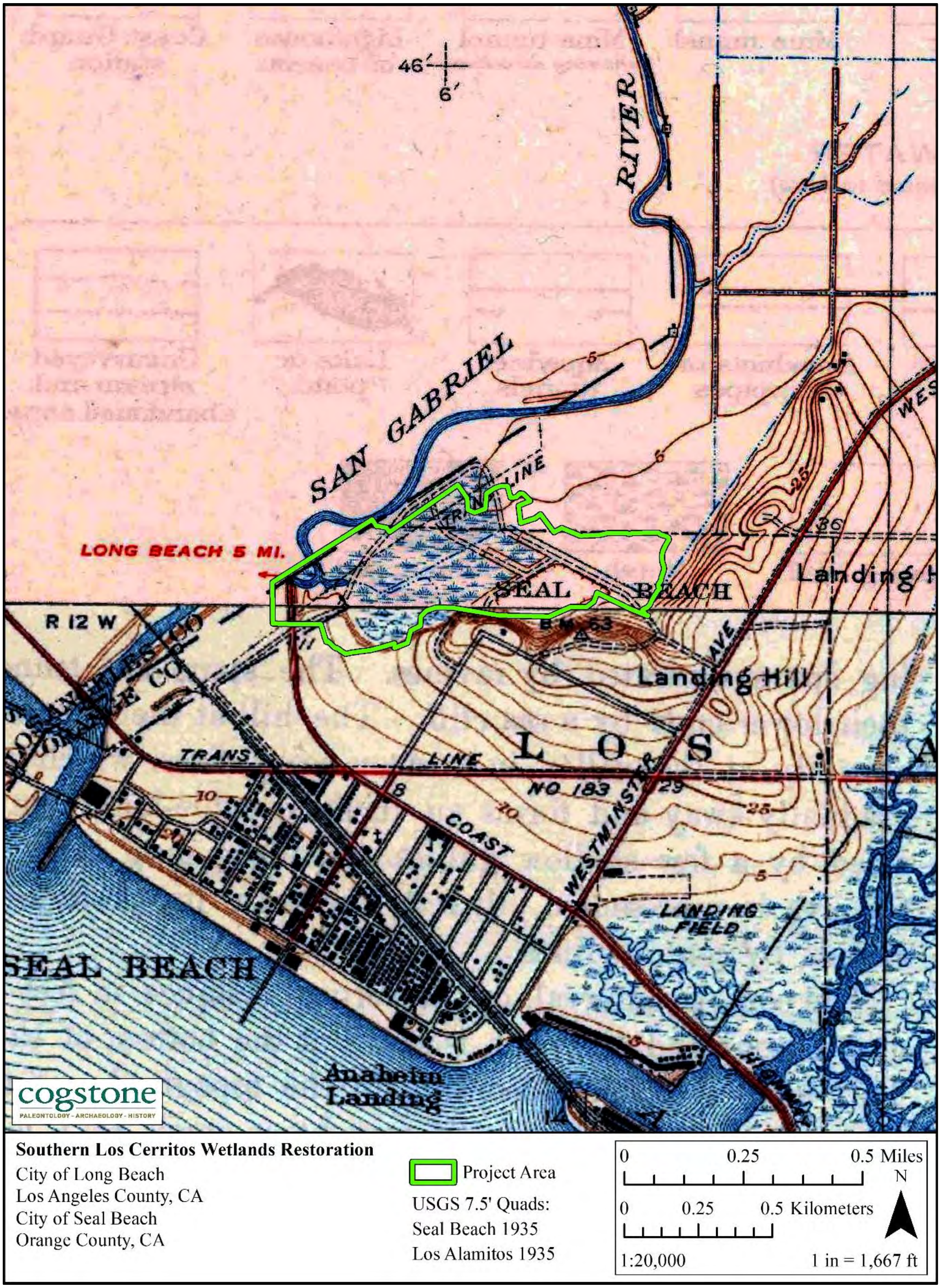


Figure G - 2. 1935 USGS Los Alamitos topographic map (1:31,680)

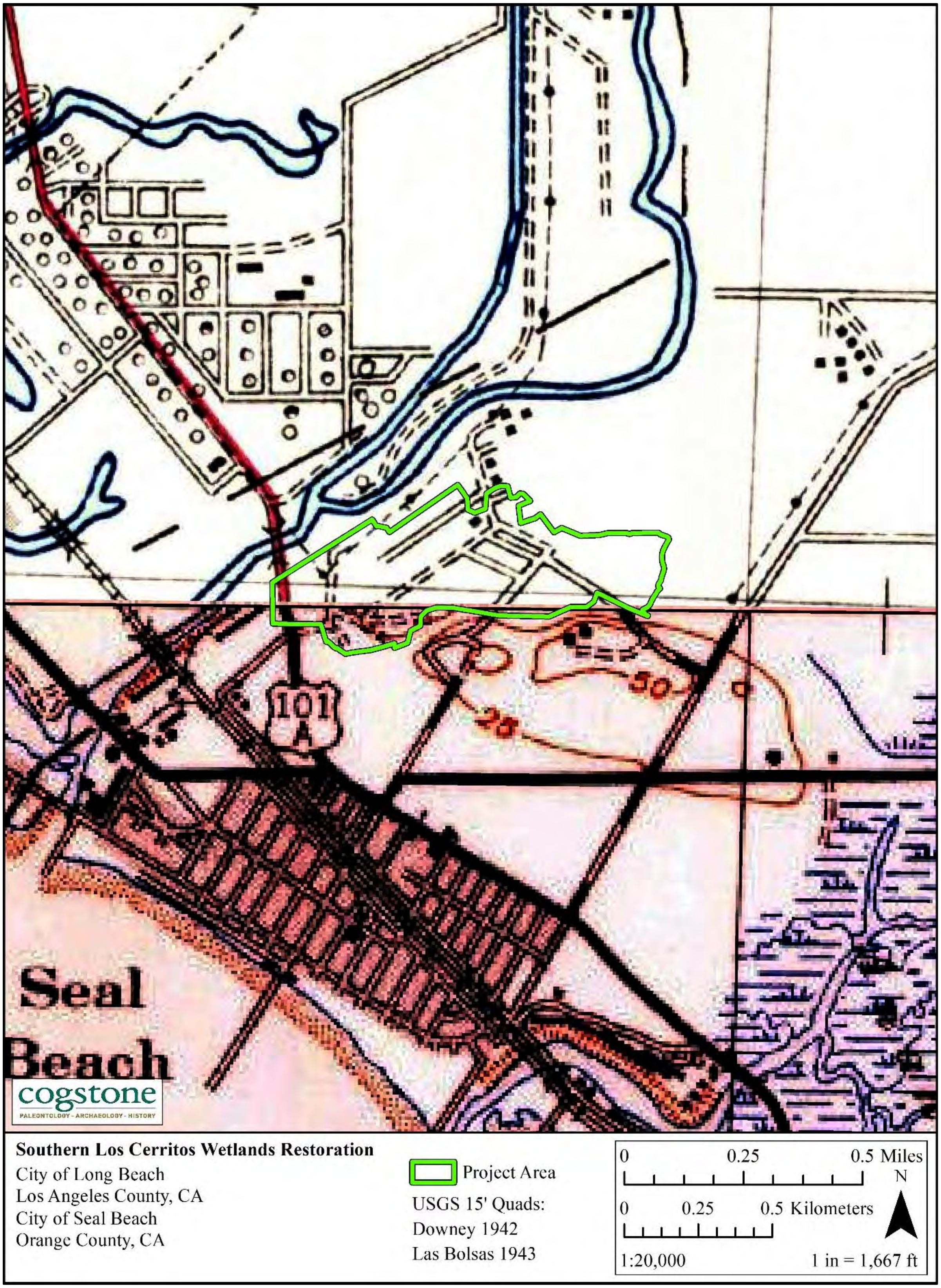


Figure G - 3. 1942 USGS Downey topographic map (1:31,680)

APPENDIX H. SACRED LANDS FILE SEARCH

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

March 21, 2019

Candace Ehringer
ESA

VIA Email to: cehringer@esassoc.com

RE: Los Cerritos Wetlands Restoration Plan Program Environmental Impact Report Project, Los Angeles and Orange Counties

Dear Ms. Ehringer:

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 positive. Please contact the tribes on the attached list for more information. 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 the NAHC. 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: steven.quinn@nahc.ca.gov.

Sincerely,

Steven Quinn

Steven Quinn
Associate Governmental Program Analyst

Attachment

APPENDIX I. SAMPLE TAG INVITATION

Los Cerritos Wetlands Authority

April 27, 2021

Cindi Alvitre
Ti'at Society/Traditional Council of Pimu
3094 Mace Avenue Apt B
Costa Mesa, CA 92626

Re: Invitation to Los Cerritos Wetlands Tribal Advisory Group

Dear Cindi Alvitre,

The Los Cerritos Wetlands Authority (LCWA) hopes this letter find your families healthy during this trying time. The LCWA invites the Ti'at Society/Traditional Council of Pimu to join the Los Cerritos Wetlands Tribal Advisory Group (TAG). I am reaching out to you because you consulted with the LCWA through AB52 for the Los Cerritos Wetlands Restoration Plan Program EIR (PEIR), certified on January 7, 2021. The LCWA acknowledges the importance of the wetlands to your tribe and we would like to continue to consult with you regarding LCWA's habitat restoration plans for a portion of the Los Cerritos Wetlands.

As you know, the LCWA is a local public agency established in 2006 with two state conservancies, the State Coastal Conservancy and San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, and the cities of Long Beach and Seal Beach. The LCWA was established to acquire, manage, and restore the Los Cerritos Wetlands. Since 2006, LCWA has acquired 170 acres of the wetlands, established community restoration programs, and have been actively planning restoration of the entire 500-acre Los Cerritos Wetlands Complex (see attached Project Location Map).

The LCWA has received funding to move forward on project level designs on 105-acres of wetlands in Seal Beach, near Heron Point, called the South Los Cerritos Wetlands Restoration Project (South LCW Project). We are convening the TAG in order to collaborate first with all tribes that consulted with LCWA through the AB52 process, and potentially other Tribes in the future, in order to involve tribal perspectives early on and throughout planning development, and to incorporate traditional ecological knowledge into restoration designs.

As part of the South LCW Project, the LCWA looks to accomplish the following:

- Conduct focused biological, geotechnical, and archeological surveys
- Complete 65% restoration designs and project level CEQA
- Complete a Traditional Cultural Landscape Study of the Los Cerritos Wetlands

Los Cerritos Wetlands Authority · El Encanto · 100 N. Old San Gabriel Canyon Road · Azusa, CA 91702
◆ Office-626.815.1019 ◆ Fax-626.815.1269 ◆

In the PEIR, the LCWA agreed with the consulting Tribes that the Los Cerritos Wetlands is part of a tribal traditional cultural landscape (TCL) and could be significantly impacted by projects conducted within the wetlands. Because the TCL was not formally documented, the LCWA has hired Cogstone Resource Management to conduct a TCL study. This will include:

- A records search for a 5 mile buffer around the entire Los Cerritos Wetlands to put the wetlands into a larger regional context.
- Conducting ethnographic and historic research to document past use of the Los Cerritos Wetlands, and wetlands in general, by the Tongva and Acjachemen. This would include documenting the collection of salt from the wetlands and the connection of the Cerritos wetlands to the villages of Puvungna and Motuucheyngna.
- Collecting oral histories from Tribal community members as recommended by the Tribal representatives and digitally record their explanations of current and past usage of the wetlands. At the end of the project, digital and hard copies of the finalized oral history will be provided to each participant and Tribe. Participants will be compensated for their time.

Currently we have government and private grant funding to compensate each Tribe's participation on TAG. Please see the LCW Tribal Advisory Group framework document attached which includes a more detailed description of this group. It is a draft, so we welcome any feedback you have.

Since there are multiple concurrent planning efforts taking place within the Los Cerritos Wetlands, we want to take this opportunity to clarify the differences between the LCWA's South LCW planning effort and the Los Cerritos Wetlands Oil Consolidation and Restoration Project, a parallel planning process taking place within the North Area of the wetlands. While the LCWA's restoration plan (i.e. PEIR) does encompass the boundaries of much of the Wetlands Oil Consolidation and Restoration Project, that project is led by Beach Oil Mineral Partners (BOMP) and not LCWA. The LCWA is a co-applicant of the project's Coastal Development Permit because the 5-acre property owned by LCWA is involved in the land swap. LCWA has been involved in the planning process in an advisory role to ensure the developed plans for the Los Cerritos Wetlands Oil Consolidation and Restoration Project are in line with LCWA's habitat restoration goals. While the LCWA maintains an active partnership with BOMP for the improvement of the Los Cerritos Wetlands, we do not oversee or advise on their day to day operations or tribal consultation and monitoring efforts.

The formation of the TAG is something the LCWA looks forward to, and we hope that you will join us! We want to schedule the initial intertribal TAG meeting on May 25, 2021 from 10am-12pm. The meeting will be held remotely.

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RE: Invitation to Los Cerritos Wetlands Tribal Advisory Group
April 27, 2021
Page 3

Please contact Sally Gee, Project Manager, (1.) if your tribe is interested in participating in the TAG, (2.) if you can attend the initial TAG meeting on the date and time mentioned above, and (3.) provide us with the name and contact information of your tribal representative(s). If your tribe is no longer interested in participating, please let us know that as well. Ms. Gee is also available to answer any questions you may have. We look forward to working with you.

Sally Gee, LCWA Project Manager
100 N. Old San Gabriel Canyon Rd. Azusa, CA 91702
Office: 626-815-1019 x 104
sgee@rmc.ca.gov

Sincerely,

Mark Stanley
Executive Officer

Attachments:

LCW Tribal Advisory Group_Draft Framework 2021.04
Project Location Map

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♦ Office-626.815.1019 ♦ Fax-626.815.1269 ♦

Los Cerritos Wetlands Tribal Advisory Group
Draft Framework

Lead: Los Cerritos Wetlands Authority (LCWA)

- representatives from the State Coastal Conservancy and the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy

Participants:

- Tribes (traditional knowledge input, design input, and tribal cultural experts)
- LCWA Consultants (present and solicit feedback on designs/ stewardship)

Goal of Tribal Advisory Group from LCWA perspective:

- Establish a long-term relationship between tribal entities and the LCWA
- Incorporate traditional ecological knowledge and tribal perspectives into restoration designs and a Traditional Cultural Landscape Study for the LCW
- Keep tribal community updated on progress of projects
- Provide enhanced access to the LCW to tribal community

Suggested meeting schedule: 2-4 meetings annually depending on project milestones and need through the end of 2022, 2-hour meetings

Topics of discussion:

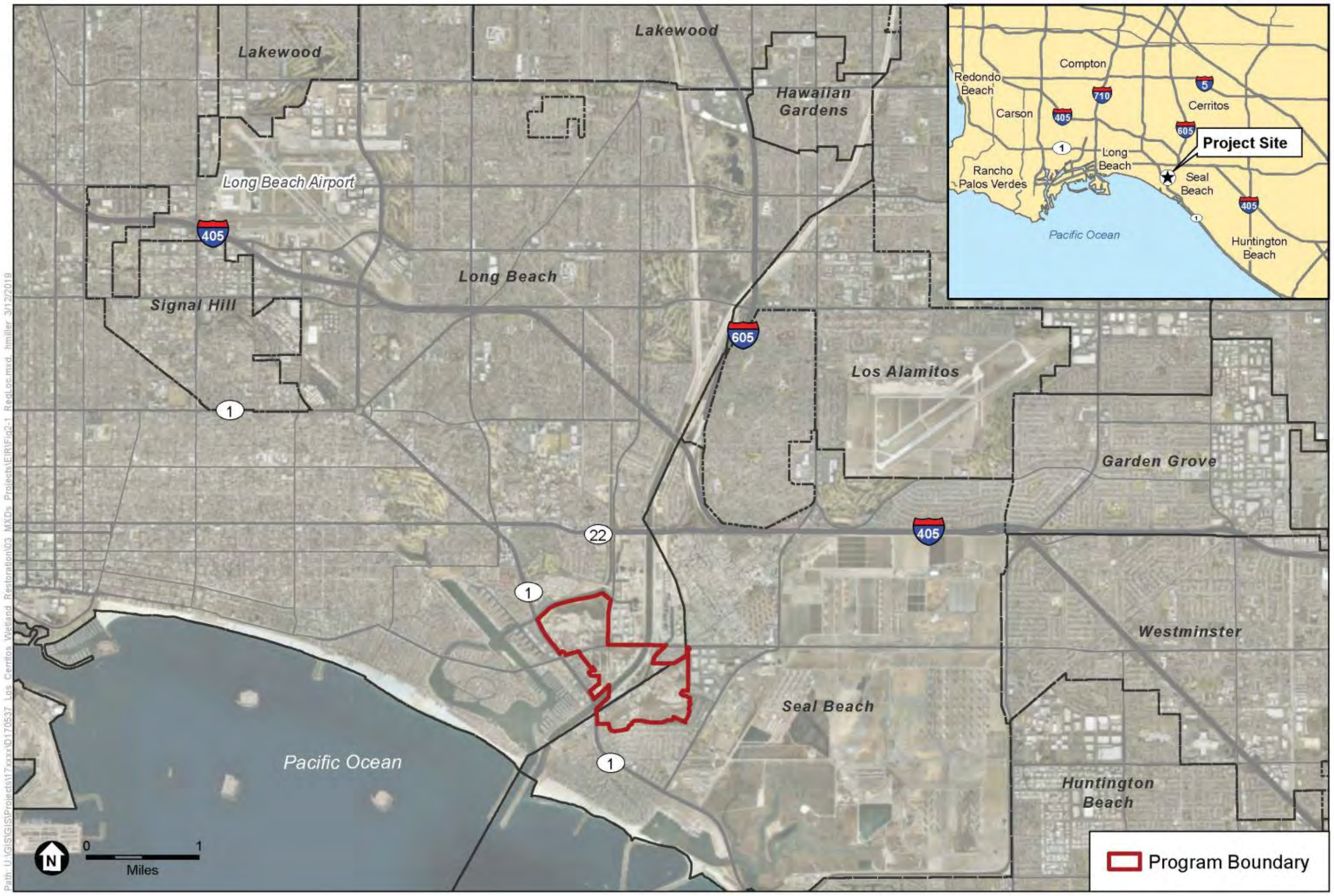
- Tribal Goals and Objectives of restoration in the LCW complex
- Southern Los Cerritos Wetlands Restoration Project
  - Restoration design input
    - Biological resources
    - Cultural resources
    - Landscape design
    - Traditional Ecological Knowledge
  - Public access design input
    - Signage/ educational materials (future phases)
  - Private tribal dedication area
  - Cultural interpretation of technical studies
  - Native American monitoring (data collection/ construction phase)
  - Traditional Cultural Landscape Study
- Public programming/ stewardship activities (could happen now, no funding)

Initial meeting (May 2021):

- Discuss role, purpose, and expectations of the tribal advisory group and compensation
- Establish membership and how to add members (LCWA expectation: start with 6 tribes who consulted on the AB52 process, allow other tribes to ask to join)
- Agreement on topics of discussion
- Update status of LCWA's restoration planning

Funding: Each Tribe will receive a stipend to compensate representatives for meeting participation and document reviews. A Tribe may appoint multiple representatives to the project, but the stipend amount will not increase with additional members.

Exhibit A



SOURCE: ESRI

Los Cerritos Wetlands Restoration Plan Program EIR

Regional Location

ESA

SOURCE: Mapbox, LCWA

Los Cerritos Wetlands Restoration Plan Program EIR

Figure 2-4
South Area

ESA

APPENDIX J. JULY 23, 2021 SITE VISIT SIGN IN SHEET

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PALEONTOLOGY - ARCHAEOLOGY - HISTORY

Los Cerritos Wetlands Tribal Site Visit
7/23/2021

Name	Tribe/Company/Agency	Phone	Email
Christina Conley	Gabrielino Tongva Indians of California	626-407-8761	Christina.marsden@alumni.usc.edu
Christine Pereira	Coastal Commission	714-610-1864	Christine.pereira@coastal.ca.gov
Dani Ziff	Coastal Commission	310-991-5042	Dani.ziff@coastal.ca.gov
Sandonné Goad	Gabrielino-Tongva Nation	951-807-0479	sgoad@gabrielino-tongva.com
Gabrielle Crowe	Gabrielino-Shoshone Tribe	909-615-9837	grochacpp@gmail.com
Clark Stevens	New West Land Co.	310-614-6636	Clark@newwestland.com
Amber Dobson	Coastal Commission	562-590-5071	Amber.dobson@coastal.ca.gov
Sam Dunlap	Gabrielino Tongva Tribe	909-262-9351	samdunlap@earthlink.net
Eric Zahn	Tidal Influence	858-353-6113	eric@tidalinfluence.com
Joyce Perry	Juaneño Band of Mission Indians	949-293-8522	kaamalam@gmail.com

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APPENDIX K. INTERVIEW CONSENT FORM AND QUESTIONS

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PALEONTOLOGY - ARCHAEOLOGY - HISTORY

CONSENT TO PARTICIPATE IN RESEARCH

Los Cerritos Wetlands Landscape Study

Cogstone will be conducting a study to identify past, present and future use of the Los Cerritos Wetlands, led by Desiree Martinez, Cogstone Archaeologist. Interviews will be used for the landscape study for the Los Cerritos Wetlands Authority. You were selected as a possible participant in this study because of your knowledge and expertise. Your participation in this research study is voluntary.

LARGER PROJECT BACKGROUND

The Los Cerritos Wetlands Authority has received funding to move forward on project level designs on 105-acres of wetlands in Seal Beach, near Heron Point, called the South Los Cerritos Wetlands Restoration Project (South LCW Project). As part of the South LCW Project, the LCWA looks to accomplish the following:

- Conduct focused biological, geotechnical, and archeological surveys
- Complete 65% restoration designs and project level CEQA
- Complete a Traditional Cultural Landscape Study of the Los Cerritos Wetlands

Cogstone has been hired to conduct the Traditional Cultural Landscape Study, including interviewing Tribal members from the Gabrielino Tongva and Acjachemen Nations.

WHAT SHOULD I KNOW ABOUT A RESEARCH STUDY?

- Whether or not you take part is up to you.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.

WHY IS THIS RESEARCH BEING DONE?

This project is being done to better understand the Tongva and Acjachemen relationship to the Los Cerritos Wetlands, salt water marshes, and the greater cultural landscape, encompassing 3 miles around the Los Cerritos Wetlands, including the villages of Puvungna and Motuucheyngna. The project outcomes—summary within the cultural landscape study to inform the restoration.

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Federal Certifications WOSB, EDWOSB, SDB
State Certifications DBE, WBE, SBE, UDBE

ARE THERE ANY RISKS IF I PARTICIPATE?

- Although unlikely, there may be questions which bring up sensitive topics. You may choose to not answer anything.
- You have the option of remaining anonymous within the report

ARE THERE ANY BENEFITS IF I PARTICIPATE?

You will be compensated $250 for your participation. Furthermore, it is our hope that your communities and all people of Los Angeles will benefit from this research in the form of better-informed policy and clearer understandings of what it will take for Los Angeles to become water sustainable and respect Indigenous sovereignty.

WHAT WILL HAPPEN IF I TAKE PART IN THIS STUDY?

If you volunteer to participate in this study, the researcher(s) will ask you to do the following:

- Answer the question listed in the document "LCW Tribal Interview Questions"
- Interviewer will write notes during the interview
- Consent to audio recording of the interview
- Consent to video recording of the interview
- Consent to digital photographs to be taken during the interview

You will be given a copies of:

- audio recording of the interview
- video recording of the interview, if any
- photos photographs to be taken during the interview
- transcript of audio and/or video recording

WILL INFORMATION ABOUT ME AND MY PARTICIPATION BE KEPT CONFIDENTIAL?

If you choose to use your real name or consent to being recorded on a group video, your information will not be kept confidential.

If you request confidentiality, researchers will do their best to make sure that your private information is kept confidential. Even so, participating in research may involve a loss of privacy or a breach in confidentiality, especially if you are participating in conversation circles or events with other people beyond the research team. Study data will be physically and electronically secured, but with electronic data there is always a risk of breach of data security.

Use of personal information that can identify you:

You will be identified as yourself unless otherwise requested. You may request to use an alias or to be kept out of a video.

How information about you will be stored:
Data produced by this project will include video/audio recordings of interviews and transcripts of these recordings, as well as written notes. These materials will be kept on a password protected server at Cogstone Resource Management. Participants will be provided copies of materials on a DVD or flash drive.

People and agencies that will have access to your information:
Research team members will have access to the recordings for the purposes of transcription and analysis. You can decide whether you want your name or an alias to be used in publications.

How long information from the study will be kept:
Videos, audio, written researcher notes and transcripts will be kept in perpetuity at Cogstone and may be donated to a research facility for future research.

WILL I BE PAID FOR MY PARTICIPATION?

Interviewees and conversation circle participants will receive a $250 honorarium in gratitude for your participation. Please fill out and return a W9 to Desiree

WHO CAN I CONTACT IF I HAVE QUESTIONS ABOUT THIS STUDY?

The research team:
If you have any questions, comments, or concerns about the research, you can talk to Desiree Martinez dmartinez@cogstone.com (626) 722-1938.

WHAT ARE MY RIGHTS IF I TAKE PART IN THIS STUDY?

- You can choose whether you want to be in this study, and you may withdraw your consent and discontinue participation at any time.
- You may refuse to answer any questions that you do not want to answer.

Los Cerritos Wetlands Landscape Study Interviews (Cogstone 5418)

Los Cerritos Wetlands Consent Form

Name:			
Tribal Entity:			
Address:			
Phone:		**Email:**	

Check all that apply:

I Agree To:	Yes	No
… participate in this study	❑	❑
… have my name used within the Cultural Landscape study	❑	❑
…audio recording during the interview	❑	❑
…video recording of the interview	❑	❑
…photographs to be taken during the interview	❑	❑

Signature: ______________________________ *Date:* ______________________________

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PALEONTOLOGY - ARCHAEOLOGY - HISTORY

Los Cerritos Wetlands Questions

1. How did your tribal community use the Los Cerritos Wetlands in the past?
2. How did your tribal community use salt marshes in the past?
3. Have you or your family personally used the Los Cerritos in the past? If yes please explain how.
4. Do you know of other families that have used the Los Cerritos Wetlands?
5. Do you have any information regarding the connection of the Los Cerritos wetland and the villages of Puvungna or Motuucheyngna?
6. Do you know of other places, villages, water sources etc. that have connections to the Los Cerritos Wetlands?
7. What plants and animals within salt marshes, and Los Cerritos Wetlands in particular, are important to your tribal community?
8. What types of activities would you like to be able to do within the Los Cerritos Wetlands in the future?
9. What types of spaces would your tribal community like to have in the Los Cerritos Wetlands?
10. Anything to add?
11. Recommendations or other people to interview?

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CONFIDENTIAL APPENDIX L. SURVEY RESULTS AND EXTENDED PHASE I TESTING LOCATON MAPS

APPENDIX M. SOILS MAP

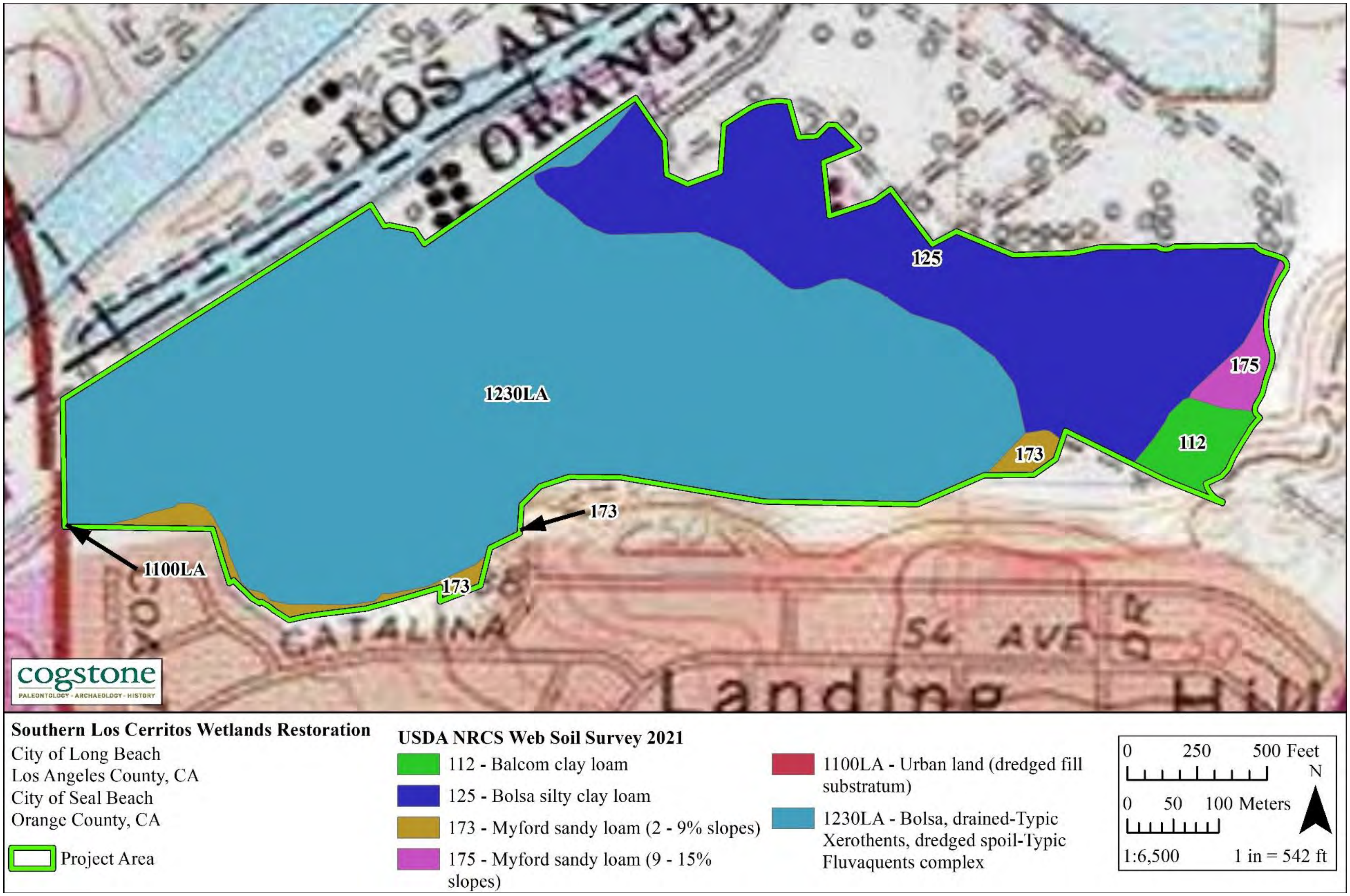

Figure M - 1. Soils map

CONFIDENTIAL APPENDIX N. DPR SITE RECORDS

Appendix G: Southern Los Cerritos Wetlands Restoration Project Sampling and Analysis Report

October 2022
Southern Los Cerritos Wetlands Restoration Project

ANCHOR QEA

Sampling and Analysis Report

Prepared for Moffatt & Nichol

October 2022
Southern Los Cerritos Wetlands Restoration Project

Sampling and Analysis Report

Prepared for
Moffatt & Nichol
555 Anton Boulevard, Suite 400
Costa Mesa, California 92626

Prepared by
Anchor QEA, LLC
9700 Research Drive
Irvine, California 92618

Project Number: 210090-01.01

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ABBREVIATIONS

ASTM	ASTM International
bgs	below ground surface
Complex	Los Cerritos Wetlands Complex
DTSC-SL	California Department of Toxic Substances Control modified screening level
ERL	effects range low
ERM	effects range median
Geosyntec	Geosyntec Consultants
HSA	hollow stem auger
LCWA	Los Cerritos Wetlands Authority
mg/kg	milligram per kilogram
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PEIR	Program Environmental Impact Report
SAP	Sampling and Analysis Plan
SPT	standard penetration testing
SVOC	semivolatile organic compound
TOC	total organic carbon
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

1 Introduction

The Los Cerritos Wetlands Authority (LCWA) is proposing to restore tidal wetlands and other habitats within the South LCWA site (also known as the Hellman Ranch property), which is located in Seal Beach, California (Figure 1). The South LCWA site is part of the Los Cerritos Wetlands Complex (Complex) that comprises approximately 503 acres of publicly and privately owned open space that is mostly degraded tidal and non-tidal salt marsh and upland fill. The LCWA owns approximately 166 acres of the Complex, including the South LCWA site. The South LCWA site is approximately 105 acres and includes former sumps, landfills, and contaminated areas from prior oil operations (Figure 2). Restoration of the South LCWA site is one of the near-term activities identified in the Program Environmental Impact Report (PEIR; ESA 2020).

The refined restoration plan for the South LCWA site is detailed in *The Los Cerritos Wetlands Habitat Restoration Plan* (CRC 2021) and is presented in Figure 3. As part of this plan, soil will be regraded to create elevations suitable for wetland habitats, a new tidal channel will be excavated, and the existing road through the South LCWA site will be retained with a bridge or culvert constructed at the new channel. The existing road will also be raised to protect against flooding, and a berm or floodwall will be constructed along the northern perimeter of the site for additional flood protection. Excavated soil from the project is planned for on-site reuse or off-site disposal at a suitable location.

A geotechnical and environmental site assessment was conducted at the South LCWA site to help determine the design for flood management (e.g., berms and flood walls) and the stability of the grading site, to evaluate cut materials to determine their suitability for safe and effective reuse on site, and to evaluate the residual chemical concentrations at the expected new post-excavation soil surface (also known as the Z-layer). This Sampling and Analysis Report summarizes the soil sampling event and evaluates data results.

1.1 Project Description

The Complex, which borders Los Angeles and Orange counties, affords the opportunity to restore salt marsh, seasonal wetlands, and other freshwater wetlands. The Southern California Wetlands Recovery Project, a partnership of 17 state and federal agencies, has identified the acquisition and restoration of the Los Cerritos Wetlands as a high regional priority. The restored habitat will provide multiple benefits, including provision of critical habitat for listed species and other fish and wildlife, carbon sequestration, improved flood control, sea level rise resiliency, preservation of tribal cultural resources, and improved public access to open space.

The Complex adjoins the lower reach of the San Gabriel River where, prior to channelization, the mouth of the river migrated back and forth across the coastal plain. Historically, the Complex covered approximately 2,400 acres and stretched approximately 2 miles inland, varying from freshwater and brackish wetlands in its inland areas to salt marsh closer to the ocean. Channelization of the San Gabriel River began in the 1930s and cut off tidal action to much of the wetland area. The size of the historical wetlands has been reduced by farming, placement of fill and excavation of channels and basins for oil fields and landfill burn dumps, and urban development. There is ongoing oil production throughout the area, and much of the remnant salt marsh is within a grid of dikes, berms, roadways, and levees. The Haynes Cooling Channel, which services an upstream power plant, also bifurcates sections of the Complex. Today, remnants of the historical wetlands occur in degraded patches divided into the following four areas: North, Central, Isthmus, and South.

The LCWA developed the PEIR for the Complex, which analyzed potential impacts of the proposed program (ESA 2020). The PEIR included restoration and public access designs to support environmental review and identified the South LCWA site as one of the near-term projects. The refined restoration plan for the South LCWA site was designed to be less impactful than those plans analyzed in the PEIR, and it includes more details on different salt marsh habitats (CRC 2021).

1.2 Review of Previously Collected Data

Several studies were conducted at the site from 1987 to 2006 (BCL Associates 1987; Converse 1996, 1997, 1998a, 1998b; Geomatrix Consultants 2001; Anchor 2004, 2006a, 2006b). In 2003, Anchor Environmental and Everest International Consultants conducted a review of previous site investigation reports conducted from 1987 to 2002 (Anchor and Everest 2003). In 2017, Geosyntec Consultants (Geosyntec) performed an environmental review of the Los Cerritos Wetlands, including the South LCWA site, based on existing environmental documentation (Geosyntec 2017). Sampling locations from these studies are presented in Figure 4.

Previous investigations characterized contamination based on the magnitude of concentrations and sources. Identified sources of contamination included oil wells, oil pipelines, petroleum sumps, Area 18 (area where asphalt-like material was stockpiled and buried), and a construction and demolition landfill. Contaminants present at the site included total petroleum hydrocarbons (TPH), metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pesticides, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). The highest TPH concentration measured at the South LCWA site was 149,000 milligrams per kilogram (mg/kg). Lead was identified as the metal likely to be of greatest concern, with concentrations up to 240 mg/kg. PAHs, PCBs, and pesticides have not been analyzed to the same extent as other contaminants. Additional details on previous investigations are provided in environmental reviews conducted by Geosyntec (2017) and Anchor Environmental and Everest International Consultants (2003).

1.3 Objectives

Because the South LCWA site is known to contain residual contaminants as a result of historical oil extraction operations, geotechnical and chemistry data were collected to verify functionality of the restoration design and ensure that future site conditions do not represent a potential threat to human health or ecological receptors. Previous investigations identified several areas with soil contamination at varying depths and magnitudes. A review of previously collected data relative to the revised restoration plan for the site indicates several areas that have not been investigated, including the south side of the site where the new tidal channel is proposed. Similarly, the northeastern side of the site—where the berm will be constructed—has not been investigated to determine soil stability to support added fill material. This geotechnical and environmental site assessment focused on evaluating those areas of the South LCWA site with limited data for three primary objectives:

1. Chemically and geotechnically characterize the overlying cut material to determine suitability for safe and effective reuse on site or for off-site disposal.
2. Evaluate the chemical concentrations at the anticipated soil surface that will be exposed after excavation (i.e., the Z-layer) to support a design that meets limits of defined human health and ecological risk thresholds in the newly restored environment.
3. Evaluate the existing geotechnical site qualities where berms and other structures (e.g., culverts and/or bridges) will be constructed to determine material strength for supporting the planned structures.

2 Field Collection Program

Sample collection, handling, and processing procedures were implemented in accordance with the Sampling and Analysis Plan (SAP; Anchor QEA 2021).

2.1 Soil Collection

Field sampling was conducted on June 15 through 17, 2022. Soil borings were collected at 15 stations for geotechnical and chemical sampling and testing purposes. Geotechnical sampling locations were chosen to test for physical properties of soils planned for excavation or filling, to estimate soil bearing capacity and other strength-related properties, and to evaluate slope stability of fill and cut slopes. These stations targeted the new berm, culverts proposed for removal, and the potential landfill cut. Environmental sampling locations were chosen to represent the physical and chemical characteristics of soils proposed for removal. Environmental borings were used to evaluate cut material for reuse on site or off-site disposal and to evaluate the Z-layer.

Initially, 18 stations were proposed in the SAP (Anchor QEA 2021); however, three stations were removed from the program or deferred to a later date in coordination with LCWA. Two stations (LCW-14 and LCW-15), located along 1st Avenue, were removed from the program because recent geotechnical data were collected in this area as part of the LCWA Watermain Rehabilitation Project (Kleinfelder 2022). Sampling locations as part of the Watermain Rehabilitation Project are presented in Appendix A. One additional station (LCW-16), which included the 100-foot boring for seismic site classification, was deferred to a later date. Two stations were moved from locations proposed in the SAP, including stations LCW-17 and LCW-18. Station LCW-17 was moved due to an existing utility, while station LCW-18 was moved within the limits of the proposed fill area to provide better access for the drill rig. Proposed and actual sampling locations are presented in Figures 5 and 6.

Borings were collected at five stations using a track-mounted limited access hollow stem auger (HSA) drill rig operated by Cascade Drilling, LP, and ten stations using a hand auger. The hand auger was used to target areas with limited access for the drill rig or areas with minimal soil proposed for removal. Geotechnical borings were advanced to a depth of 25 feet below ground surface (bgs). Standard penetration testing (SPT) was performed using a standard split spoon sampler at approximately 5-foot intervals to boring termination. Geotechnical samples were collected from the split spoon sampler for characterization and strength testing of the soils. For chemistry testing borings, samples were collected continuously to the proposed excavation depth and Z-layer (0.5 foot beyond proposed excavation depth), which represents the future exposed elevation post-restoration. All borings were collected to the target depth, except LCW-01, LCW-06, and LCW-11. All three locations were sampled with a hand auger. After multiple attempts at LCW-06, a successful boring could not be collected with a hand auger due to asphalt and other debris. At stations LCW-01 and LCW-11, refusal was encountered slightly below the target depth. Station coordinates, existing and proposed habitats, existing and proposed elevations, and boring depths for each station are presented in Table 1.

2.2 Sample Processing

The lithology of each boring was recorded on individual boring logs and representative intervals from each boring were photographed. Field logs and sample photographs are provided in Appendices B and C, respectively.

2.2.1 Chemical Samples

VOC samples were collected from one sample interval per composite prior to homogenization and compositing to minimize loss of volatile constituents during handling. Soil from each 2-foot interval and the entire length of each boring to the depth of the expected cut were collected and archived to allow for additional chemical analyses, if necessary. The Z-layer from each station, consisting of the 0.5-foot interval below the depth of the expected cut, was also collected and archived to characterize the newly exposed surface layer. As previously described, refusal was encountered just below the target depths at stations LCW-01 and LCW-11; therefore, Z-layer archives were not collected from these stations.

Composite samples were created for chemical analysis. The soil sample compositing scheme and testing strategy is presented in Table 2. Each composite consisted of two stations, except LCW-05 and LCW-07, which were tested individually. Station LCW-05 was located within the historical landfill; therefore, compositing was not planned because soil quality was believed to potentially be inconsistent with other sampling locations. Station LCW-07 was tested individually because a successful boring was not collected at station LCW-06. A proportionate volume of the homogenized soil from each boring, based on relative boring lengths, was combined to form each composite sample. After completion of compositing, samples were placed into jars appropriate for physical and chemical analyses, and all jars will be firmly sealed with Teflon-lined lids. A subsample was collected for particle size analysis and placed in a zip-top bag. All chemistry samples were stored in coolers with ice and delivered to Eurofins Calscience, Inc., located in Garden Grove, California. Particle size samples were stored at room temperature and shipped to GeoTesting Express, Inc., located in Acton, Massachusetts. Proper chain-of-custody procedures were followed.

2.2.2 Geotechnical Samples

For each SPT performed, blow counts were recorded for each 6-inch interval of the split spoon driven into the subsurface. Split spoon samplers were retrieved and opened. The percent of recovery was noted, and lithology was interpreted in accordance with ASTM International (ASTM) D2488. A minimum of one subsurface soil sample was collected from each distinct stratum of the soil boring and placed into a zip-top bag. Laboratory test assignments were determined based on the encountered soil types. The geotechnical testing strategy is presented in Table 3. All geotechnical samples were stored at room temperature and shipped to GeoTesting Express, Inc. Proper chain-of-custody procedures were followed.

3 Chemical Analyses Results

Chemical analyses were conducted on soil to determine the suitability of material for reuse on site and evaluate the chemical concentrations at the expected new soil horizon or Z-layer. Chemical analyses of composite samples representing overlying cut material included total solids, particle size, salinity, total organic carbon (TOC), Title 22 metals, PAHs, organochlorine pesticides, PCB Aroclors, TPH, and VOCs. As previously described, VOC samples were collected from one interval per composite prior to homogenization and compositing in order to minimize loss of volatile constituents during handling. Based on the results of composite chemistry, Z-layer samples were analyzed for metals and 2-foot intervals from stations LCW-03 and LCW-04 were also analyzed for PCB Aroclors. Analytical testing was performed by Eurofins Calscience, Inc. Method detection limits, reporting limits, and raw data for the analyses are presented in the chemistry laboratory reports in Appendix D. Particle size analysis was conducted by GeoTesting Express, Inc.

Results of chemical analyses were compared to effects range low (ERL) and effects range median (ERM) values (Long et al. 1995) to evaluate potential ecological impacts. While the wetland is not specifically intended for humans, future activities may include walking trails; therefore, results of chemical analyses were also compared to California Department of Toxic Substances Control modified screening levels (DTSC-SLs; DTSC 2020) to evaluate potential human health impacts. ERLs and ERMs were developed for marine sediments from a large dataset where results of both benthic organism effects (e.g., toxicity tests and benthic assessments) and chemical concentrations were available for individual samples (Long et al. 1995). To derive these guidelines, chemical values for paired data demonstrating benthic impairment were sorted in ascending chemical concentration. The 10th percentile of this rank order distribution was identified as the ERL value, and the 50th percentile was identified as the ERM value. DTSC-SLs were developed based on U.S. Environmental Protection Agency Regional Screening Levels to evaluate human health risk at California sites. For this project, concentrations were compared to DTSC-SLs for residential land use.

3.1 Composite Samples

Results of physical and chemical analyses of composite samples are presented in Table 4. Because VOC were analyzed on individual cores prior to compositing, results are presented separately in Table 5. All results are expressed in dry weight unless otherwise indicated. Composite sample results are summarized as follows:

- Salinity ranged from 2.02 to 5.75 grams per kilogram.
- TOC ranged from 0.285% to 1.2%.
- Several metals were detected in composite samples. Arsenic, copper, and nickel exceeded the ERL value in at least one sample. Arsenic also exceeded the DTSC-SL for residential land use; however, arsenic is a naturally occurring metal found throughout California at background concentrations that commonly exceed soil screening criteria.

- PAHs were detected at low concentrations in six of the seven composite samples. Total PAHs were less than the ERL value in all samples. All PAH concentrations were less than DTSC-SLs.
- The only pesticides detected were DDTs, dieldrin, and cis-nonachlor. Total DDTs and dieldrin exceeded the ERL value in at least one sample. All pesticide concentrations were less than DTSC-SLs.
- PCB Aroclors were detected in one sample (LCW-03/04-COMP). In this sample, total PCB Aroclors exceeded the ERL value. All PCB concentrations were less than DTSC-SLs.
- TPH (C6-C44) ranged from 15 to 800 mg/kg. All TPH concentrations were less than DTSC-SLs.
- All VOC concentrations were less than DTSC-SLs.

Although copper, nickel, DDTs, dieldrin, and total PCB Aroclors exceeded ERL values, all concentrations were less then ERM values. All concentrations except for arsenic were also less than DTSC-SLs. As previously described, arsenic is a naturally occurring metal found throughout California at background concentrations that commonly exceed soil screening criteria. All arsenic concentrations measured in composite samples at the South LCWA site were less than background levels for soil in Southern California (Chernoff et al. 2008).

3.2 Sample Intervals from Stations LCW-03 and LCW-04

Based on the results of composite chemistry, individual 2-foot intervals from stations LCW-03 and LCW-04 were analyzed for PCB Aroclors to determine if concentrations at one of these stations or within one or more sample intervals may be at a level of concern. PCB results for individual sample intervals are presented in Table 6. All results are expressed in dry weight unless otherwise indicated. PCB Aroclors were not detected in individual 2-foot intervals, except the 0- to 2-foot interval from station LCW-03. At this station, total PCB Aroclors exceeded the ERL value but were less than the ERM value. All PCB concentrations were less than DTSC-SLs.

3.3 Z-Layer Samples

Z-layer samples represent the anticipated soil surface that will be exposed after excavation. Based on the results of composite chemistry, Z-layer samples from each station were analyzed for metals, and Z-layer samples from stations LCW-03 and LCW-04 were also analyzed for PCB Aroclors. Z-layer chemistry results are presented in Table 7. All results are expressed in dry weight unless otherwise indicated. Arsenic, copper, lead, and nickel exceeded ERL values in at least one sample; however, all concentrations were less then ERM values. All concentrations except arsenic were less than DTSC-SLs (similar to composite samples). All arsenic concentrations were less than or similar to background levels for soil in Southern California (Chernoff et al. 2008).

3.4 Quality Assurance/Quality Control

A review of analytical results was conducted to evaluate the laboratory’s performance in meeting quality assurance/quality control guidelines outlined in the SAP (Anchor QEA 2021). Data validation reports prepared by Anchor QEA, LLC, are presented in Appendix E. The results of this assessment concluded that most data were acceptable as reported or qualified; however, two results were rejected. Antimony recovered below 30% in the matrix spike and matrix spike duplicate analyzed on sample LCW-02-Z-061522. Low recovery of antimony is a common issue when silicates are present because antimony can form insoluble oxides during the nitric acid digestion. Associated sample results that were below detection were rejected. Although two results were rejected, the data reviewed from South LCWA met the data quality objective of 95% completeness.

4 Geotechnical Testing Results

As part of this investigation, 15 borings were conducted (see Section 2), including six borings for geotechnical testing purposes (see Table 1). Five of these borings were conducted with a track-mounted HSA drill rig and one was collected with a hand auger. Boring logs are provided in Appendix B. This subsurface investigation was conducted to assess the soil strata and provide engineering parameters for soil under the proposed berm, the proposed culvert (or bridge) on the roadway, and the proposed culverts to be removed. Geotechnical testing conducted included the following:

- Nineteen moisture content tests (ASTM D2216)
- Nine particle size analysis tests (ASTM D6913)[1]
- Seven Atterberg limit tests (ASTM D4318)

The laboratory testing breakdown for each boring are summarized in Table 3. Geotechnical testing results are included in the full laboratory report in Appendix F.

Moisture content ranged from 2.2% to 189.9%. Based on particle size analysis, percent fines ranged from 8.9% to 66.4%. In addition to particle size analysis on geotechnical borings, particle size analysis was conducted on chemical boring composite samples to support the environmental site assessment. Percent fines on the chemical boring composite samples ranged from 39.3% to 73.1% (Table 4). Along with particle analysis, Atterberg limit tests were conducted on geotechnical samples. The plasticity index of those samples ranged from 9 to 51.

The lithology was observed using visual classification methods within the soil cores sampled through SPT split spoons as well as hand auger cuttings. Two borings were conducted to 26.5 feet, including LCW-17 and LCW-18. These two borings showed a dense silty sand to sandy silt layer in the upper 10 feet. Beneath this layer was a 10-foot-thick layer of fat clay between 10 and 20 feet bgs. Beneath this unit was a silty clayey sand layer that extended to the termination depth of the boring at 26.5 feet bgs. Borings LCW-05, LCW-09, and LCW-13 were drilled to a depth of 10.5 feet bgs. All three borings showed consistent sandy silt with clay material throughout. This layer was generally between soft and medium stiff, with an SPT N-value range of 4 to 25.

Hand augers (including both the chemical and geotechnical borings; Appendix B) were collected to a depth range of 1.3 to 12.6 feet bgs. The upper unit, observed to a depth range between 2.5 and 5.5 feet bgs, consisted of either sand or silty sand. In most cases, the middle layer consisted of a soft or very soft clay. The overall fines content of both layers varied from boring to boring. For example, LCW-07 consisted of a poorly graded sand in the upper unit and a sandy clay in the lower unit.

[1] Seven additional particle size tests were performed on composite chemistry samples to support the environmental site assessment. Results for these samples are presented in Table 4, and the laboratory report is provided in Appendix F.

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Tables

Table 1
Station Coordinates, Existing and Proposed Elevations, and Boring Depths for Each Sampling Location

Core Sample ID	Purpose	Existing Habitat Type	Proposed Habitat and/or Construction Element	Latitude (Decimal Degrees)[1]	Longitude (Decimal Degrees)[1]	Existing Elevation (feet NAVD88)	Proposed Cut Elevation (feet NAVD88)[2]	Depth of Z-layer below Proposed Elevation (feet)	Target Boring Depth (feet bgs)[3]	Actual Boring Depth (feet bgs)	Sampling Equipment
LCW-01	Chemical	Ruderal uplands	Low intertidal (new channel)	33.75102	-118.10395	8.6	-1.8	0.5	10.9	10.5	Hand auger
LCW-02	Chemical	Ruderal uplands	Cordgrass marsh	33.75242	-118.10219	8.5	2.9	0.5	6.1	6.1	Hand auger
LCW-03	Chemical	Ruderal uplands	Mid-marsh	33.75114	-118.10224	8.1	4.3	0.5	4.3	4.3	Hand auger
LCW-04	Chemical	Ruderal uplands	Mid-marsh	33.75167	-118.10111	9.9	4.3	0.5	6.1	6.1	Hand auger
LCW-05	Chemical and geotechnical	Ruderal uplands	Mid-marsh (landfill cut)	33.74977	-118.10213	13.5	4.3	0.5	9.7	10.5	HSA drill rig
LCW-06	Chemical	Ruderal uplands	Low intertidal (new channel)	33.74996	-118.10188	11.2	-1.8	0.5	13.5	1.7	Hand auger
LCW-07	Chemical	Ruderal uplands	Low intertidal (new channel)	33.75024	-118.09962	10.3	-1.8	0.5	12.6	12.6	Hand auger
LCW-08	Chemical	Berm between salt flat and southern coastal salt marsh	Mid-marsh (berm cut)	33.75157	-118.09981	10.9	4.3	0.5	7.1	7.1	Hand auger
LCW-09	Chemical and geotechnical	Vegetation-free zone	Low intertidal (culvert removal)	33.75183	-118.09930	7.1	-1.8	0.5	9.4	10.5	HSA drill rig
LCW-10	Chemical	Ruderal uplands	Mid-marsh	33.75085	-118.09870	10.6	4.3	0.5	6.8	6.8	Hand auger
LCW-11	Chemical and geotechnical	Ruderal uplands	Low intertidal (new channel)	33.75060	-118.09763	11	-1.8	0.5	13.3	12.0	Hand auger
LCW-12	Chemical	Ruderal uplands	Mid-marsh	33.75087	-118.09628	12.2	4.3	0.5	8.4	8.4	Hand auger
LCW-13	Chemical and geotechnical	Vegetation-free zone	Low intertidal (culvert removal)	33.75156	-118.09631	7.6	-1.8	0.5	9.9	10.5	HSA drill rig
LCW-17	Geotechnical	Ruderal uplands	New berm	33.75195	-118.09556	5.5	--	--	25	26.5	HSA drill rig
LCW-18	Geotechnical	Ruderal uplands	Fill area	33.75147	-118.09496	10.2	--	--	25	26.5	HSA drill rig

Notes:

1. Based on North American Datum of 1983.
2. Proposed cut elevation is based on the habitat elevation ranges for full tidal conditions (no muting), as presented in Table 6-1 of *The Los Cerritos Wetlands Habitat Restoration Plan* (CRC 2021). The lower end of the elevation range was conservatively used.
3. For chemical borings, target boring depth includes the depth to achieve design depth plus Z-layer.
4. Refusal.
5. After multiple attempts, a successful boring could not be collected due to asphalt and other debris; sample discarded.

--: not applicable
bgs: below ground surface
HSA: hollow stem auger
NAVD88: North American Vertical Datum of 1988

Table 2
Compositing Scheme and Chemical Testing Strategy

Core Sample ID	Composite Sample ID	Archive: 2-Foot Interval	Archive: Core	Archive: Z-layer	Composite Chemical Analysis[1]
LCW-01	LCW-01/02	X	X	--[2]	X
LCW-02		X	X	X	
LCW-03	LCW-03/04	X	X	X	X
LCW-04		X	X	X	
LCW-05	--	X	X	X	X
LCW-06	--	--[3]	--[3]	--[3]	--[3]
LCW-07	--	X	X	X	X
LCW-08	LCW-08/09	X	X	X	X
LCW-09		X	X	X	
LCW-10	LCW-10/11	X	X	X	X
LCW-11		X	X	--[2]	
LCW-12	LCW-12/13	X	X	X	X
LCW-13		X	X	X	

Notes:

1. Volatile organic compounds were collected from one interval per composite prior to homogenization and compositing to minimize loss of volatile constituents during handling.
2. Z-layer depth was not achieved due to refusal.
3. After multiple attempts, unable to collect successful core.

--: not applicable

Table 3
Geotechnical Testing Strategy

Core Sample ID	Sample Interval (feet bgs)	Sample ID	Geotechnical Testing		
			Grain Size	Moisture Content	Atterberg Limits
LCW-05	0 to 1.5	LCW-05-0-1.5	X	X	--
	4.5 to 6	LCW-05-4.5-6	--	X	X
LCW-09	0 to 1.5	LCW-09-0-1.5	X	X	--
	6 to 7.5	LCW-09-6-7.5	--	X	X
LCW-11	0 to 2	LCW-11-0-2	X	X	--
	4 to 6	LCW-11-4-6	--	X	X
LCW-13	0 to 1.5	LCW-13-0-1.5	X	X	--
	4.5 to 6	LCW-13-4.5-6	--	X	X
LCW-17	0 to 1.5	LCW-17-0-1.5	X	X	--
	5 to 6.5	LCW-17-5-6.5	--	X	--
	10 to 11.5	LCW-17-10-11.5	--	X	X
	15 to 16.5	LCW-17-15-16.5	--	X	--
	20 to 21.5	LCW-17-20-21.5	X	X	--
LCW-18	0 to 1.5	LCW-18-0-1.5	--	X	--
	5 to 6.5	LCW-18-5-6.5	X	X	--
	10 to 11.5	LCW-18-10-11.5	--	X	X
	15.4 to 16.3	LCW-18-15.4-16.3	--	X	X
	20 to 21.5	LCW-18-20-21.5	X	X	--
	25 to 26.5	LCW-18-25-26.5	X	X	--

Note:
bgs: below ground surface

Table 4
Composite Soil Chemistry Results

Task	LCWA_2022	LCWA_2022	LCWA_2022	LCWA_2022	LCWA_2022	LCWA_2022	LCWA_2022			
Location ID	LCW-01/02-COMP	LCW-03/04-COMP	LCW-05	LCW-07	LCW-08/09-COMP	LCW-10/11-COMP	LCW-12/13-COMP			
Sample ID	LCW-01/02-061522	LCW-03/04-061522	LCW-05-061722	LCW-07-061722	LCW-08/09-061722	LCW-10/11-061722	LCW-12/13-061722			
Sample Date	6/15/2022	6/15/2022	6/17/2022	6/17/2022	6/17/2022	6/17/2022	6/17/2022			
Sample Type	N	N	N	N	N	N	N			
Matrix	SO	SO	SO	SO	SO	SO	SO			DTSC HHRA
Chemical								ERL	ERM	Residential[1]
Conventional Parameters (deg C)										
Temperature	**22**	**20.8**	**20.6**	**21.9**	**20.8**	**21.8**	**22.7**	--	--	--
Conventional Parameters (g/kg)										
Salinity	**3.21**	**2.78**	-- U	-- U	**5.75**	**2.02**	**3.39**	--	--	--
Conventional Parameters (pct)										
Total organic carbon	**0.79**	**0.757**	**0.973**	**0.285**	**0.923**	**1.05**	**1.2**	--	--	--
Total Solids	**79.6**	**87**	**88.3**	**85.2**	**83.7**	**74**	**81**	--	--	--
Grain Size (pct)										
Gravel	**6.9**	**10.5**	**12.3**	**0**	**4.9**	**0.3**	**20.7**	--	--	--
Sand	**44.2**	**32.7**	**48.4**	**45.6**	**40.8**	**26.6**	**19.1**	--	--	--
Silt and Clay	**48.9**	**56.8**	**39.3**	**54.4**	**54.3**	**73.1**	**60.2**	--	--	--
Metals (mg/kg)										
Antimony	**0.510 J**	**0.255 J**	**0.318 J**	**0.242 J**	**0.224 J**	**0.303 J**	**0.163 J**	--	--	--
Arsenic	**9.75**	**10.8**	**7.65**	**4.19**	**9.82**	**7.89**	**7.79**	8.2	70	0.11
Barium	**180**	**372**	**142**	**103**	**119**	**186**	**137**	--	--	--
Beryllium	0.784 U	0.721 U	0.725 U	0.739 U	0.745 U	0.852 U	**0.785 J**	--	--	16
Cadmium	**0.219 J**	**0.218 J**	**0.251 J**	**0.138 J**	**0.220 J**	**0.272 J**	**0.542 J**	1.2	9.6	--
Chromium	**29.5**	**27.5**	**30**	**24.1**	**24.5**	**36.8**	**28.3**	81	370	--
Cobalt	**15.7**	**12.4**	**12.9**	**11.4**	**10.4**	**15.2**	**11.4**	--	--	--
Copper	**35.6**	**27.2**	**38.5**	**20**	**28**	**40**	**28**	34	270	--
Lead	**12.6**	**16.2**	**19.9**	**7.73**	**16.1**	**14.8**	**11.1**	46.7	218	80
Mercury	**0.0705 J**	**0.0383 J**	**0.0410 J**	**0.0316 J**	**0.0784 J**	**0.0442 J**	**0.0403 J**	0.15	0.71	1
Molybdenum	**0.928 J**	**1.33 J**	**0.721 J**	0.622 U	**1.39 J**	**2.01 J**	**1.27**	--	--	--
Nickel	**27.1**	**24.6**	**25.2**	**21.9**	**20**	**30.5**	**22.9**	20.9	51.6	820
Selenium	*0.866 U*	*0.796 U*	*0.800 U*	*0.817 U*	*0.823 U*	*0.941 U*	*0.863 U*	--	--	--
Silver	0.272 U	0.251 U	0.252 U	0.257 U	0.259 U	0.296 U	0.272 U	1	3.7	--
Thallium	**0.216 J**	**0.220 J**	**0.182 J**	**0.164 J**	**0.158 J**	**0.220 J**	**0.234 J**	--	--	--
Vanadium	**60.7**	**54.9**	**56.5**	**50.7**	**46.2**	**68.5**	**46.5**	--	--	--
Zinc	**84.6**	**84.4**	**85.3**	**59.1**	**71**	**103**	**95**	150	410	--
Polycyclic Aromatic Hydrocarbons (µg/kg)										
1-Methylnaphthalene	2.4 U	2.2 U	11 U	2.3 U	**29**	2.6 U	12 U	--	--	9,900
1-Methylphenanthrene	2.7 U	2.5 U	12 U	2.6 U	2.6 U	2.9 U	13 U	--	--	--
2,6-Dimethylnaphthalene	1.6 U	1.5 U	7.2 U	1.5 U	**90**	1.7 U	7.9 U	--	--	--
2-Methylnaphthalene	2.3 U	2.1 U	10 U	2.2 U	**32**	2.5 U	11 U	70	670	190,000
Acenaphthene	2.7 U	2.5 U	12 U	2.5 U	**3.1 J**	2.9 U	13 U	16	500	3,300,000
Acenaphthylene	**3.5 J**	2.4 U	12 U	2.5 U	2.5 U	2.8 U	13 U	44	640	--
Anthracene	**29**	2.2 U	11 U	2.2 U	2.3 U	2.6 U	12 U	85.3	1100	17,000,000
Benzo(a)anthracene	**8.1**	**2.6 J**	13 U	2.6 U	**4.8 J**	**3.8 J**	14 U	261	1600	1,100
Benzo(a)pyrene	**13**	3.4 U	17 U	3.5 U	3.5 U	**5.0 J**	18 U	430	1600	110
Benzo(e)pyrene	**13**	**4.5 J**	**8.5 J**	1.5 U	**10**	**7.2**	**17 J**	--	--	--
Biphenyl (1,1'-Biphenyl)	1.8 U	1.7 U	8.2 U	1.7 U	1.7 U	2.0 U	9.0 U	--	--	47,000
Chrysene	**14**	**4.0 J**	9.3 U	1.9 U	**21**	**6.8**	**19 J**	384	2800	110,000
Dibenzo(a,h)anthracene	**2.8 J**	2.2 U	11 U	2.3 U	2.3 U	2.6 U	12 U	63.4	260	28
Fluoranthene	**18**	**4.4 J**	16 U	3.3 U	**7**	**6.6 J**	17 U	600	5100	2,400,000
Fluorene	2.7 U	2.5 U	12 U	2.6 U	**8.6**	3.0 U	14 U	19	540	2,300,000

Table 4
Composite Soil Chemistry Results

Task / Location ID / Sample ID / Sample Date / Sample Type / Matrix	LCWA_2022 / LCW-01/02-COMP / LCW-01/02-061522 / 6/15/2022 / N / SO	LCWA_2022 / LCW-03/04-COMP / LCW-03/04-061522 / 6/15/2022 / N / SO	LCWA_2022 / LCW-05 / LCW-05-061722 / 6/17/2022 / N / SO	LCWA_2022 / LCW-07 / LCW-07-061722 / 6/17/2022 / N / SO	LCWA_2022 / LCW-08/09-COMP / LCW-08/09-061722 / 6/17/2022 / N / SO	LCWA_2022 / LCW-10/11-COMP / LCW-10/11-061722 / 6/17/2022 / N / SO	LCWA_2022 / LCW-12/13-COMP / LCW-12/13-061722 / 6/17/2022 / N / SO			
Chemical								**ERL**	**ERM**	**DTSC HHRA Residential[1]**
Naphthalene	1.8 U	1.6 U	8.0 U	1.7 U	1.7 U	1.9 U	8.7 U	160	2100	2,000
Perylene	**7.8**	**12**	**62**	3.2 U	**33**	**7.3**	**52**	--	--	--
Phenanthrene	**10**	**2.6 J**	12 U	2.5 U	**32**	**3.7 J**	13 U	240	1500	--
Pyrene	**19**	**4.7 J**	18 U	3.7 U	**9.3**	**11**	20 U	665	2600	1,800,000
Total LPAH (U = 0 max limit)	**43 J**	**2.6 J**	12 U	2.6 U	**195 J**	**3.7 J**	14 U	--		--
Total HPAH (U = 0 max limit)	**96 J**	**32 J**	**71 J**	3.7 U	**85 J**	**48 J**	**88 J**	--		--
Total PAH (U = 0 max limit)	**140 J**	**35 J**	**71 J**	3.7 U	**280 J**	**51 J**	**88 J**	4022	44792	--
Pesticides (µg/kg)										
2,4'-DDD (o,p'-DDD)	0.080 U	0.074 U	0.072 U	0.075 U	**0.84 J**	0.086 U	**0.76 J**	--	--	--
2,4'-DDE (o,p'-DDE)	1.3 U	1.2 U	1.2 U	1.2 U	1.2 U	1.4 U	1.3 U	--	--	--
2,4'-DDT (o,p'-DDT)	0.12 U	0.11 U	0.10 U	0.11 U	0.11 U	0.12 U	0.11 U	--	--	--
4,4'-DDD (p,p'-DDD)	**1.2 J**	0.57 U	0.56 U	0.58 U	**2.5**	**1.2 J**	**3**	2	20	1,900
4,4'-DDE (p,p'-DDE)	0.34 U	0.31 U	**0.72 J**	0.32 U	**2.3 J**	**1.8**	**1.4 J**	2.2	27	2,000
4,4'-DDT (p,p'-DDT)	0.39 U	0.35 U	**1.9**	0.36 U	0.37 U	0.42 U	**1.1 J**	1	7	1,900
Aldrin	0.46 U	0.42 U	0.41 U	0.43 U	0.44 U	0.49 U	0.45 U	--	--	39
Chlordane (technical)	*0.90 U*	*0.82 U*	*0.81 U*	*0.83 U*	*0.85 U*	*0.96 U*	*0.88 U*	0.5	6	1,700
Chlordane, alpha- (Chlordane, cis-)	0.13 U	0.12 U	0.12 U	0.12 U	0.12 U	0.14 U	0.13 U	--	--	--
Chlordane, beta- (Chlordane, trans-)	0.44 U	0.40 U	0.40 U	0.41 U	0.42 U	0.47 U	0.43 U	--	--	--
Dieldrin	*0.083 U*	*0.076 U*	*0.075 U*	*0.077 U*	*0.079 U*	*0.089 U*	**0.18 J**	0.02	8	34
Endosulfan sulfate	0.14 U	0.12 U	0.12 U	0.13 U	0.13 U	0.15 U	0.13 U	--	--	380,000
Endosulfan, alpha- (I)	0.15 U	0.13 U	0.13 U	0.14 U	0.14 U	0.16 U	0.14 U	--	--	--
Endosulfan, beta (II)	0.28 U	0.26 U	0.26 U	0.26 U	0.27 U	0.31 U	0.28 U	--	--	--
Endrin	0.24 U	0.22 U	0.21 U	0.22 U	0.23 U	0.26 U	0.23 U	--	--	19,000
Endrin aldehyde	1.2 U	1.1 U	1.1 U	1.1 U	1.2 U	1.3 U	1.2 U	--	--	--
Heptachlor	0.075 U	0.068 U	0.067 U	0.070 U	0.071 U	0.080 U	0.073 U	--	--	130
Heptachlor epoxide	0.11 U	0.098 U	0.096 U	0.10 U	0.10 U	0.12 U	0.10 U	--	--	70
Hexachlorocyclohexane (BHC), alpha-	0.10 U	0.092 U	0.090 U	0.094 U	0.096 U	0.11 U	0.099 U	--	--	86
Hexachlorocyclohexane (BHC), beta-	0.24 U	0.22 U	0.22 U	0.22 U	0.23 U	0.26 U	0.24 U	--	--	300
Hexachlorocyclohexane (BHC), delta-	0.19 U	0.17 U	0.17 U	0.18 U	0.18 U	0.20 U	0.18 U	--	--	--
Hexachlorocyclohexane (BHC), gamma- (Lindane)	0.13 U	0.12 U	0.12 U	0.12 U	0.13 U	0.14 U	0.13 U	--	--	570
Nonachlor, cis-	0.059 U	**2.9**	0.053 U	0.055 U	0.056 U	0.064 U	0.058 U	--	--	--
Nonachlor, trans-	0.14 U	0.13 U	0.13 U	0.13 U	0.13 U	0.15 U	0.14 U	--	--	--
Oxychlordane	0.19 U	0.17 U	0.17 U	0.17 U	0.18 U	0.20 U	0.18 U	--	--	--
Total BHC (U = 0 max limit)	0.24 U	0.22 U	0.22 U	0.22 U	0.23 U	0.26 U	0.24 U	--	--	--
Total DDX (U = 0 max limit)	**1.2 J**	1.2 U	**2.6 J**	1.2 U	**5.6 J**	**3.0 J**	**6.3 J**	1.58	46.1	--
Toxaphene	*1.2 U*	*1.1 U*	*1.1 U*	*1.2 U*	*1.2 U*	*1.3 U*	*1.2 U*	--	--	450

Table 4
Composite Soil Chemistry Results

Chemical	Task: LCWA_2022 Location ID: LCW-01/02-COMP Sample ID: LCW-01/02-061522 Sample Date: 6/15/2022 Sample Type: N Matrix: SO	LCWA_2022 LCW-03/04-COMP LCW-03/04-061522 6/15/2022 N SO	LCWA_2022 LCW-05 LCW-05-061722 6/17/2022 N SO	LCWA_2022 LCW-07 LCW-07-061722 6/17/2022 N SO	LCWA_2022 LCW-08/09-COMP LCW-08/09-061722 6/17/2022 N SO	LCWA_2022 LCW-10/11-COMP LCW-10/11-061722 6/17/2022 N SO	LCWA_2022 LCW-12/13-COMP LCW-12/13-061722 6/17/2022 N SO	ERL	ERM	DTSC HHRA Residential[1]
PCB Aroclors (µg/kg)										
Aroclor 1016	6.9 U	6.3 U	6.2 U	6.4 U	6.6 U	7.4 U	6.8 U	--	--	4,000
Aroclor 1221	6.9 U	6.3 U	6.2 U	6.4 U	6.6 U	7.4 U	6.8 U	--	--	200
Aroclor 1232	6.9 U	6.3 U	6.2 U	6.4 U	6.6 U	7.4 U	6.8 U	--	--	170
Aroclor 1242	6.9 U	6.3 U	6.2 U	6.4 U	6.6 U	7.4 U	6.8 U	--	--	230
Aroclor 1248	6.9 U	6.3 U	6.2 U	6.4 U	6.6 U	7.4 U	6.8 U	--	--	230
Aroclor 1254	6.2 U	**39**	5.6 U	5.8 U	5.9 U	6.7 U	6.1 U	--	--	240
Aroclor 1260	6.2 U	5.7 U	5.6 U	5.8 U	5.9 U	6.7 U	6.1 U	--	--	240
Aroclor 1262	6.2 U	5.7 U	5.6 U	5.8 U	5.9 U	6.7 U	6.1 U	--	--	--
Aroclor 1268	6.2 U	5.7 U	5.6 U	5.8 U	5.9 U	6.7 U	6.1 U	--	--	--
Total PCB Aroclors (U = 0 max limit)	6.9 U	**39**	6.2 U	6.4 U	6.6 U	7.4 U	6.8 U	22.7	180	--
Total Petroleum Hydrocarbons (mg/kg)										
Diesel range organics (C10 - C28)	4.8 U	**33**	**130**	**10**	**510**	5.2 U	**500**	--	--	--
Total petroleum hydrocarbons (C6-C44)	**21**	**140**	**370**	**30**	**800**	**15**	**850**	--	--	--
Total petroleum hydrocarbons (C6)	4.8 U	4.4 U	4.3 U	4.5 U	4.6 U	5.2 U	4.7 U	--	--	--
Total petroleum hydrocarbons (C7)	4.8 U	4.4 U	4.3 U	4.5 U	4.6 U	5.2 U	4.7 U	--	--	--
Total petroleum hydrocarbons (C8)	4.8 U	4.4 U	4.3 U	4.5 U	4.6 U	5.2 U	4.7 U	--	--	--
Total petroleum hydrocarbons (C9-C10)	4.8 U	4.4 U	4.3 U	4.5 U	4.6 U	5.2 U	4.7 U	--	--	--
Total petroleum hydrocarbons (C11-C12)	4.8 U	4.4 U	4.3 U	4.5 U	**8.9**	5.2 U	4.7 U	--	--	--
Total petroleum hydrocarbons (C13-C14)	4.8 U	4.4 U	4.3 U	4.5 U	**28**	5.2 U	**8.8**	--	--	--
Total petroleum hydrocarbons (C15-C16)	4.8 U	4.4 U	4.3 U	4.5 U	**41**	5.2 U	**25**	--	--	--
Total petroleum hydrocarbons (C9-C16) (U = 0 max limit)	4.8 U	4.4 U	4.3 U	4.5 U	**77.9**	5.2 U	**33.8**	--	--	97
Total petroleum hydrocarbons (C17-C18)	4.8 U	4.4 U	**4.5 J**	4.5 U	**54**	5.2 U	**47**	--	--	--
Total petroleum hydrocarbons (C19-C20)	4.8 U	4.4 U	**8.2**	4.5 U	**65**	5.2 U	**68**	--	--	--
Total petroleum hydrocarbons (C21-C22)	4.8 U	4.4 U	**13**	4.5 U	**67**	5.2 U	**74**	--	--	--
Total petroleum hydrocarbons (C23-C24)	4.8 U	**7**	**25**	4.5 U	**77**	5.2 U	**91**	--	--	--
Total petroleum hydrocarbons (C25-C28)	4.8 U	**22**	**80**	**8.9**	**170**	5.2 U	**180**	--	--	--
Total petroleum hydrocarbons (C29-C32)	4.8 U	**34**	**120**	**9.4**	**160**	5.2 U	**180**	--	--	--
Total petroleum hydrocarbons (C17-C32) (U = 0 max limit)	4.8 U	**63**	**251**	**18**	**593**	5.2 U	**640**	--	--	2,400
Total petroleum hydrocarbons (C33-C36)	4.8 U	**30**	**73**	**6.5**	**84**	5.2 U	**100**	--	--	--
Total petroleum hydrocarbons (C37-C40)	4.8 U	**29**	**41**	4.5 U	**45**	5.2 U	**55**	--	--	--
Total petroleum hydrocarbons (C41-C44)	4.8 U	**12**	**16**	4.5 U	**18**	5.2 U	**21**	--	--	--

Table 4
Composite Soil Chemistry Results

Notes:
All nondetect results are reported at the method detection limit.
Gamma chlordane and trans-chlordane are synonymous and refer to CAS RN 5103-74-2.
Total BHC is the sum of alpha-, beta-, delta-, and gamma-hexachlorocyclohexane (BHC).
Total chlordane is the sum of cis-chlordane, trans-chlordane, cis-nonachlor, trans-nonachlor, and oxychlordane.
Total DDx is the sum of 4,4'-DDD, 4,4'-DDE, 4,4'-DDT 2,4'-DDD, 2,4'-DDE, and 2,4'-DDT if measured.
Total HPAH is the sum of benzo(a)anthracene, benzo(a)pyrene, benzo(e)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene, perylene, and pyrene.
Total LPAH is the sum of 1-methylnaphthalene, 1-methylphenanthrene, 2,6-dimethylnaphthalene, 2-methylnapthalene, acenaphthylene, acenaphthene, anthracene, biphenyl, fluorene, naphthalene, and phenanthrene.
Total PAH is the total of all PAHs listed in this table.
Total PCB Aroclors is the total of all PCB Aroclors listed in this table.
Totals are calculated as the sum of all detected results (U=0). If all results are not detected, the highest method detection limit value is reported as the sum.
USEPA Stage 2A data validation was completed by Anchor QEA.
1. More conservative of cancer or noncancer endpoint used for DTSC HHRA screening levels
Detected concentration is greater than ERL screening level
Detected concentration is greater than DTSC HHRA Residential cancer or noncancer screening level
Italicized : Non-detected concentration is above one or more identified screening levels
Bold: Detected result
--: not applicable
µg/kg: micrograms per kilogram
BHC: benzene hexachloride
Deg C: degrees Celsius
DTSC: California Department of Toxic Substances Control
ERL: effects range low
ERM: effects range median
g/kg: grams per kilogram
HHRA: human health risk assessment
HPAH: high-molecular-weight polycyclic aromatic hydrocarbon
J: Estimated value
LPAH: low-molecular-weight polycyclic aromatic hydrocarbon
mg/kg: milligrams per kilogram
N: normal environmental sample
PAH: polycyclic aromatic hydrocarbons
PCB: polychlorinated biphenyl
pct: percent
SO: soil
U: Compound analyzed for, but not detected above detection limit

Table 5
VOC Results

Task Location ID Sample ID Sample Date Sample Type Matrix Chemical	LCWA_2022 LCW-02 LCW-02-061522 6/15/2022 N SO	LCWA_2022 LCW-04 LCW-04-061522 6/15/2022 N SO	LCWA_2022 LCW-05 LCW-05-061722 6/17/2022 N SO	LCWA_2022 LCW-09 LCW-09-061722 6/17/2022 N SO	LCWA_2022 LCW-11 LCW-11-061622 6/17/2022 N SO	LCWA_2022 LCW-12 LCW-12-061622 6/17/2022 N SO	DTSC HHRA Residential[1]
Volatile Organics (µg/kg)							
1,1,1,2-Tetrachloroethane	0.39 U	0.40 U	0.34 U	0.37 U	0.43 U	23 U	2,000
1,1,1-Trichloroethane	0.31 U	0.32 U	0.27 U	0.29 U	0.35 U	18 U	1,700,000
1,1,2,2-Tetrachloroethane	0.72 U	0.74 U	0.63 U	0.69 U	0.81 U	43 U	600
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.61 U	0.63 U	0.54 U	0.58 U	0.68 U	36 U	--
1,1,2-Trichloroethane	0.62 U	0.63 U	0.54 U	0.59 U	0.69 U	36 U	--
1,1-Dichloroethane	0.37 U	0.38 U	0.32 U	0.35 U	0.41 U	22 U	3,600
1,1-Dichloroethene	0.35 U	0.36 U	0.31 U	0.33 U	0.39 U	21 U	83,000
1,1-Dichloropropene	0.52 U	0.53 U	0.45 U	0.49 U	0.57 U	30 U	--
1,2,3-Trichlorobenzene	1.3 U	1.4 U	1.2 U	1.3 U	1.5 U	78 U	40,000
1,2,3-Trichloropropane	0.56 U	0.57 U	0.49 U	0.53 U	0.62 U	*33 U*	1.5
1,2,4-Trichlorobenzene	0.55 U	0.56 U	0.47 U	0.52 U	0.61 U	32 U	7,800
1,2,4-Trimethylbenzene	0.80 U	0.82 U	0.69 U	0.76 U	0.89 U	47 U	--
1,2-Dibromo-3-chloropropane	*9.0 U*	*9.3 U*	*7.8 U*	*8.5 U*	*10 U*	*530 U*	4.3
1,2-Dichlorobenzene	0.33 U	0.34 U	0.29 U	0.32 U	0.37 U	20 U	--
1,2-Dichloroethane	0.37 U	0.38 U	0.32 U	0.35 U	0.41 U	22 U	--
1,2-Dichloroethene, cis-	0.45 U	0.46 U	0.39 U	0.43 U	0.50 U	26 U	18,000
1,2-Dichloroethene, trans-	0.40 U	0.41 U	0.35 U	0.38 U	0.45 U	24 U	130,000
1,2-Dichloropropane	0.37 U	0.38 U	0.32 U	0.35 U	0.41 U	22 U	--
1,3,5-Trimethylbenzene (Mesitylene)	0.36 U	0.37 U	0.31 U	0.34 U	0.40 U	21 U	--
1,3-Dichlorobenzene	0.34 U	0.35 U	0.29 U	0.32 U	0.37 U	20 U	--
1,3-Dichloropropane	0.39 U	0.40 U	0.34 U	0.37 U	0.44 U	23 U	410,000
1,3-Dichloropropene, cis-	0.46 U	0.48 U	0.40 U	0.44 U	0.52 U	*27 U*	--
1,3-Dichloropropene, trans-	0.37 U	0.38 U	0.32 U	0.35 U	0.41 U	*22 U*	--
1,4-Dichlorobenzene	0.41 U	0.42 U	0.35 U	0.39 U	0.45 U	24 U	--
2,2-Dichloropropane	0.36 U	0.37 U	0.31 U	0.34 U	0.40 U	21 U	--
2-Chlorotoluene	0.34 U	0.34 U	0.29 U	0.32 U	0.37 U	20 U	470,000
2-Hexanone (Methyl butyl ketone)	4.1 U	4.2 U	3.6 U	3.9 U	4.6 U	240 U	--
4-Chlorotoluene	0.32 U	0.33 U	0.28 U	0.30 U	0.36 U	19 U	440,000
4-Methyl-2-pentanone (Methyl isobutyl ketone)	3.9 U	4.0 U	3.4 U	3.7 U	4.3 U	230 U	--
Acetone	13 U	**37**	**21 J**	**58**	15 U	770 U	--
Benzene	**1.3**	**2**	**1.5**	**0.90 J**	**1.4 J**	20 U	330
Bromobenzene	0.28 U	0.29 U	0.24 U	0.26 U	0.31 U	16 U	--
Bromochloromethane	0.59 U	0.61 U	0.51 U	0.56 U	0.66 U	35 U	--
Bromodichloromethane	0.43 U	0.44 U	0.38 U	0.41 U	0.48 U	26 U	290
Bromoform (Tribromomethane)	1.8 U	1.8 U	1.5 U	1.7 U	2.0 U	100 U	19,000
Bromomethane (Methyl bromide)	8.7 U	9.0 U	7.6 U	8.3 U	9.7 U	520 U	--
Carbon disulfide	0.53 U	**2.3 J**	**15**	0.50 U	0.59 U	**320 J**	--
Carbon tetrachloride (Tetrachloromethane)	0.40 U	0.41 U	0.35 U	0.38 U	0.44 U	23 U	650
Chlorobenzene	0.36 U	0.37 U	0.31 U	0.34 U	0.40 U	21 U	--
Chloroethane	0.99 U	1.0 U	0.86 U	0.94 U	1.1 U	58 U	--
Chloroform	0.78 U	0.81 U	0.68 U	0.74 U	0.87 U	46 U	--
Chloromethane	2.0 U	2.1 U	1.8 U	1.9 U	2.3 U	120 U	--
Cymene, p- (4-Isopropyltoluene)	0.38 U	0.39 U	0.33 U	0.36 U	0.42 U	22 U	--
Dibromochloromethane	0.36 U	0.37 U	0.32 U	0.34 U	0.40 U	21 U	940

Table 5
VOC Results

Task Location ID Sample ID Sample Date Sample Type Matrix Chemical	LCWA_2022 LCW-02 LCW-02-061522 6/15/2022 N SO	LCWA_2022 LCW-04 LCW-04-061522 6/15/2022 N SO	LCWA_2022 LCW-05 LCW-05-061722 6/17/2022 N SO	LCWA_2022 LCW-09 LCW-09-061722 6/17/2022 N SO	LCWA_2022 LCW-11 LCW-11-061622 6/17/2022 N SO	LCWA_2022 LCW-12 LCW-12-061622 6/17/2022 N SO	DTSC HHRA Residential[1]
Dibromomethane	0.41 U	0.42 U	0.35 U	0.38 U	0.45 U	24 U	--
Dichlorodifluoromethane	0.60 U	0.62 U	0.52 U	0.57 U	0.67 U	36 U	--
Dichloromethane (Methylene chloride)	4.2 U	4.3 U	3.6 U	3.9 U	4.6 U	*240 U*	2,200
Diisopropylether (Isopropyl Ether)	0.66 U	0.68 U	0.58 U	0.63 U	0.74 U	39 U	--
Ethanol	88 U	90 U	76 U	83 U	98 U	5200 U	--
Ethyl tert-butyl ether (ETBE)	0.31 U	0.32 U	0.27 U	0.30 U	0.35 U	19 U	--
Ethylbenzene	0.27 U	0.28 U	0.24 U	**0.48 J**	0.31 U	16 U	--
Ethylene dibromide (1,2-Dibromoethane)	0.27 U	0.28 U	0.24 U	0.26 U	0.30 U	16 U	36
Isopropylbenzene (Cumene)	0.37 U	0.38 U	0.32 U	0.35 U	0.41 U	22 U	--
m,p-Xylene	0.63 U	0.65 U	0.55 U	**1.7 J**	0.70 U	37 U	--
Methyl ethyl ketone (2-Butanone)	6.0 U	6.2 U	5.2 U	**8.0 J**	6.7 U	350 U	--
Methyl tert-butyl ether (MTBE)	0.25 U	0.26 U	0.22 U	0.24 U	0.28 U	15 U	--
Naphthalene	6.9 U	7.1 U	6.0 U	6.6 U	7.7 U	*410 U*	2,000
n-Butylbenzene	0.28 U	0.29 U	0.24 U	0.27 U	0.31 U	16 U	2,400,000
n-Propylbenzene	0.35 U	0.36 U	0.30 U	0.33 U	0.39 U	20 U	--
o-Xylene	0.34 U	0.35 U	0.30 U	**0.50 J**	0.38 U	20 U	--
sec-Butylbenzene	0.36 U	0.37 U	0.32 U	0.35 U	0.41 U	21 U	2,200,000
Styrene	0.42 U	0.43 U	0.37 U	0.40 U	0.47 U	25 U	5,600,000
tert-Amyl methyl ether (TAME)	0.26 U	0.27 U	0.22 U	0.24 U	0.29 U	15 U	--
tert-Butyl alcohol (2-Methyl-2-propanol)	9.3 U	9.6 U	8.1 U	8.8 U	10 U	550 U	--
tert-Butylbenzene	0.34 U	0.35 U	0.29 U	0.32 U	0.38 U	20 U	2,200,000
Tetrachloroethene (PCE)	0.30 U	0.31 U	0.26 U	0.28 U	0.33 U	18 U	590
Toluene	**0.57 J**	**1.2 J**	**0.72 J**	**0.57 J**	**0.59 J**	**24 J**	1,100,000
Total xylene (U = 0 max limit)	0.63 U	0.65 U	0.55 U	**2.2 J**	0.70 U	37 U	--
Trichloroethene (TCE)	0.51 U	0.53 U	0.45 U	0.49 U	0.57 U	30 U	--
Trichlorofluoromethane (Fluorotrichloromethane)	0.36 U	0.37 U	0.32 U	0.34 U	0.40 U	21 U	1,200,000
Vinyl acetate	5.2 U	5.4 U	4.5 U	4.9 U	5.8 U	310 U	--
Vinyl chloride	0.50 U	0.52 U	0.44 U	0.48 U	0.56 U	*30 U*	8.2

Notes:
All nondetect results are reported at the method detection limit.
USEPA Stage 2A data validation was completed by Anchor QEA.
1. More conservative of cancer or noncancer endpoint used for DTSC HHRA screening levels
Italicized : Non-detected concentration is above one or more identified screening levels
Bold: Detected result
µg/kg: micrograms per kilogram
DTSC: California Department of Toxic Substances Control
HHRA: human health risk assessment
J: Estimated value
N: normal environmental sample
SO: soil
U: Compound analyzed for, but not detected above detection limit

Table 6
Individual Core PCB Arolcor Results

Task	LCWA_2022	LCWA_2022	LCWA_2022	LCWA_2022	LCWA_2022			
Location ID	LCW-03	LCW-03	LCW-04	LCW-04	LCW-04			
Sample ID	LCW-03-0_2-061522	LCW-03-2_4-061522	LCW-04-0_2-061522	LCW-04-2_4-061522	LCW-04-4_6-061522			
Sample Date	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022			
Depth	0–2 feet	2–3.8 feet	0–2 feet	2–4 feet	4–5.6 feet			
Sample Type	N	N	N	N	N			
Matrix	SO	SO	SO	SO	SO			
Chemical						ERL	ERM	DTSC HHRA Residential[1]
Conventional Parameters (pct)								
Total solids	**95.1**	**87.2**	**88.7**	**85.7**	**79.9**	--	--	--
PCB Aroclors (µg/kg)								
Aroclor 1016	5.8 U	6.3 U	6.2 U	6.4 U	6.9 U	--	--	4000
Aroclor 1221	5.8 U	6.3 U	6.2 U	6.4 U	6.9 U	--	--	200
Aroclor 1232	5.8 U	6.3 U	6.2 U	6.4 U	6.9 U	--	--	170
Aroclor 1242	5.8 U	6.3 U	6.2 U	6.4 U	6.9 U	--	--	230
Aroclor 1248	**23**	6.3 U	6.2 U	6.4 U	6.9 U	--	--	230
Aroclor 1254	5.2 U	5.7 U	5.6 U	5.8 U	6.2 U	--	--	240
Aroclor 1260	**22**	5.7 U	5.6 U	5.8 U	6.2 U	--	--	240
Aroclor 1262	5.2 U	5.7 U	5.6 U	5.8 U	6.2 U	--	--	--
Aroclor 1268	5.2 U	5.7 U	5.6 U	5.8 U	6.2 U	--	--	--
Total PCB Aroclors (U = 0 max limit)	**45**	6.3 U	6.2 U	6.4 U	6.9 U	23	180	--

Notes:
Detected concentration is greater than ERL screening level
Italicized : Non-detected concentration is above one or more identified screening levels
Bold: Detected result
All nondetect results are reported at the **method detection limit**.
Total PCB Aroclors is the total of all PCB Aroclors listed in this table.
Totals are calculated as the sum of all detected results (U=0). If all results are not detected, the highest method detection limit value is reported as the sum.
USEPA Stage 2A data validation was completed by Anchor QEA, LLC.
1. More conservative of cancer or noncancer endpoint used for DTSC HHRA screening levels
µg/kg: microgram per kilogram
DTSC: California Department of Toxic Substances Control
ERL: effects range low
ERM: effects range median
HHRA: human health risk assessment
J: Estimated value
pct: percent
PCB: polychlorinated biphenyl
U: Compound analyzed for, but not detected above detection limit
USEPA: U.S. Environmental Protection Agency

Table 7
Z-Layer Chemistry Results

Task	LCWA_2022	LCWA_2022	LCWA_2022	LCWA_2022	LCWA_2022	LCWA_2022	LCWA_2022	LCWA_2022	LCWA_2022	LCWA_2022			
Location ID	LCW-02	LCW-03	LCW-04	LCW-05	LCW-07	LCW-08	LCW-09	LCW-10	LCW-12	LCW-13			
Sample ID	LCW-02-Z-061522	LCW-03-Z-061522	LCW-04-Z-061522	LCW-05-Z-061722	LCW-07-Z-061722	LCW-08-Z-061522	LCW-09-Z-061722	LCW-10-Z-061722	LCW-12-Z-061522	LCW-13-Z-061722			
Sample Date	6/15/2022	6/15/2022	6/15/2022	6/17/2022	6/17/2022	6/15/2022	6/17/2022	6/17/2022	6/16/2022	6/17/2022			
Depth	5.6–6.1 feet	3.8–4.3 feet	5.6–6.1 feet	9.2–9.7 feet	12.1–12.6 feet	6.6–7.1 feet	8.9–9.4 feet	6.3–6.8 feet	7.9–8.4 feet	9.4–9.9 feet			
Sample Type	N	N	N	N	N	N	N	N	N	N			
Matrix	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO			
Chemical											ERL	ERM	DTSC HHRA Residential[1]
Conventional Parameters (pct)													
Total solids	**73.4**	**83.6**	**74.6**	**86.2**	**82.2**	**80.5**	**70**	**75.4**	**79.3**	**74.5**	--	--	--
Metals (mg/kg)													
Antimony	**0.341 J**	**0.196 J**	**0.507 J**	**0.194 J**	**0.469 J**	-- R	**0.496 J**	**0.379 J**	**0.211 J**	-- R	--	--	--
Arsenic	**10.3**	**7.36**	**13.1**	**2.46**	**2.03**	**4.25**	**19.4**	**13.2**	**7.58**	**11.3**	8.2	70	0.11
Barium	**179 J**	**135 J**	**344 J**	**98.5 J**	**65.6**	**68.7 J**	**166 J**	**146 J**	**187 J**	**97.9 J**	--	--	--
Beryllium	**0.796**	**0.766**	**0.974**	0.158 U	**0.378**	**0.386**	**1.45**	**1.24**	**0.717**	**0.644**	--	--	16
Cadmium	**0.177 J**	**0.195 J**	**1.08**	0.0972 U	0.106 U	**0.147 J**	**0.226 J**	**0.260 J**	**0.464 J**	0.114 U	1.2	9.6	--
Chromium	**34.7**	**29.5**	**45.2**	**12.3**	**17.9**	**16.6**	**44.3**	**42.9**	**31.8**	**33.7**	81	370	--
Cobalt	**14.9**	**12.2**	**17.5**	**5.48**	**7.52**	**6.47**	**26.3**	**18.3**	**12.1**	**9.79**	--	--	--
Copper	**41.3**	**27.5**	**53**	**11**	**15.9**	**13.9**	**53.8**	**44.8**	**32.8**	**26.5**	34	270	--
Lead	**11.8**	**8.94**	**56.8**	**8.64**	**4.67**	**6.2**	**15.3**	**15.2**	**14.5**	**8.16**	46.7	218	80
Mercury	**0.0604 J**	**0.0278 J**	**0.0949 J**	**0.0558 J**	**0.0202 J**	**0.0259 J**	**0.125 J**	**0.0479 J**	**0.0806 J**	**0.0632 J**	0.15	0.71	1
Molybdenum	**1.77**	**1.71**	**2.97**	**0.442 J**	1.24 U	**0.607 J**	**3.22**	**2.43**	**1.20 J**	**2.64**	--	--	--
Nickel	**26.5**	**21**	**38.7**	**9.39**	**14.6**	**11.4**	**43.6**	**33.1**	**24.5**	**18.2**	20.9	51.6	820
Selenium	**2.47**	**1.88**	**3.44**	**0.627 J**	**0.559 J**	**1.05 J**	**3.33**	**2.9**	**1.8**	**1.76**	--	--	--
Silver	0.426 U	0.369 U	0.432 U	0.361 U	0.394 U	0.396 U	0.436 U	0.428 U	0.398 U	0.424 U	1	3.7	--
Thallium	**0.337 J**	**0.261 J**	**0.424 J**	**0.0831 J**	**0.147 J**	**0.178 J**	**0.296 J**	**0.416 J**	**0.264 J**	**0.399 J**	--	--	--
Vanadium	**67.4**	**57.6**	**84.3**	**22.5**	**33.7**	**34.6**	**81.9**	**81.3**	**57.2**	**57.6**	--	--	--
Zinc	**95**	**76.7**	**133**	**34**	**42.3**	**49.5**	**111**	**116**	**84.6**	**77.8**	150	410	--
PCB Aroclors (µg/kg)													
Aroclor 1016	--	6.6 UJ	7.4 U	--	--	--	--	--	--	--	--	--	4000
Aroclor 1221	--	6.6 UJ	7.4 U	--	--	--	--	--	--	--	--	--	200
Aroclor 1232	--	6.6 UJ	7.4 U	--	--	--	--	--	--	--	--	--	170
Aroclor 1242	--	6.6 UJ	7.4 U	--	--	--	--	--	--	--	--	--	230
Aroclor 1248	--	6.6 UJ	7.4 U	--	--	--	--	--	--	--	--	--	230
Aroclor 1254	--	5.9 UJ	6.6 U	--	--	--	--	--	--	--	--	--	240
Aroclor 1260	--	5.9 UJ	6.6 U	--	--	--	--	--	--	--	--	--	240
Aroclor 1262	--	5.9 UJ	6.6 U	--	--	--	--	--	--	--	--	--	--
Aroclor 1268	--	5.9 UJ	6.6 U	--	--	--	--	--	--	--	--	--	--
Total PCB Aroclors (U = 0 max limit)	--	6.6 UJ	7.4 U	--	--	--	--	--	--	--	23	180	--

Notes:
Detected concentration is greater than ERL screening level
Detected concentration is greater than DTSC HHRA Residential cancer or noncancer screening level
Italicized : Non-detected concentration is above one or more identified screening levels
Bold: Detected result
All nondetect results are reported at the **method detection limit**.
Total PCB Aroclors is the total of all PCB Aroclors listed in this table.
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USEPA Stage 2A data validation was completed by Anchor QEA, LLC.
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J: Estimated value
mg/kg: milligrams per kilogram
pct: percent
U: Compound analyzed for, but not detected above detection limit

Figures

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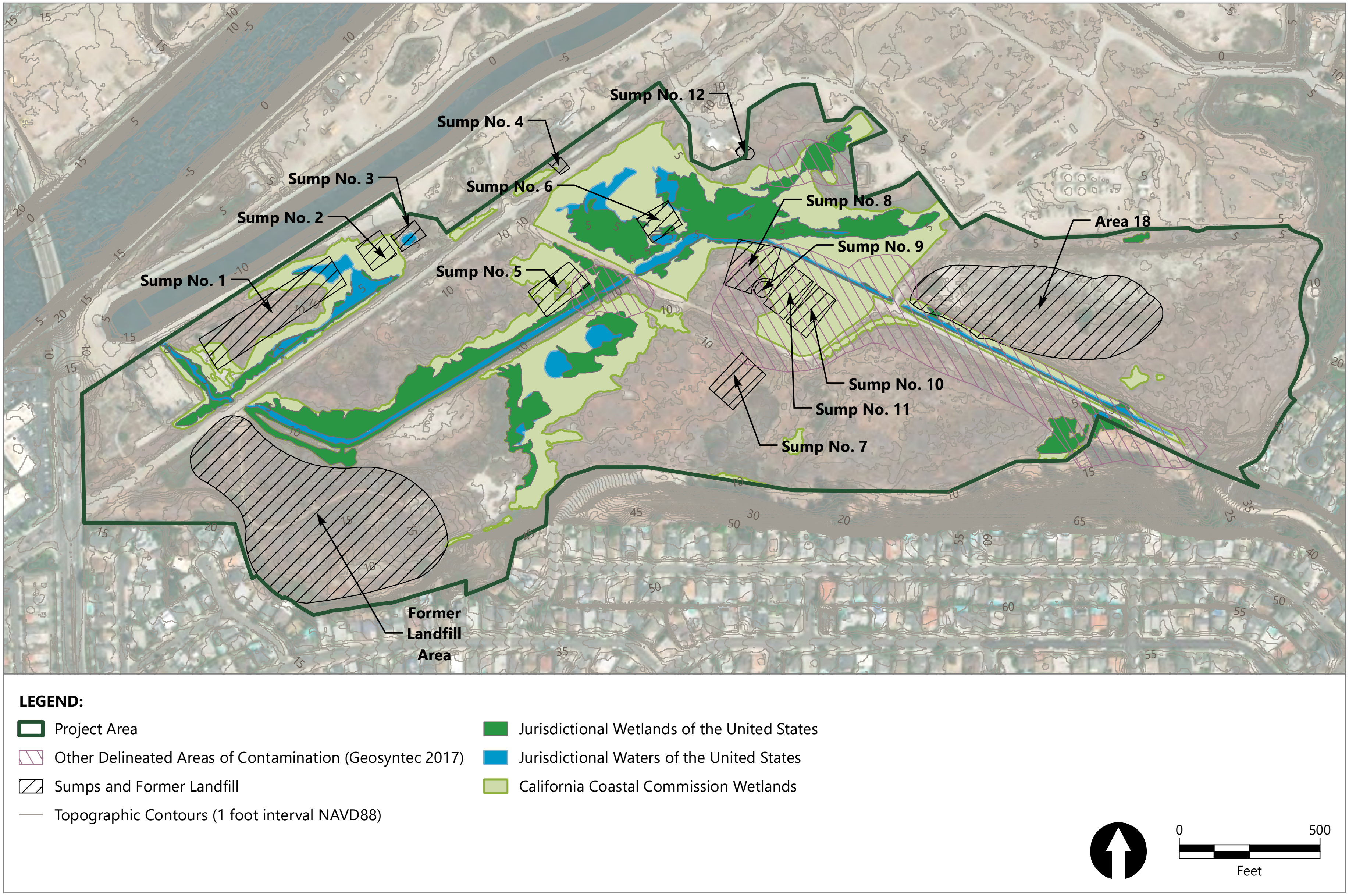
ANCHOR QEA

Figure 1
Project Site and Vicinity Map
Sampling and Analysis Report
Southern Los Cerritos Wetlands Restoration Project



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ANCHOR QEA

Figure 2
Site Map
Sampling and Analysis Report
Southern Los Cerritos Wetlands Restoration Project

LEGEND:

- Bioswale/Riparian Woodland
- Camissoniopsis Mitigation Site
- Camissoniopsis Preservation Site
- Existing Tidal Channel
- Flood Wall or Berm
- High Salt Marsh
- High Salt Marsh - Salt Panne
- Mid Salt Marsh
- Raise and Re-align 1st Street on Fill Dirt
- Restore Upland on Fill
- Spartina Salt Marsh
- Subtidal Channel
- To Be Determined
- Tidal Mesocosm
- Transition Zone
- Upland
- Upland on Fill

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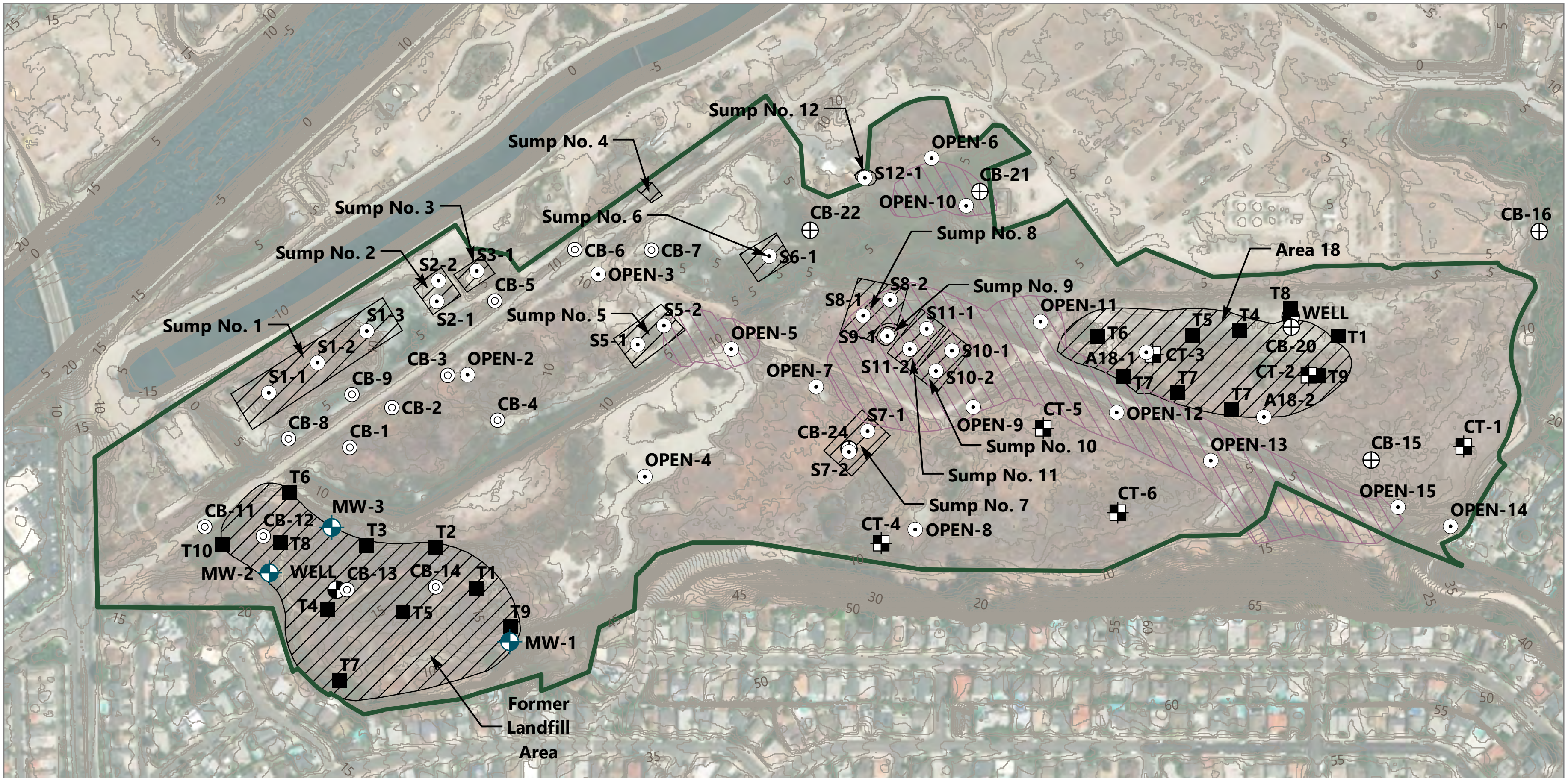
ANCHOR QEA

0 500
Feet

Figure 3
Los Cerritos Wetlands Habitat Restoration Plan



LEGEND:

- Soil Boring for Agronomy Study (Converse 1996)
- Trench (Geomatrix Consultants 2001)
- Groundwater Monitoring Well (Geomatrix Consultants 2001)
- Test Pit for Agronomy Study (Converse 1996)
- Monitoring Well (Converse 1996)
- Boring Location (Anchor 2004)
- Monitoring Well (Anchor 2004)
- Project Area
- Other Delineated Areas of Contamination (Geosyntec 2017)
- Sumps and Former Landfill
- Topographic Contours (1 foot interval NAVD88)

0 500
Feet

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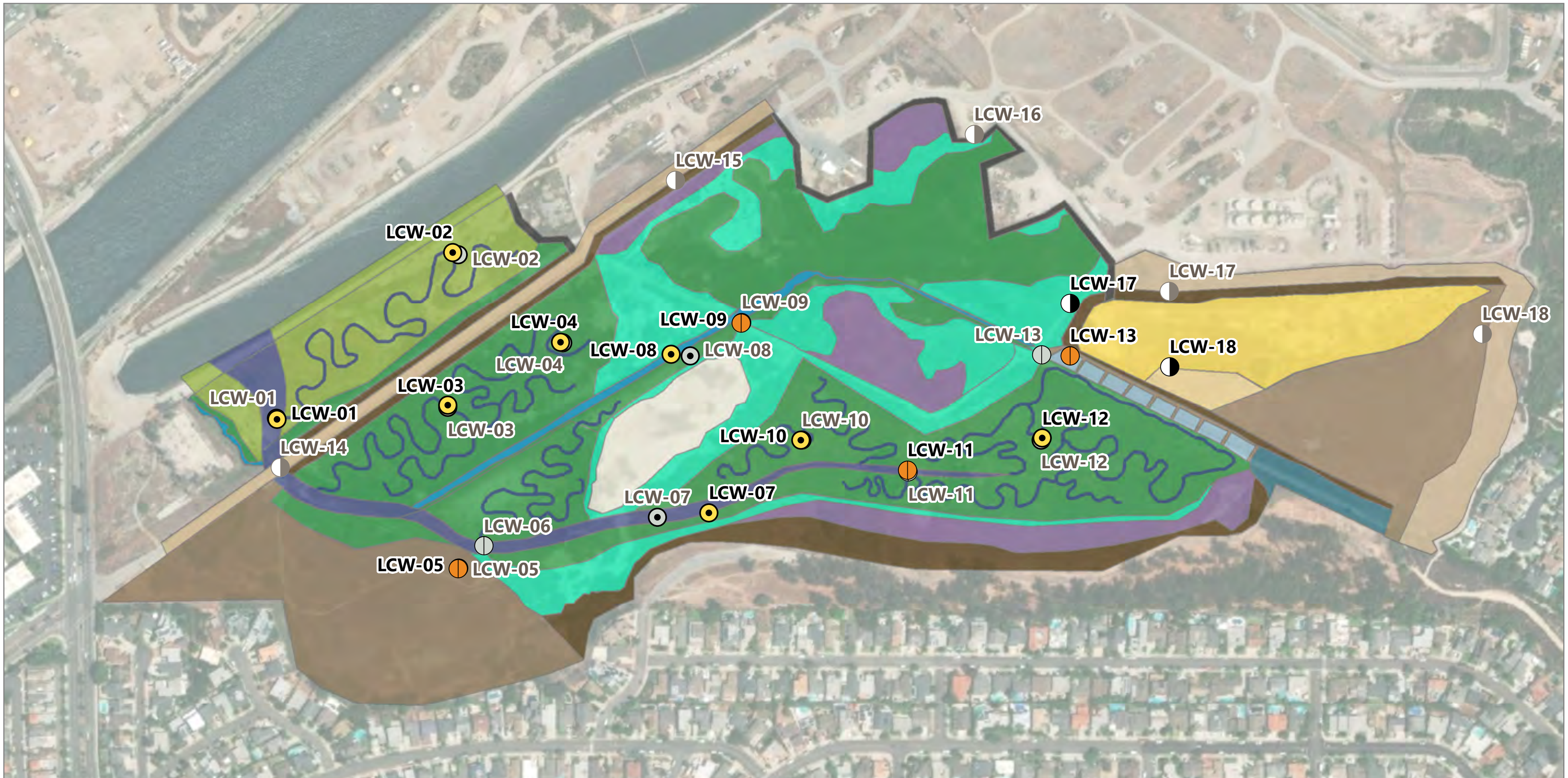
ANCHOR QEA

Figure 4
Previously Completed Sample Locations
Sampling and Analysis Report
Southern Los Cerritos Wetlands Restoration Project



LEGEND:

- Actual Soil Boring: Chemical Sampling Only
- Actual Soil Boring: Geotechnical Purpose with Chemical Sampling
- Actual Soil Boring: Geotechnical Purposes Only
- Proposed Soil Boring: Chemical Sampling Only
- Proposed Soil Boring: Geotechnical Purposes Only
- Proposed Soil Boring: Geotechnical Purposes with Chemical Sampling
- Bioswale/Riparian Woodland
- Camissoniopsis Mitigation Site
- Camissoniopsis Preservation Site
- Existing Tidal Channel
- Flood Wall or Berm
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- High Salt Marsh - Salt Panne
- Mid Salt Marsh
- Raise and Re-align 1st Street on Fill Dirt
- Restore Upland on Fill
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- Subtidal Channel
- To Be Determined
- Tidal Mesocosm
- Transition Zone
- Upland
- Upland on Fill

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ANCHOR QEA

0 500
Feet

Figure 5
Proposed and Actual Sampling Locations Relative to Habitat Restoration Plan
Sampling and Analysis Report
Southern Los Cerritos Wetlands Restoration Project

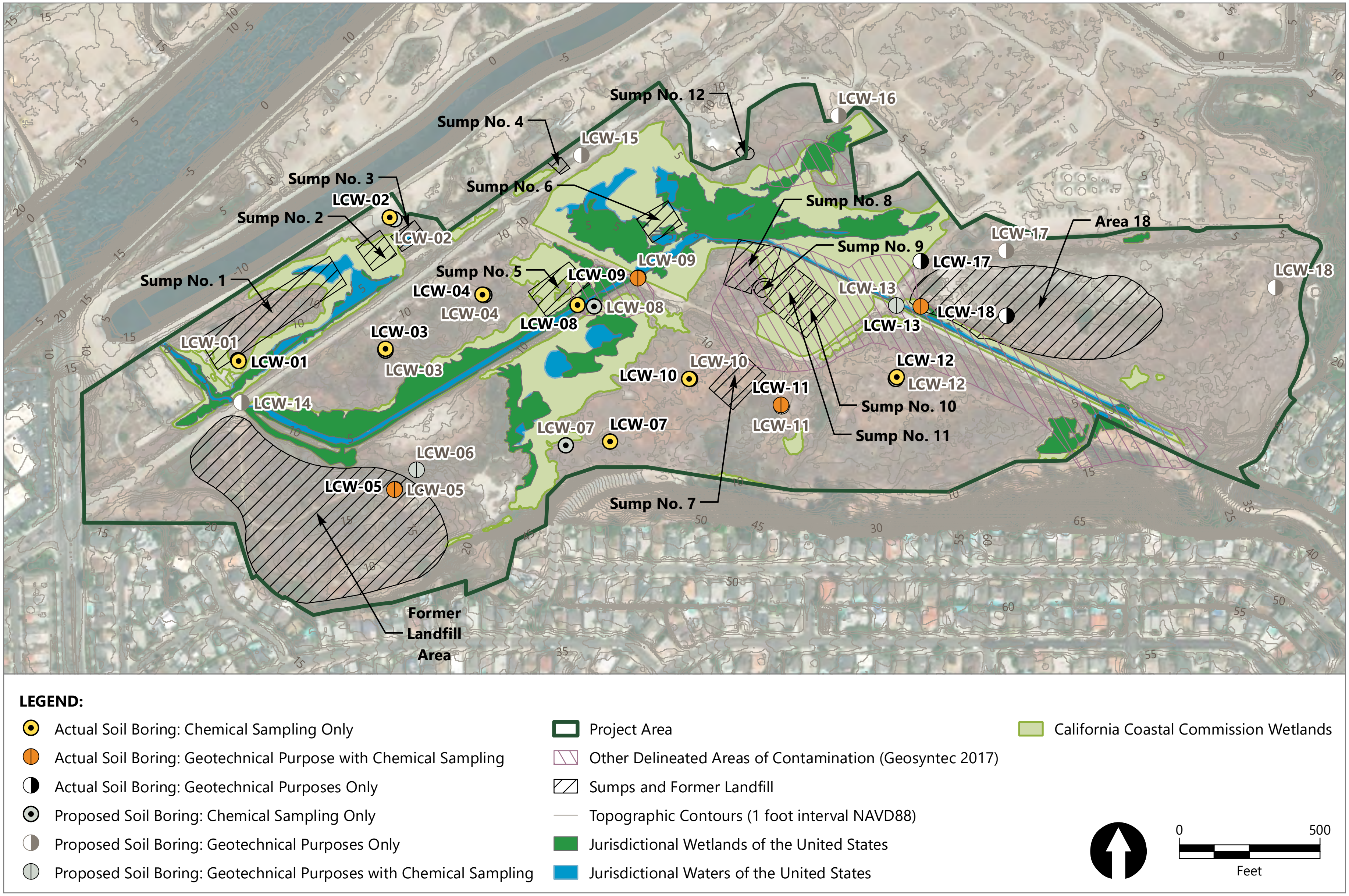

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Figure 6
Proposed and Actual Sampling Locations Relative to Existing Wetlands, Sumps, Former Landfill, and Other Areas of Contamination
Sampling and Analysis Report
Southern Los Cerritos Wetlands Restoration Project

Appendix A
Watermain Rehabilitation Project Boring Locations

SAMPLE/SAMPLER TYPE GRAPHICS

- BULK SAMPLE
- CALIFORNIA SAMPLER (3 in. (76.2 mm.) outer diameter)
- GRAB SAMPLE
- STANDARD PENETRATION SPLIT SPOON SAMPLER (2 in. (50.8 mm.) outer diameter and 1-3/8 in. (34.9 mm.) inner diameter)

GROUND WATER GRAPHICS

- WATER LEVEL (level where first observed)
- WATER LEVEL (level after exploration completion)
- WATER LEVEL (additional levels after exploration)
- OBSERVED SEEPAGE

NOTES

- The report and graphics key are an integral part of these logs. All data and interpretations in this log are subject to the explanations and limitations stated in the report.
- Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual or differ from those shown.
- No warranty is provided as to the continuity of soil or rock conditions between individual sample locations.
- Logs represent general soil or rock conditions observed at the point of exploration on the date indicated.
- In general, Unified Soil Classification System designations presented on the logs were based on visual classification in the field and were modified where appropriate based on gradation and index property testing.
- Fine grained soils that plot within the hatched area on the Plasticity Chart, and coarse grained soils with between 5% and 12% passing the No. 200 sieve require dual USCS symbols, ie., GW-GM, GP-GM, GW-GC, GP-GC, GC-GM, SW-SM, SP-SM, SW-SC, SP-SC, SC-SM.
- If sampler is not able to be driven at least 6 inches then 50/X indicates number of blows required to drive the identified sampler X inches with a 140 pound hammer falling 30 inches.

ABBREVIATIONS

WOH - Weight of Hammer
WOR - Weight of Rod

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)	**GRAVELS** (More than half of coarse fraction is larger than the #4 sieve)	CLEAN GRAVEL WITH <5% FINES	Cu≥4 and 1≤Cc≤3	**GW**	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			Cu<4 and/ or 1>Cc>3	**GP**	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH 5% TO 12% FINES	Cu≥4 and 1≤Cc≤3	**GW-GM**	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
				GW-GC	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
			Cu<4 and/ or 1>Cc>3	**GP-GM**	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
				GP-GC	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
		GRAVELS WITH > 12% FINES		**GM**	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
				GC-GM	CLAYEY GRAVELS, GRAVEL-SAND-CLAY-SILT MIXTURES
	SANDS (Half or more of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH <5% FINES	Cu≥6 and 1≤Cc≤3	**SW**	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			Cu<6 and/ or 1>Cc>3	**SP**	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH 5% TO 12% FINES	Cu≥6 and 1≤Cc≤3	**SW-SM**	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
				SW-SC	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
			Cu<6 and/ or 1>Cc>3	**SP-SM**	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
				SP-SC	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
		SANDS WITH > 12% FINES		**SM**	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES
				SC-SM	CLAYEY SANDS, SAND-SILT-CLAY MIXTURES

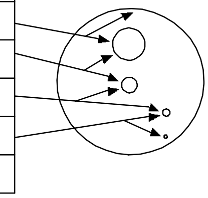
FINE GRAINED SOILS (Half or more of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid Limit less than 50)	**ML**	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, SILTS WITH SLIGHT PLASTICITY
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		CL-ML	INORGANIC CLAYS-SILTS OF LOW PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (Liquid Limit 50 or greater)	**MH**	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
		OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY

NOTE: USE MATERIAL DESCRIPTION ON THE LOG TO DEFINE A GRAPHIC THAT MAY NOT BE PROVIDED ON THIS LEGEND.

KLEINFELDER Bright People. Right Solutions.	PROJECT NO.: 20221319.001A	GRAPHICS KEY	FIGURE
	DRAWN BY: MAP	Los Cerritos Wetlands Authority Watermain Rehabilitation Project Seal Beach, CA	A-1
	CHECKED BY: JW		
	DATE: 1/24/2022		

GRAIN SIZE

DESCRIPTION		SIEVE SIZE	GRAIN SIZE	APPROXIMATE SIZE
Boulders		>12 in. (304.8 mm.)	>12 in. (304.8 mm.)	Larger than basketball-sized
Cobbles		3 - 12 in. (76.2 - 304.8 mm.)	3 - 12 in. (76.2 - 304.8 mm.)	Fist-sized to basketball-sized
Gravel	coarse	3/4 -3 in. (19 - 76.2 mm.)	3/4 -3 in. (19 - 76.2 mm.)	Thumb-sized to fist-sized
	fine	#4 - 3/4 in. (#4 - 19 mm.)	0.19 - 0.75 in. (4.8 - 19 mm.)	Pea-sized to thumb-sized
Sand	coarse	#10 - #4	0.079 - 0.19 in. (2 - 4.9 mm.)	Rock salt-sized to pea-sized
	medium	#40 - #10	0.017 - 0.079 in. (0.43 - 2 mm.)	Sugar-sized to rock salt-sized
	fine	#200 - #40	0.0029 - 0.017 in. (0.07 - 0.43 mm.)	Flour-sized to sugar-sized
Fines		Passing #200	<0.0029 in. (<0.07 mm.)	Flour-sized and smaller



SECONDARY CONSTITUENT

Term of Use	AMOUNT: Secondary Constituent is Fine Grained	AMOUNT: Secondary Constituent is Coarse Grained
Trace	<5%	<15%
With	≥5 to <15%	≥15 to <30%
Modifier	≥15%	≥30%

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

CONSISTENCY - FINE-GRAINED SOIL

CONSISTENCY	SPT - N_{60} (# blows / ft)	Pocket Pen (tsf)	UNCONFINED COMPRESSIVE STRENGTH (Q_u)(psf)	VISUAL / MANUAL CRITERIA
Very Soft	<2	PP < 0.25	<500	Thumb will penetrate more than 1 inch (25 mm). Extrudes between fingers when squeezed.
Soft	2 - 4	0.25 ≤ PP <0.5	500 - 1000	Thumb will penetrate soil about 1 inch (25 mm). Remolded by light finger pressure.
Medium Stiff	4 - 8	0.5 ≤ PP <1	1000 - 2000	Thumb will penetrate soil about 1/4 inch (6 mm). Remolded by strong finger pressure.
Stiff	8 - 15	1 ≤ PP <2	2000 - 4000	Can be imprinted with considerable pressure from thumb.
Very Stiff	15 - 30	2 ≤ PP <4	4000 - 8000	Thumb will not indent soil but readily indented with thumbnail.
Hard	>30	4 ≤ PP	>8000	Thumbnail will not indent soil.

REACTION WITH HYDROCHLORIC ACID

DESCRIPTION	FIELD TEST
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming immediately

APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL

APPARENT DENSITY	SPT-N_{60} (# blows/ft)	MODIFIED CA SAMPLER (# blows/ft)	CALIFORNIA SAMPLER (# blows/ft)	RELATIVE DENSITY (%)
Very Loose	<4	<4	<5	0 - 15
Loose	4 - 10	5 - 12	5 - 15	15 - 35
Medium Dense	10 - 30	12 - 35	15 - 40	35 - 65
Dense	30 - 50	35 - 60	40 - 70	65 - 85
Very Dense	>50	>60	>70	85 - 100

FROM TERZAGHI AND PECK, 1948

PLASTICITY

DESCRIPTION	LL		PI
Non-Plastic	NP	Either the LL or the PI (or both) may be used to describe the soil plasticity. The ranges of numbers shown here do not imply that the LL ranges correlate with the PI ranges for all soils.	NP
Low	< 30		< 15
Medium	30 - 50		15 - 25
High	> 50		> 25

LL is from Casagrande, 1948. PI is from Holtz , 1959.

STRUCTURE

DESCRIPTION	CRITERIA
Stratified	Alternating layers of varying material or color with layers at least 1/4-in. thick, note thickness.
Laminated	Alternating layers of varying material or color with the layer less than 1/4-in. thick, note thickness.
Fissured	Breaks along definite planes of fracture with little resistance to fracturing.
Slickensided	Fracture planes appear polished or glossy, sometimes striated.
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown.
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness.

ANGULARITY

DESCRIPTION	CRITERIA
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces.
Subangular	Particles are similar to angular description but have rounded edges.
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges.
Rounded	Particles have smoothly curved sides and no edges.

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 20221319.001A

DRAWN BY: MAP

CHECKED BY: JW

DATE: 1/24/2022

SOIL DESCRIPTION KEY

Los Cerritos Wetlands Authority
Watermain Rehabilitation Project
Seal Beach, CA

FIGURE A-2

BORING LOG B-1

Date Begin - End: 12/15/2021	**Drilling Co.-Lic.#:** BC2 Environmental - #1051275		
Logged By: V. Flores	**Drill Crew:** J. Ortiz / E. Ramirez		
Hor.-Vert. Datum: Not Available	**Drilling Equipment:** CME-95	**Hammer Type - Drop:** 140 lb. Auto - 30 in.	
Plunge: -90 degrees	**Drilling Method:** Hollow Stem Auger	**Hammer Efficiency:** 77.6%	
Weather: Clear and Cold	**Exploration Diameter:** 8 in. O.D.	**Hammer Cal. Date:** 6/26/2021	

FIELD EXPLORATION / LABORATORY RESULTS

Latitude: 33.75001°
Longitude: -118.10505°
Approximate Ground Surface Elevation (ft.): 9.99
Surface Condition: Asphalt Pavement

Approximate Elevation (feet)	Depth (feet)	Lithologic Description	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
	0	**ASPHALT**: approximately 2 inches										Hand augered 5 feet below ground surface
		AGGREGATE BASE: approximately 3 inches										
		<u>**Artificial Fill**</u> **Poorly Graded SAND with Silt (SP-SM)**: fine to medium-grained, olive yellow (2.5Y 6/6), moist, trace clay content										
		<u>**Alluvium**</u> **Lean CLAY with Sand (CL)**: low to medium plasticity, olive brown (2.5Y 4/3), moist, increasing sand content										
5	5	(2.5Y 4/3), very soft, trace silt	BC=1 1 1	6"								Low recovery
			BC=1 1 1	18"					84			**Direct Shear** Soil completely saturated, no visible groundwater
0	10	light brownish gray (2.5Y 6/2), soft, iron oxide staining	BC=1 1 2	18"						32	16	
		olive gray (5Y 4/2)	BC=1 1 1	18"		46.2	76.4		72			Very soft soil settling
-5	15	**SILT (ML)**: gray (GLEY 1-6/N), moist, soft, iron oxide staining, trace clay and sand content	BC=1 1 2	18"								
-10	20	olive (5Y 5/4), stiff, trace subangular gravel up to 3/4 inch	BC=1 7 18	18"								
-15	25											

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with cement-bentonite grout on December 15, 2021.

<u>GROUNDWATER LEVEL INFORMATION:</u>
Groundwater was not observed during drilling or after completion.
<u>GENERAL NOTES:</u>
The approximate latitude/longitude and elevation are estimated from the drawings provided by Stantec.

KLEINFELDER
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PROJECT NO.: 20221319.001A
DRAWN BY: MAP
CHECKED BY: JW
DATE: 1/24/2022

BORING LOG B-1

Los Cerritos Wetlands Authority
Watermain Rehabilitation Project
Seal Beach, CA

FIGURE
A-3

Date Begin - End:	12/15/2021	Drilling Co.-Lic.#:	BC2 Environmental - #1051275		**BORING LOG B-2**
Logged By:	V. Flores	**Drill Crew:**	J. Ortiz / E. Ramirez		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-95	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger	**Hammer Efficiency:**	77.6%
Weather:	Clear and Cold	**Exploration Diameter:**	8 in. O.D.	**Hammer Cal. Date:**	6/26/2021

FIELD EXPLORATION / LABORATORY RESULTS

Latitude: 33.75070°
Longitude: -118.10386°
Approximate Ground Surface Elevation (ft.): 9.30
Surface Condition: Asphalt Pavement

Approximate Elevation (feet)	Depth (feet)	Lithologic Description	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
	0	**ASPHALT**: approximately 2 inches										Hand augered 5 feet below ground surface
		AGGREGATE BASE: approximately 3 inches										
		Artificial Fill **Poorly Graded SAND with Silt (SP-SM)**: fine to medium-grained, olive yellow (2.5Y 6/6), moist, trace clay content										
5		**Alluvium** **Sandy Lean CLAY (CL)**: low to medium plasticity, olive brown (2.5Y 4/3), moist, trace subangular gravel up to 3/4 inch										
	5		BC=7 5 4	16"		10.5	117.2		11			
		Well-Graded SAND with Silt (SW-SM): fine to coarse-grained, mottled gray (GLEY 1-6/N), moist, loose										
		SILT with Sand (ML): olive brown (2.5Y 4/3), moist, medium stiff	BC=1 1 1	18"								Tree roots
0		**Lean CLAY (CL)**: low to medium plasticity, light brownish gray (2.5Y 4/3), moist, very soft										
	10	**SILT (ML)**: olive gray (5Y 4/2), moist, very soft	BC=1 1 1	18"					95			**Unconfined Compression**
	▽▼	**SILT with Sand (ML)**: non-plastic, olive gray (5Y 4/2), wet, soft	BC=1 1 2	18"	ML				74	NP	NP	
-5	15		BC=1 1 3	18"		30.6	91.2					
-10	20	**Poorly Graded SAND with Silt (SP-SM)**: fine to medium-grained, olive gray (5Y 4/2), wet, loose	BC=1 2 7	18"								
		Lean CLAY (CL): low to medium plasticity, olive gray (5Y 4/2), wet, stiff										
-15	25											
-20												

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with cement-bentonite grout on December 15, 2021.

GROUNDWATER LEVEL INFORMATION:
▽ Groundwater was observed at approximately 12.5 ft. below ground surface during drilling.
▼ Groundwater was observed at approximately 12.5 ft. below ground surface at the end of drilling.

GENERAL NOTES:
The approximate latitude/longitude and elevation are estimated from the drawings provided by Stantec.

KLEINFELDER Bright People. Right Solutions.	PROJECT NO.: 20221319.001A	BORING LOG B-2	FIGURE
	DRAWN BY: MAP	Los Cerritos Wetlands Authority Watermain Rehabilitation Project Seal Beach, CA	A-4
	CHECKED BY: JW		
	DATE: 1/24/2022		PAGE: 1 of 1

BORING LOG B-3

Date Begin - End:	12/15/2021	**Drilling Co.-Lic.#:**	BC2 Environmental - #1051275
Logged By:	V. Flores	**Drill Crew:**	J. Ortiz / E. Ramirez
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-95
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	Clear and Cold	**Exploration Diameter:**	8 in. O.D.

Hammer Type - Drop: 140 lb. Auto - 30 in.
Hammer Efficiency: 77.6%
Hammer Cal. Date: 6/26/2021

FIELD EXPLORATION

Latitude: 33.75140°
Longitude: -118.10269°
Approximate Ground Surface Elevation (ft.): 8.78
Surface Condition: Asphalt Pavement

Approximate Elevation (feet)	Depth (feet)	Lithologic Description	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		ASPHALT: approximately 2 inches										Hand augered 5 feet below ground surface
		AGGREGATE BASE: approximately 3 inches										
		Artificial Fill **Poorly Graded SAND with Silt (SP-SM)**: fine to medium-grained, olive yellow (2.5Y 6/6), moist										
5		**Alluvium** **Sandy Lean CLAY (CL)**: low to medium plasticity, olive brown (2.5Y 4/3), moist										
	5	**Fat CLAY (CH)**: high plasticity, gray (GLEY 1-6/N), moist, stiff	BC=3 4 5	18"	CH				98	60	33	
		olive gray (5Y 4/2), soft to medium stiff	BC=1 2 2	16"		79.0	58.4					Tree roots
0		**SILT with Sand (ML)**: low to medium plasticity, olive gray (5Y 4/2), moist, soft to medium stiff										
	10	**Sandy SILT (ML)**: olive gray (5Y 4/2), moist, very soft	BC=1 1 1	18"								
		fine-grained sand, wet, stiff	BC=1 3 6	18"		43.1	79.0		53			
-5		**Poorly Graded SAND with Silt (SP-SM)**: fine to medium-grained, olive gray (5Y 4/2), wet, loose										
	15	**SILT with Sand (ML)**: low to medium plasticity, olive gray (5Y 4/2), wet, soft	BC=1 1 2	18"								
-10		**Poorly Graded SAND with Silt (SP-SM)**: fine to coarse-grained, olive gray (5Y 4/2), wet, loose, seashells										
	20		BC=3 4 5	18"								
-15	25											
-20												

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with cement-bentonite grout on December 15, 2021.

GROUNDWATER LEVEL INFORMATION:
∇ Groundwater was observed at approximately 11.8 ft. below ground surface during drilling.
▼ Groundwater was observed at approximately 11.8 ft. below ground surface at the end of drilling.

GENERAL NOTES:
The approximate latitude/longitude and elevation are estimated from the drawings provided by Stantec.

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PROJECT NO.:	20221319.001A
DRAWN BY:	MAP
CHECKED BY:	JW
DATE:	1/24/2022

BORING LOG B-3

Los Cerritos Wetlands Authority
Watermain Rehabilitation Project
Seal Beach, CA

FIGURE
A-5

Date Begin - End:	12/15/2021	Drilling Co.-Lic.#:	BC2 Environmental - #1051275		BORING LOG B-4
Logged By:	V. Flores	Drill Crew:	J. Ortiz / E. Ramirez		
Hor.-Vert. Datum:	Not Available	Drilling Equipment:	CME-95	Hammer Type - Drop:	140 lb. Auto - 30 in.
Plunge:	-90 degrees	Drilling Method:	Hollow Stem Auger	Hammer Efficiency:	77.6%
Weather:	Clear and Cold	Exploration Diameter:	8 in. O.D.	Hammer Cal. Date:	6/26/2021

FIELD EXPLORATION / LABORATORY RESULTS

Latitude: 33.75204°
Longitude: -118.10159°
Approximate Ground Surface Elevation (ft.): 9.91
Surface Condition: Asphalt Pavement

Approximate Elevation (feet)	Depth (feet)	Lithologic Description	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		ASPHALT: approximately 2 inches										Hand augered 5 feet below ground surface
		AGGREGATE BASE: approximately 3 inches										
		Artificial Fill **Poorly Graded SAND with Silt (SP-SM)**: fine to medium-grained, olive gray (5Y 4/2), moist, trace clay content										
		Alluvium **Sandy Lean CLAY (CL)**: low to medium plasticity, olive gray (5Y 4/2), moist										
5	5	**Lean CLAY (CL)**: low to medium plasticity, olive gray (5Y 4/2), moist, very stiff	BC=5 8 10	12"		32.0	86.3					
		soft to medium stiff	BC=1 1 3	18"								
0	10	**SILT with Sand (ML)**: non-plastic, olive gray (5Y 4/2), moist, medium stiff	BC=1 2 3	16"	ML				79	NP	NP	
		wet, very soft, increasing fines content	BC=1 1 1	18"								
-5	15	**SILT (ML)**: olive gray (5Y 4/2), wet, medium stiff	BC=1 2 4	18"					89			
		Lean CLAY (CL): low to medium plasticity, olive gray (5Y 4/2), wet, soft to medium stiff										
-10	20		BC=1 1 3	16"								
-15	25											

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with cement-bentonite grout on December 15, 2021.

GROUNDWATER LEVEL INFORMATION:
▽ Groundwater was observed at approximately 12 ft. below ground surface during drilling.
▼ Groundwater was observed at approximately 12 ft. below ground surface at the end of drilling.

GENERAL NOTES:
The approximate latitude/longitude and elevation are estimated from the drawings provided by Stantec.

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PROJECT NO.: 20221319.001A	BORING LOG B-4	FIGURE
DRAWN BY: MAP	Los Cerritos Wetlands Authority Watermain Rehabilitation Project Seal Beach, CA	A-6
CHECKED BY: JW		
DATE: 1/24/2022		PAGE: 1 of 1

BORING LOG B-5

Date Begin - End:	12/16/2021	**Drilling Co.-Lic.#:**	BC2 Environmental - #1051275
Logged By:	V. Flores	**Drill Crew:**	J. Ortiz / E. Ramirez
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-95
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	Clear and Cold	**Exploration Diameter:**	8 in. O.D.

Hammer Type - Drop: 140 lb. Auto - 30 in.
Hammer Efficiency: 77.6%
Hammer Cal. Date: 6/26/2021

Latitude: 33.75269°
Longitude: -118.10050°
Approximate Ground Surface Elevation (ft.): 10.12
Surface Condition: Asphalt Pavement

Approximate Elevation (feet)	Depth (feet)	Lithologic Description	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		ASPHALT: approximately 2 inches										Hand augered 5 feet below ground surface
		AGGREGATE BASE: approximately 3 inches										
		Artificial Fill **Poorly Graded SAND with Silt (SP-SM)**: fine to medium-grained, olive yellow (2.5Y 6/6), moist, trace clay content				8.9						
		Alluvium **Sandy Lean CLAY (CL)**: low to medium plasticity, olive gray (5Y 4/2), moist										
5	5	**Lean CLAY with Sand (CL)**: low to medium plasticity, olive gray (5Y 4/2), moist, stiff, iron oxide staining, increasing sand content	BC=2 4 5	18"								
		Sandy SILT (ML): fine-grained sand, olive gray (5Y 4/2), moist, stiff, increasing fines content	BC=3 4 10	16"		21.7	102.3		58			
		SILT (ML): olive (5Y 5/4), moist, medium stiff										
0	10	very soft	BC=1 1 1	18"								
		non-plastic, olive gray (5Y 4/2), wet, stiff	BC=2 4 7	16"		27.3	97.2			NP	NP	
-5	15	very soft, trace clay content	BC=1 1 1	18"								
		Lean CLAY (CL): low to medium plasticity, olive gray (5Y 4/2), wet, stiff										
-10	20		BC=2 5 5	18"								
-15	25											

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with cement-bentonite grout on December 16, 2021.

GROUNDWATER LEVEL INFORMATION:
∇ Groundwater was observed at approximately 11.1 ft. below ground surface during drilling.
▼ Groundwater was observed at approximately 11.1 ft. below ground surface at the end of drilling.

GENERAL NOTES:
The approximate latitude/longitude and elevation are estimated from the drawings provided by Stantec.

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PROJECT NO.:	20221319.001A
DRAWN BY:	MAP
CHECKED BY:	JW
DATE:	1/24/2022

BORING LOG B-5

Los Cerritos Wetlands Authority
Watermain Rehabilitation Project
Seal Beach, CA

FIGURE
A-7

Date Begin - End:	12/16/2021	**Drilling Co.-Lic.#:**	BC2 Environmental - #1051275		**BORING LOG B-6**
Logged By:	V. Flores	**Drill Crew:**	J. Ortiz / E. Ramirez		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-95	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger	**Hammer Efficiency:**	77.6%
Weather:	Clear and Cold	**Exploration Diameter:**	8 in. O.D.	**Hammer Cal. Date:**	6/26/2021

FIELD EXPLORATION / LABORATORY RESULTS

Latitude: 33.75334°
Longitude: -118.09940°
Approximate Ground Surface Elevation (ft.): 9.67
Surface Condition: Asphalt Pavement

Approximate Elevation (feet)	Depth (feet)	Lithologic Description	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		ASPHALT: approximately 2 inches										Hand augered 5 feet below ground surface
		AGGREGATE BASE: approximately 3 inches										
		Artificial Fill **Poorly Graded SAND with Silt (SP-SM)**: fine to medium-grained, olive yellow (2.5Y 6/6), moist										
		Alluvium **SILT with Sand (ML)**: olive gray (5Y 4/2), moist, increasing fines content										
5	5	**SILT (ML)**: olive brown (2.5Y 4/3), moist, stiff, iron oxide staining	BC=2 4 5	14"		23.0	94.6					
		olive gray (5Y 4/2), medium stiff	BC=1 2 3	18"								
0	10	non-plastic, (5Y 4/2), medium stiff to stiff, iron oxide staining	BC=2 5 3	14"	ML	38.8	85.5		95	NP	NP	
			BC=1 3 5	18"								
-5	15	**Lean CLAY (CL)**: low to medium plasticity, olive gray (5Y 4/2), wet, medium stiff, trace subangular gravel up to 3/4 inch	BC=1 2 4	14"								
-10	20	no recovery, trace amounts of Lean CLAY (CL)	BC=1 4 5	NR								
-15	25											
-20												

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with cement-bentonite grout on December 16, 2021.

GROUNDWATER LEVEL INFORMATION:
Groundwater was observed at approximately 11.5 ft. below ground surface during drilling.
Groundwater was observed at approximately 11.5 ft. below ground surface at the end of drilling.
GENERAL NOTES:
The approximate latitude/longitude and elevation are estimated from the drawings provided by Stantec.

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PROJECT NO.: 20221319.001A
DRAWN BY: MAP
CHECKED BY: JW
DATE: 1/24/2022

BORING LOG B-6

Los Cerritos Wetlands Authority
Watermain Rehabilitation Project
Seal Beach, CA

FIGURE
A-8

BORING LOG B-7

Date Begin - End:	12/16/2021	**Drilling Co.-Lic.#:**	BC2 Environmental - #1051275		
Logged By:	V. Flores	**Drill Crew:**	J. Ortiz / E. Ramirez		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-95	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger	**Hammer Efficiency:**	77.6%
Weather:	Clear and Cold	**Exploration Diameter:**	8 in. O.D.	**Hammer Cal. Date:**	6/26/2021

FIELD EXPLORATION / LABORATORY RESULTS

Latitude: 33.75398°
Longitude: -118.09832°
Approximate Ground Surface Elevation (ft.): 9.40
Surface Condition: Asphalt Pavement

Approximate Elevation (feet)	Depth (feet)	Lithologic Description	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
	0	**ASPHALT**: approximately 2 inches										Hand augered 5 feet below ground surface
		AGGREGATE BASE: approximately 3 inches										
		Artificial Fill **Poorly Graded SAND with Silt (SP-SM)**: fine to medium-grained, olive yellow (2.5Y 6/6), moist, trace clay content										
5		**Alluvium** **Sandy Lean CLAY (CL)**: low to medium plasticity, olive yellow (2.5Y 6/6), moist										
	5	olive (5Y 5/4), medium stiff, iron oxide staining	BC=2 2 3	18"								
		Lean CLAY with Sand (CL): medium plasticity, olive yellow (2.5Y 6/6), moist, medium stiff, iron oxide staining, trace clay content	BC=1 2 4	18"		28.4	94.4		83			
0	10	olive (5Y 5/4), soft	BC=1 1 2	18"								
		SILT (ML): low plasticity, gray (GLEY 1-6/N), wet, stiff	BC=3 5 7	18"		34.2	88.0		88			
-5	15	**Lean CLAY (CL)**: low to medium plasticity, gray (GLEY 1-6/N), wet, soft	BC=1 1 2	18"								
		SILT (ML): low plasticity, gray (GLEY 1-6/N), wet, stiff to very stiff										
-10	20		BC=4 7 8	18"								
-15	25											
-20												

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with cement-bentonite grout on December 16, 2021.

GROUNDWATER LEVEL INFORMATION:
Groundwater was observed at approximately 12.5 ft. below ground surface during drilling.
Groundwater was observed at approximately 12.5 ft. below ground surface at the end of drilling.

GENERAL NOTES:
The approximate latitude/longitude and elevation are estimated from the drawings provided by Stantec.

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PROJECT NO.: 20221319.001A	BORING LOG B-7	FIGURE
DRAWN BY: MAP	Los Cerritos Wetlands Authority Watermain Rehabilitation Project Seal Beach, CA	A-9
CHECKED BY: JW		
DATE: 1/24/2022		PAGE: 1 of 1

Date Begin - End:	12/16/2021	**Drilling Co.-Lic.#:**	BC2 Environmental - #1051275		**BORING LOG B-8**
Logged By:	V. Flores	**Drill Crew:**	J. Ortiz / E. Ramirez		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	CME-95	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger	**Hammer Efficiency:**	77.6%
Weather:	Clear and Cold	**Exploration Diameter:**	8 in. O.D.	**Hammer Cal. Date:**	6/26/2021

FIELD EXPLORATION / LABORATORY RESULTS

Latitude: 33.75456°
Longitude: -118.09747°
Approximate Ground Surface Elevation (ft.): 9.75
Surface Condition: Asphalt Pavement

Approximate Elevation (feet)	Depth (feet)	Lithologic Description	Blow Counts(BC)= Uncorr. Blows/6 in.	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		ASPHALT: approximately 2 inches										Hand augered 5 feet below ground surface
		AGGREGATE BASE: approximately 3 inches										
		Artificial Fill **Poorly Graded SAND with Silt (SP-SM)**: fine to medium-grained, olive yellow (2.5Y 6/6), moist										
		Alluvium **Sandy Lean CLAY (CL)**: medium plasticity, olive gray (5Y 4/2), moist										
5	5	**Fat CLAY (CH)**: high plasticity, olive (5Y 5/4), moist, medium stiff	BC=4 5 9	18"		28.2	95.7					
		iron oxide staining, trace subangular gravel up to 3/4 inch	BC=2 2 3	18"						52	31	
0	10	**Lean CLAY (CL)**: low to medium plasticity, olive yellow (2.5Y 6/6), weak petrol odor, moist, medium stiff, iron oxide staining	BC=1 2 5	18"					99			**Direct Shear**
		SILT (ML): low plasticity, olive yellow (2.5Y 6/6 to gray (Gley 1-6/N), wet, medium stiff, iron oxide staining	BC=2 3 4	18"								
-5	15	**Lean CLAY (CL)**: low to medium plasticity, gray (GLEY 1-6/N), wet, medium stiff, iron oxide staining	BC=1 2 3	18"					91			
		SILT (ML): low plasticity, gray (GLEY 1-6/N), wet, stiff										
-10	20		BC=2 4 7	18"								
-15	25											
-20												

The boring was terminated at approximately 21.5 ft. below ground surface. The boring was backfilled with cement-bentonite grout on December 16, 2021.

GROUNDWATER LEVEL INFORMATION:
Groundwater was observed at approximately 11.5 ft. below ground surface during drilling.
Groundwater was observed at approximately 11.5 ft. below ground surface at the end of drilling.

GENERAL NOTES:
The approximate latitude/longitude and elevation are estimated from the drawings provided by Stantec.

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PROJECT NO.: 20221319.001A		BORING LOG B-8	FIGURE A-10
DRAWN BY:	MAP	Los Cerritos Wetlands Authority Watermain Rehabilitation Project Seal Beach, CA	
CHECKED BY:	JW		
DATE:	1/24/2022		PAGE: 1 of 1

BORING	LATITUDE	LONGITUDE
B-1	33.749956°	-118.105010°
B-2	33.750658°	-118.103817°
B-3	33.751350°	-118.102656°
B-4	33.752006°	-118.101538°
B-5	33.752642°	-118.100460°
B-6	33.753288°	-118.099361°
B-7	33.753916°	-118.098296°
B-8	33.754557°	-118.097466°

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PROJECT NO.	20221319.001A
DRAWN:	07-07-2021
DRAWN BY:	V. FLORES
CHECKED BY:	J. WOON
FILE NAME:	

PROPOSED BORING LOCATIONS

LOS CERRITOS WETLANDS AUTHORITY WATERMAIN REHABILITATION
TRENCHLESS TECHNOLOGY IMPROVEMENTS
SEAL BEACH, CA

FIGURE:
1

Appendix B
Boring Logs

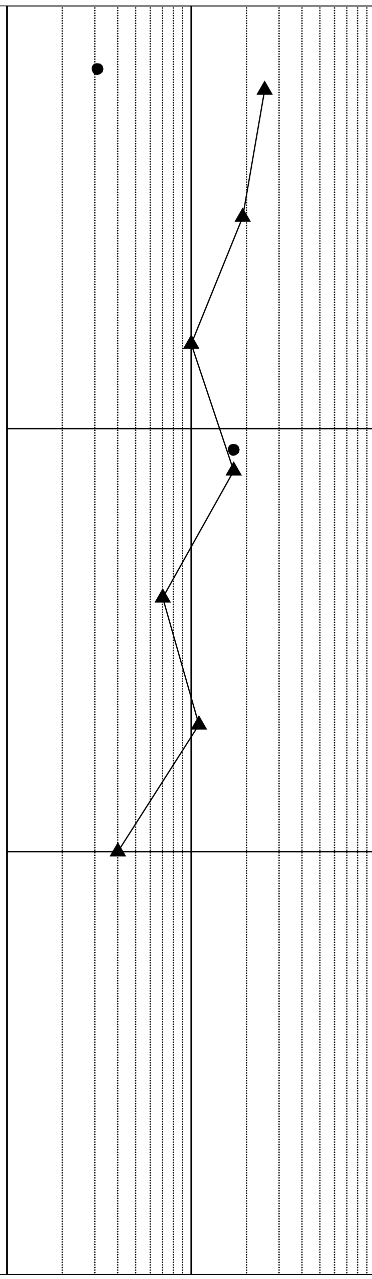
Soil Boring Log

LCW-05

Sheet 1 of 1

Project #: **Los Cerritos Wetland Restoration**	Project: **Los Cerritos Wetland Restoration**	Method: **Hollow Stem**
Location: **Seal Beach, California**	Northing/Latitude: **33.74977**	Total Depth (ft): **10.5**
Client: **Los Cerritos Wetland Authority**	Easting/Longitude: **-118.10213**	Observed Groundwater (ft bgs): **N/A**
Collection Date: **6/17/2022**	Horiz. Datum: **North American Datum of 1983**	Ground Surface Elevation (ft): **13.5**
Contractor: **Cascade Environmental**	Vert. Datum: **North American Vertical Datum 1988**	Hammer: **140-lb Auto Hammer**
Logged By: **C. Osuch**	Sampler(s): **Split Spoon Sampler**	Hammer Efficiency (%): **N/A**

Depth (ft)	Elevation (ft)	Samples ID's	PID	Uncorrected Standard Penetration Resistance (blows per foot) and Moisture Content (%)	Lithology	Soil Description Samples and descriptions are in recovered depths. Classification scheme: USCS	Lab Tests
0		LCW-05 -0-1.5	0.0			0 to 2 ft: Medium dense, damp, dark grayish brown SILTY SAND with gravel (SM), concrete, asphalt.	MC, GS
			0.0			1.5 to 3.7 ft: Soft, damp, dark gray, SILT (ML).	
	10		0.0			3.7 to 4.5 ft: Loose, damp, gray to brown SAND with gravel (SP).	
5		LCW-05 -0-4.5-6	0.0			4.5 to 5 ft: Loose, damp, brown, SAND (SP)	MC, AL
			0.0			5 to 9 ft: Stiff, damp, yellowish brown, CLAY (CL).	
	5		0.0			@8.4 ft: Grades to clay with sand.	
			0.0			9 to 10.2 ft: Loose, damp, brownish gray, SAND (SP).	
10						10.2 to 10.5: Soft, damp, dark gray, SILT (ML).	
						End of boring at 10.5 ft.	
15	0						



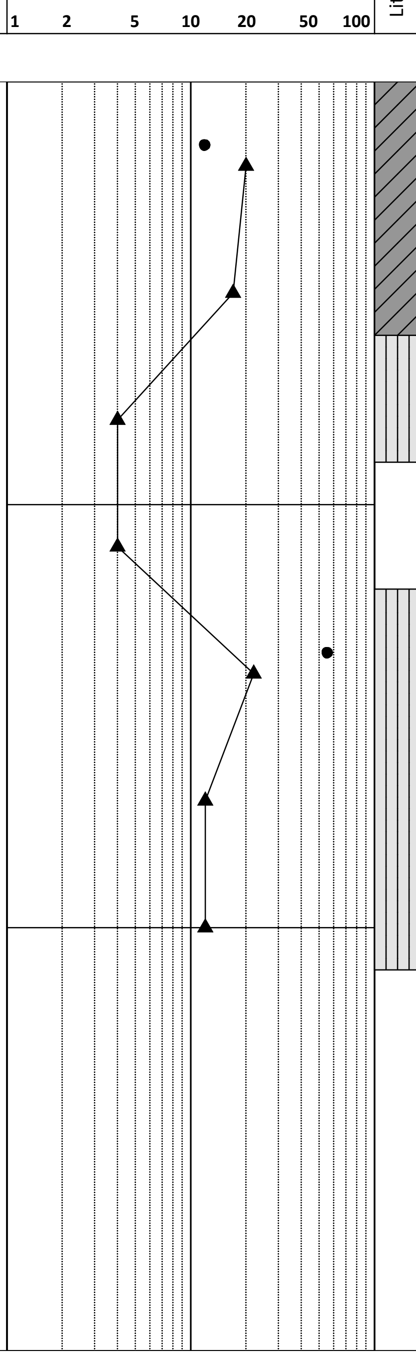
ANCHOR QEA 1201 Third Avenue Suite 2600 Seattle, WA 98101	▲ SPT N-Value ● Moisture Content (%) Groundwater Level	**Notes:** 1) MC = Moisture Content, AL = Atterberg Limits, GS = Grain Size. 2) Soil sampels were archived in 2 foot intervals throughout the termination depth of each boring.

Soil Boring Log

LCW-09

Project #: Los Cerritos Wetland Restoration	Project: Los Cerritos Wetland Restoration	Method: Hollow Stem
Location: Seal Beach, California	Northing/Latitude: 33.75183	Total Depth (ft): 10.5
Client: Los Cerritos Wetland Authority	Easting/Longitude: -118.09930	Observed Groundwater (ft bgs): 6
Collection Date: 6/17/2022	Horiz. Datum: North American Datum of 1983	Ground Surface Elevation (ft): 7.1
Contractor: Cascade Environmental	Vert. Datum: North American Vertical Datum 1988	Hammer: 140-lb Auto Hammer
Logged By: Chris Osuch	Sampler(s): Split Spoon Sampler	Hammer Efficiency (%): N/A

Depth (ft)	Elevation (ft)	Samples ID's	PID	Uncorrected Standard Penetration Resistance (blows per foot) and Moisture Content (%)	Lithology	Soil Description Samples and descriptions are in recovered depths. Classification scheme: USCS	Lab Tests
0		LCW-09 -0-1.5	0.0			0 to 3 ft: Medium stiff, damp, brown, sandy SILT (ML) with trace gravel and asphalt.	MC, GS
	5		2.1				
			0.0			3 to 4.5 ft: Very soft, damp, dark gray, SILT (ML).	
5			0.0			4.5 to 6 ft: No recovery.	
	0	LCW-09 -6-7.5	0.0			6 to 7.5 ft: Soft, damp, dark gray, SILT (ML). @6 ft: Groundwater observed.	MC, AL
			0.0			@8.7 ft: Lens of loose fine sand.	
10			0.0			@9.8 ft: Lens of medium dense, fine sand.	
	-5					End of boring at 10.5 ft.	
15							



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▲ SPT N-Value
● Moisture Content (%)
Groundwater Level

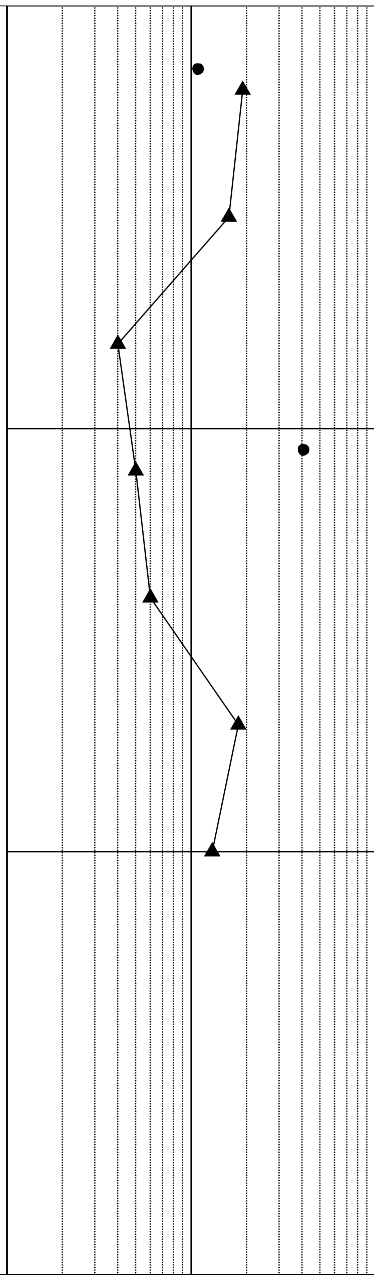
Notes: 1) MC = Moisture Content, AL = Atterberg Limits, GS = Grain Size.
2) Soil sampels were archived in 2 foot intervals throughout the termination depth of each boring.

Soil Boring Log

LCW-13

Project #: **Los Cerritos Wetland Restoration**	Project: **Los Cerritos Wetland Restoration**	Method: **Hollow Stem**
Location: **Seal Beach, California**	Northing/Latitude: **33.75156**	Total Depth (ft): **10.5**
Client: **Los Cerritos Wetland Authority**	Easting/Longitude: **--118.09631**	Observed Groundwater (ft bgs): **6**
Collection Date: **6/17/2022**	Horiz. Datum: **North American Datum of 1983**	Ground Surface Elevation (ft): **7.6**
Contractor: **Cascade Environmental**	Vert. Datum: **North American Vertical Datum 1988**	Hammer: **140-lb Auto Hammer**
Logged By: **M. Brown**	Sampler(s): **Split Spoon Sampler**	Hammer Efficiency (%): **N/A**

Depth (ft)	Elevation (ft)	Samples ID's	PID	Uncorrected Standard Penetration Resistance (blows per foot) and Moisture Content (%)	Lithology	**Soil Description** Samples and descriptions are in recovered depths. Classification scheme: USCS	Lab Tests
0		LCW-13 -0-1.5	0.1			0 to 3 ft: Medium stiff, damp, black SILTY SAND with gravel (ML).	MC, GS
	5		0.0			@1.5 ft: Grades to clay with sand and gravel.	
			0.0			3 to 4.5 ft: No Recovery	
5		LCW-13 -4.5-6	0.0			4.5 to 10.5 ft: Soft, damp, grayish brown, CLAY with sand (CL).	MC, AL
			0.0			@6 ft: Grades to soft. Groundwater observed.	
	0					@7.5 ft: Grades to medium stiff.	
			0.0			@8.5 ft: Grades to soft.	
10			0.0			End of boring at 10.5 ft.	
	-5						
15							



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▲ SPT N-Value
● Moisture Content (%)
Groundwater Level

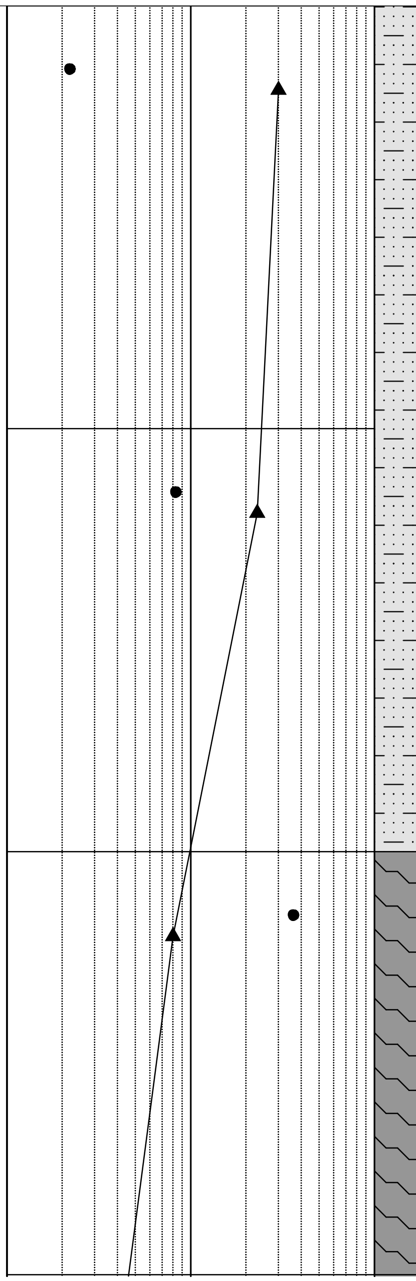
Notes: 1) MC = Moisture Content, AL = Atterberg Limits, GS = Grain Size.
2) Soil sampels were archived in 2 foot intervals throughout the termination depth of each boring.

Soil Boring Log

LCW-17

Project #: **Los Cerritos Wetland Restoration**	Project: **Los Cerritos Wetland Restoration**	Method: **Mud Rotary**
Location: **Seal Beach, California**	Northing/Latitude: **33.75195**	Total Depth (ft): **26.5**
Client: **Los Cerritos Wetland Authority**	Easting/Longitude: **-118.09555**	Observed Groundwater (ft bgs): **15**
Collection Date: **6/16/2022**	Horiz. Datum: **North American Datum of 1983**	Ground Surface Elevation (ft): **5.5**
Contractor: **Cascade Environmental**	Vert. Datum: **North American Vertical Datum 1988**	Hammer: **140-lb Auto Hammer**
Logged By: **A. Barrett**	Sampler(s): **Split Spoon Sampler**	Hammer Efficiency (%): **N/A**

Depth (ft)	Elevation (ft)	Samples ID's	PID	Uncorrected Standard Penetration Resistance (blows per foot) and Moisture Content (%) 1 2 5 10 20 50 100	Lithology	Soil Description Samples and descriptions are in recovered depths. Classification scheme: USCS	Lab Tests
0	5	LCW-17 -0-1.5	0.1			0 to 10 ft: Dense, damp, brownish gray, SAND WITH SILT (SP-SM). Less than 5% gravel, no odor.	MC, GS
5	0	LCW-17 -5-6.5	0.2			@5 ft: Grades to damp. @5.5 ft: One large subrounded gravel.	MC
10	-5	LCW-17 -10-11.5	0.1			10 to 20 ft: Medium stiff, damp, dark gray, CLAY (CH). Sand with shell hash slough observed.	MC, AL
15							



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▲ SPT N-Value
● Moisture Content (%)
Groundwater Level

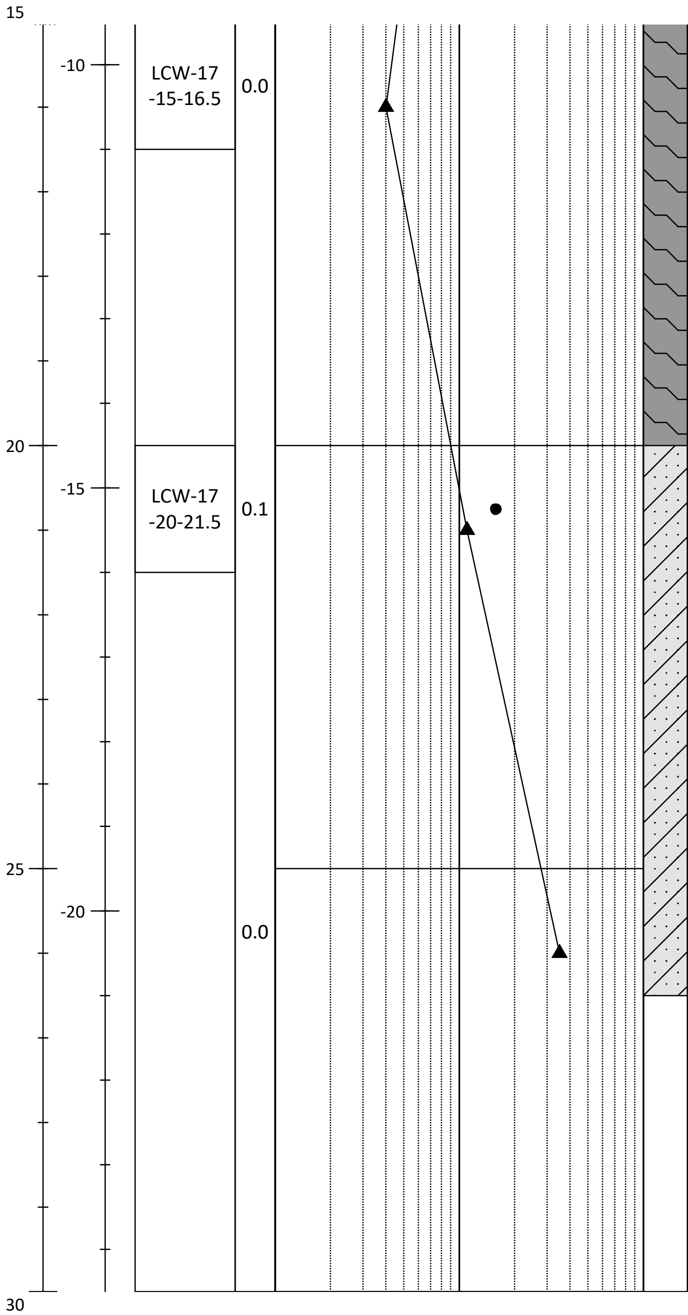
Notes: 1) MC = Moisture Content, AL = Atterberg Limits, GS = Grain Size.
2) Soil sampels were archived in 2 foot intervals throughout the termination depth of each boring.

Soil Boring Log

LCW-17

Project #: **Los Cerritos Wetland Restoration**	Project: **Los Cerritos Wetland Restoration**	Method: **Mud Rotary**
Location: **Seal Beach, California**	Northing/Latitude: **33.75195**	Total Depth (ft): **26.5**
Client: **Los Cerritos Wetland Authority**	Easting/Longitude: **-118.09555**	Observed Groundwater (ft bgs): **15**
Collection Date: **6/16/2022**	Horiz. Datum: **North American Datum of 1983**	Ground Surface Elevation (ft): **5.5**
Contractor: **Cascade Environmental**	Vert. Datum: **North American Vertical Datum 1988**	Hammer: **140-lb Auto Hammer**
Logged By: **A. Barrett**	Sampler(s): **Split Spoon Sampler**	Hammer Efficiency (%): **N/A**

Depth (ft)	Elevation (ft)	Samples ID's	PID	Uncorrected Standard Penetration Resistance (blows per foot) and Moisture Content (%) 1 2 5 10 20 50 100	Lithology	Soil Description Samples and descriptions are in recovered depths. Classification scheme: USCS	Lab Tests
15–20	-10 – -15	LCW-17 -15-16.5	0.0		CH	10 to 20 ft: Medium stiff, damp, dark gray, CLAY (CH). Sand with shell hash slough observed. @15 ft: Grades to soft, no slough, no gravel, no odor. Groundwater observed.	MC
20–26.5	-15 – -20	LCW-17 -20-21.5	0.1		SC	20 to 26.5 ft: Medium dense, damp, gray with brown mottling, CLAYEY SAND (SC), no gravel. @25 ft: Grades to dense, gray.	MC, GS
			0.0				
26.5						End of boring at 26.5 ft.	



▲ SPT N-Value
● Moisture Content (%)
Groundwater Level

Notes: 1) MC = Moisture Content, AL = Atterberg Limits, GS = Grain Size.
2) Soil sampels were archived in 2 foot intervals throughout the termination depth of each boring.

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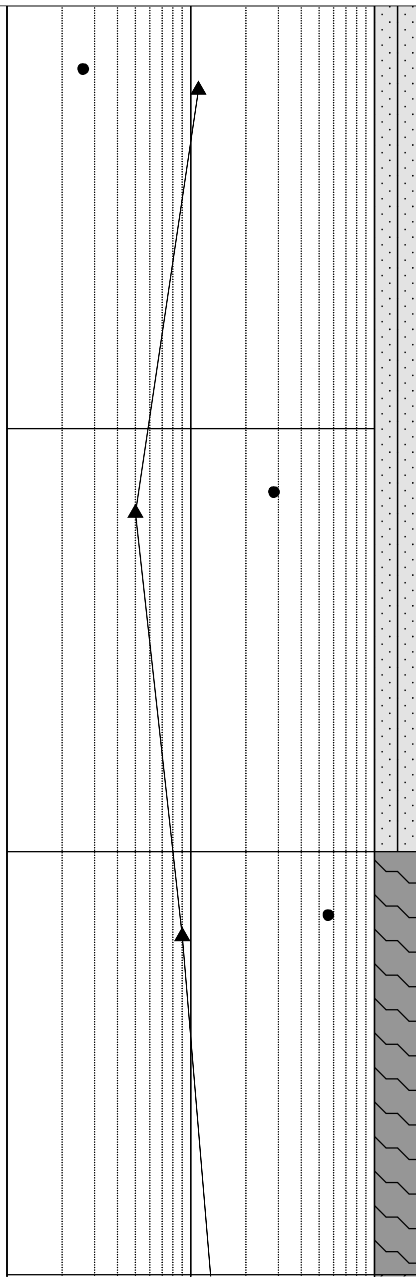
Soil Boring Log

LCW-18

Project #: **Los Cerritos Wetland Restoration**	Project: **Los Cerritos Wetland Restoration**	Method: **Mud Rotary**
Location: **Seal Beach, California**	Northing/Latitude: **33.75147**	Total Depth (ft): **26.5**
Client: **Los Cerritos Wetland Authority**	Easting/Longitude: **--118.09496**	Observed Groundwater (ft bgs): **15**
Collection Date: **6/17/2022**	Horiz. Datum: **North American Datum of 1983**	Ground Surface Elevation (ft): **10.2**
Contractor: **Cascade Environmental**	Vert. Datum: **North American Vertical Datum 1988**	Hammer: **140-lb Auto Hammer**
Logged By: **M. Brown**	Sampler(s): **Split Spoon Sampler**	Hammer Efficiency (%): **NA**

Depth (ft)	Elevation (ft)	Samples ID's	PID	Uncorrected Standard Penetration Resistance (blows per foot) and Moisture Content (%)	Lithology	**Soil Description** Samples and descriptions are in recovered depths. Classification scheme: USCS	Lab Tests
0	10	LCW-18 -0-1.5	0.0			0 to 10 ft: Very loose, dry, grayisg brown, SILTY SAND (SM), fine to medium grained.	MC
5	5	LCW-18 -5-6.5	0.0			@5 ft: Grades to damp.	MC, GS
10	0	LCW-18 -10-11.5	0.1			10 to 20 ft: Medium stiff, damp, gray, CLAY (CH), less than 5% sand.	MC, AL
15							



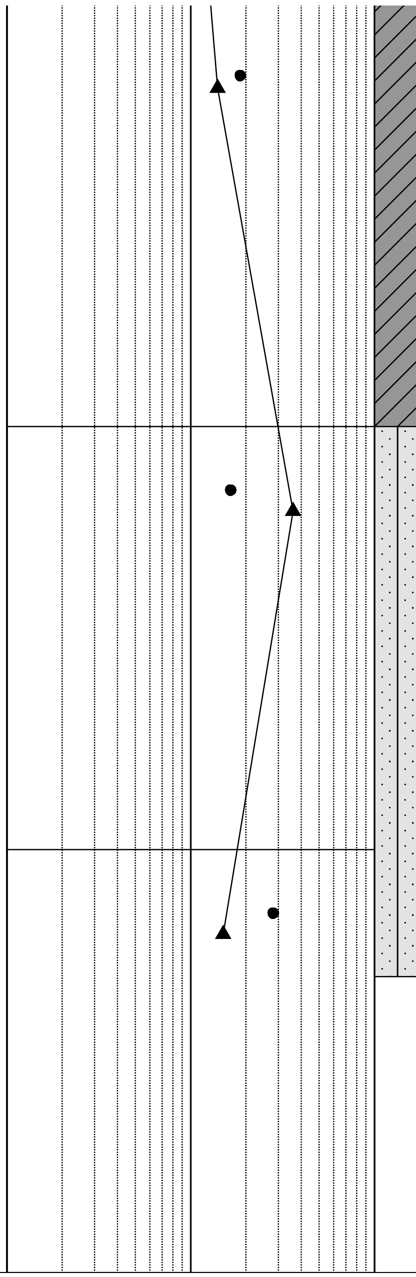
ANCHOR QEA 1201 Third Avenue Suite 2600 Seattle, WA 98101	▲ SPT N-Value ● Moisture Content (%) Groundwater Level	**Notes:** 1) MC = Moisture Content, AL = Atterberg Limits, GS = Grain Size. 2) Soil sampels were archived in 2 foot intervals throughout the termination depth of each boring.

Soil Boring Log

LCW-18

Project #: **Los Cerritos Wetland Restoration**	Project: **Los Cerritos Wetland Restoration**	Method: **Mud Rotary**
Location: **Seal Beach, California**	Northing/Latitude: **33.75147**	Total Depth (ft): **26.5**
Client: **Los Cerritos Wetland Authority**	Easting/Longitude: **--118.09496**	Observed Groundwater (ft bgs): **15**
Collection Date: **6/17/2022**	Horiz. Datum: **North American Datum of 1983**	Ground Surface Elevation (ft): **10.2**
Contractor: **Cascade Environmental**	Vert. Datum: **North American Vertical Datum 1988**	Hammer: **140-lb Auto Hammer**
Logged By: **M. Brown**	Sampler(s): **Split Spoon Sampler**	Hammer Efficiency (%): **NA**

Depth (ft)	Elevation (ft)	Samples ID's	PID	Uncorrected Standard Penetration Resistance (blows per foot) and Moisture Content (%) 1 2 5 10 20 50 100	Lithology	Soil Description Samples and descriptions are in recovered depths. Classification scheme: USCS	Lab Tests
15	-5	LCW-18 -15.4-16.3	0.1			@15 ft: Grades to non plastic CLAY (CL). Groundwater observed. @15.4 Grades to dark gray. @16.3 Grades to grayish brown.	MC, AL
20	-10	LCW-18 -20-21.5	0.1			20 to 26.5 ft: Very stiff, damp, dark grayish brown, SILTY SAND (SM), medium grained.	MC, GS
25	-15	LCW-18 -25-26.5	0.1			@25 ft: One piece of gravel. Grades to gray with pockets of red to brown, fine sand with less than 5% clay. @26 ft: Lens of clay.	MC, GS
						End of boring at 26.5 ft.	
30							



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- ▲ SPT N-Value
- ● Moisture Content (%)
- Groundwater Level

Notes: 1) MC = Moisture Content, AL = Atterberg Limits, GS = Grain Size.
2) Soil sampels were archived in 2 foot intervals throughout the termination depth of each boring.

Boring Location: N: 33.75102, E: -118.10395	Hand Auger: LCW-01	Sheet: 1 of 1	
	Job: Los Cerritos Watershed Restoration Project	Job No.: 210090-01.01	
	Logged By: Andrew Barrett	Weather:	
	Excavated By: Cascade Environmental	Date: 6/15/22	
	Excavation Method: Hand Auger		
	Sampling Method: Grab		
Elevation: / Datum:	Bottom of Test Pit: 10.5 feet	GW (ATD): 7 feet	

SIZE (%) G Max.	SIZE (%) S Range	SIZE (%) F Att. Limits	PID or other	SAMPLE ID	SAMPLE RECOVERY (depth, ft)	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT, NON-SOIL SUBSTANCES: Odor, staining, sheen, scrag, slag, etc.
			0	LCW-01/02 -061522	0	0 to 4 feet: Very soft, damp, brown SILTY SANDY (SM), organics
					1	
			0.6		2	
					3	
			0.3		4	4 to 8 feet: Very soft, damp, gray Clay (CL), organics
					5	
			0.1		6	
					7	Groundwater at 7 feet
			0.1		8	8 to 10.9 feet: Very loose, wet, gray SAND (SP), no organics
					9	
					10	
					11	End of boring at 10.5 feet
					12	
					13	
					14	
					15	
					16	
					17	
					18	
					19	
					20	

Notes: Soil samples arechived at 2 foot intervals thoughout hang auger, Z-layer sampled.
Hole diameter of 3 inches
0800 Start

ANCHOR QEA

Boring Location: N: 33.75242, E: -118.10219	Hand Auger: LCW-02
	Sheet: 1 of 1
	Job: Los Cerritos Watershed Restoration Project
	Job No.: 210090-01.01
	Logged By: Andrew Barrett
	Weather:
	Excavated By: Cascade Environmental
	Date: 6/15/22
	Excavation Method: Hand Auger
	Sampling Method: Grab
	Bottom of Test Pit: 6.1 feet
	GW (ATD)
Elevation: 12 feet	Datum:

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	SAMPLE ID	SAMPLE RECOVERY (depth, ft)	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT, NON-SOIL SUBSTANCES: Odor, staining, sheen, scrag, slag, etc.
			0	LCW-01/02 -061522	0	0 to 3 feet: Very loose, dry, brown, SAND with gravel (SP)
				LCW-01/02 -061522		
					1	
			0.2		2	
					3	3 to 6 feet: very soft, damp, brown, CLAY (CL)
			0.1		4	
					5	
			0		6	End of boring at 6.1 feet
					7	
					8	
					9	
					10	

Notes: Hole diameter of 3 inches
No geotech samples just visual class
1100 Start

ANCHOR QEA

Boring Location: N: 33.75114, E: -118.10224	Hand Auger: LCW-03 — Sheet 1 of 1 Job: Los Cerritos Watershed Restoration Project — Job No. 210090-01.01 Logged By: Andrew Barrett — Weather: Excavated By: Cascade Environmental — Date: 6/15/22 Excavation Method: Hand Auger Sampling Method: Grab Bottom of Test Pit: 4.3 feet — GW (ATD)
Elevation: Datum:	

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	SAMPLE ID	SAMPLE RECOVERY (depth, ft)	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT, NON-SOIL SUBSTANCES: Odor, staining, sheen, scrag, slag, etc.
			0	LCW-03/04 -061522	0	0 to 2.5 feet: Very loose, dry, brown, SANDY SILT (ML), trace gravel
					1	
			0		2	
					2.5	2.5 to 4.3: Very soft, damp, gray, CLAY (CL)
					3	
			0.1		4	
					4.3	End of boring at 4.3 feet
					5	
					6	
					7	
					8	
					9	
					10	

Notes: Hole diameter of 3 inches
0915 Start

ANCHOR QEA

Boring Location: N: 33.75167, E: -118.10111	Hand Auger LCW-04	Sheet 1 of 1
	Job Los Cerritos Watershed Restoration Project	Job No. 210090-01.01
	Logged By Andrew Barrett	Weather
	Excavated By Cascade Environmental	Date 6/15/22
	Excavation Method Hand Auger	
	Sampling Method Grab	
	Bottom of Test Pit 6.1 feet	GW (ATD)
Elevation: Datum:		

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	SAMPLE ID	SAMPLE RECOVERY	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT, NON-SOIL SUBSTANCES: Odor, staining, sheen, scrag, slag, etc.
			0.3	LCW-03/04 -061522 LCW-04 -061522	0	0 to 2 feet: Very soft, loose, gray, dry, SANDY SILT (ML)
					1	
			0		2	2 to 4 feet: Very soft, loose, gray, dry, SILTY CLAYEY SAND (SC-SM)
					3	
					4	4 to 6.1 feet: Very soft, gray, damp, CLAY (CL)
					5	
					6	End of boring at 6.1 feet
					7	
					8	
					9	
					10	

Notes: Hole diameter of 3 inches
1015 Start

ANCHOR QEA

Boring Location:		Hand Auger	LCW-05	Sheet	1 of 1
		Job	Los Cerritos Watershed Restoration Project	Job No.	210090-01.01
		Logged By	Chris Osuch	Weather	
		Excavated By	Cascade Environmental	Date	6/17/22
		Excavation Method	Hand Auger		
		Sampling Method	Grab		
		Bottom of Test Pit	1.3 feet	GW (ATD)	
Elevation:	Datum:				

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	SAMPLE ID	SAMPLE RECOVERY	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT, NON-SOIL SUBSTANCES: Odor, staining, sheen, scrag, slag, etc.
				LCW-05 -061722	0	0 to 1.3 feet: Dense, dry, gray, SILTY SAND (SM) with concrete gravel and asphalt
					1	
						End of boring at 1.3 feet
					2	
					3	
					4	
					5	
					6	
					7	
					8	
					9	
					10	

Notes: Hole diameter of 3 inches
1320 Start
Att. 1 Refusal at 1.3', Offset 5", Att 2. Refusal at 1.2', Offset another 5", Refusal at 0.6'

ANCHOR QEA

Boring Location:	Hand Auger: LCW-06
	Job: Los Cerritos Watershed Restoration Project
	Logged By: Chris Osuch
	Excavated By: Cascade Environmental
	Excavation Method: Hand Auger
	Sampling Method: Grab
Elevation: Datum:	Bottom of Test Pit: 1.7 feet GW (ATD)

Sheet 1 of 1
Job No. 210090-01.01
Weather
Date 6/17/22

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	SAMPLE ID	SAMPLE RECOVERY	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT, NON-SOIL SUBSTANCES: Odor, staining, sheen, scrag, slag, etc.
					0	0 to 1.7 feet: Dense, dry, brown, SAND (SP) with concrete gravel and asphalt
					1	
						End of boring at 1.7 feet
					2	
					3	
					4	
					5	
					6	
					7	
					8	
					9	
					10	

Notes: Hole diameter of 3 inches
1400 Start
Att 1. Refusal at 0.6', Offset 5", Att. 2 Refusal at 0.5', Att. 3 Refusal at 1.7'

ANCHOR QEA

Boring Location: N: 33.75024, E: -118.09962	Hand Auger: LCW-07 / Sheet 1 of 1
	Job: Los Cerritos Watershed Restoration Project / Job No. 210090-01.01
	Logged By: Chris Osuch / Weather
	Excavated By: Cascade Environmental / Date 6/17/22
	Excavation Method: Hand Auger
	Sampling Method: Grab
Elevation: Datum:	Bottom of Test Pit: 12.6 feet / GW (ATD) 10 feet

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	SAMPLE ID	SAMPLE RECOVERY (depth, ft)	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT, NON-SOIL SUBSTANCES: Odor, staining, sheen, scrag, slag, etc.
				LCW-07 -061722	0	0 to 2 feet: Very loose, dry, brown, SAND (SP), trace silt
					1	
			0		2	2 to 9 feet: Very soft, damp, reddish brown, fine, sandy CLAY (CL)
					3	
					4	@4 feet: Grades to medium stiff
					5	
			0		6	
					7	
					8	
					9	9 to 10 feet: Soft to medium stiff, damp, reddish brown, Clay with sand (CL), 10% sand. @10 feet: Groundwater
			0		10	10 to 12.6 feet: Loose, wet, gray, SAND (SP), trace clay
					11	
					12	
					13	End of boring at 12.6 feet
			0		14	
					15	
					16	
					17	
					18	
					19	
					20	

Notes: Hole diameter of 3 inches
1018 Start

ANCHOR QEA

Boring Location: N: 33.75157, E: -118.09981	Hand Auger: LCW-08 — Sheet 1 of 1
	Job: Los Cerritos Watershed Restoration Project — Job No. 210090-01.01
	Logged By: Andrew Barrett — Weather:
	Excavated By: Cascade Environmental — Date: 6/15/22
	Excavation Method: Hand Auger
	Sampling Method: Grab
Elevation: Datum:	Bottom of Test Pit: 7.1 feet — GW (ATD)

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	SAMPLE ID	SAMPLE RECOVERY (depth, ft)	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT, NON-SOIL SUBSTANCES: Odor, staining, sheen, scrag, slag, etc.
			0.2	LCW-08/09-061722	0	0 to 2.5 feet: Very loose, dry, olive brown, SANDY SILT (ML), trace gravel
					1	
			0.1		2	
					2.5	2.5 to 7.1 feet: Very soft, damp, brown, CLAY with sand (CL)
			0		3	
			0		4	
					5	
			0		6	
					7	End of boring at 7.1 feet
					8	
					9	
					10	

Notes: Hole diameter of 3 inches
1200 Start, 1240 Finish

ANCHOR QEA

Boring Location: N: 33.75085, E: -118.09870	Hand Auger: LCW-10
	Sheet: 1 of 1
	Job: Los Cerritos Watershed Restoration Project
	Job No.: 210090-01.01
	Logged By: Chris Osuch
	Weather:
	Excavated By: Cascade Environmental
	Date: 6/17/22
	Excavation Method: Hand Auger
	Sampling Method: Grab
	Bottom of Test Pit: 6.8 feet
	GW (ATD)
Elevation:	Datum:

SIZE (%) G Max.	SIZE (%) S Range	SIZE (%) F Att. Limits	PID or other	SAMPLE ID	SAMPLE RECOVERY (depth, feet)	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT, NON-SOIL SUBSTANCES: Odor, staining, sheen, scrag, slag, etc.
				LCW-10/11 -061722	0	0 to 3.5 feet: Very loose, dry, brown, SAND (SP), trace silt
					1	
					2	@ 2 feet: Grades to damp
					3	
					3.5	3.5 to 6.8 feet: Very soft, damp, brown CLAY (CL)
					4	
					5	
					6	
					6.8	End of boring at 6.8 feet
					7	
					8	
					9	
					10	

Notes: Hole diameter of 3 inches
0830 Start

ANCHOR QEA

Boring Location: N: 33.75060, E: -118.09763	Hand Auger: LCW-11 — Sheet 1 of 1
	Job: Los Cerritos Watershed Restoration Project — Job No. 210090-01.01
	Logged By: Andrew Barrett — Weather:
	Excavated By: Cascade Environmental — Date: 6/16/22
	Excavation Method: Hand Auger
	Sampling Method: Grab
	Bottom of Test Pit: 12 feet — GW (ATD): 9.5 feet
Elevation: Datum:	

SIZE (%) G Max.	S Range	F Att. Limits	PID or other	SAMPLE ID	SAMPLE RECOVERY (depth, ft)	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT, NON-SOIL SUBSTANCES: Odor, staining, sheen, scrag, slag, etc.
			0.5		0	0 to 5.5 feet: Very loose, dry, brown, SILT with sand (ML)
				LCW-11 -0-2	1	
					2	
				LCW-10/11 -061722	3	
				LCW-11 -061722	4	
			0.3	LCW-11 -4-6	5	
					6	5.5 to 12 feet Very soft, damp, gray CLAY (CL), trace sand @6 feet: Grades to no sand
					7	
			0.2		8	
					9	@9.5 feet: Groundwater
					10	
					11	
			0.1		12	End of boring at 12 feet
					13	
					14	
					15	
			0		16	
					17	
					18	
					19	
					20	

Notes: Hole diameter of 3 inches
1245 Start

ANCHOR QEA

Boring Location: N: 33.75087, E: -118.09628	Hand Auger: LCW-12 — Sheet 1 of 1 Job: Los Cerritos Watershed Restoration Project — Job No. 210090-01.01 Logged By: Andrew Barrett — Weather: Excavated By: Cascade Environmental — Date: 6/16/22 Excavation Method: Hand Auger Sampling Method: Grab Bottom of Test Pit: 8.4 feet — GW (ATD)
Elevation: Datum:	

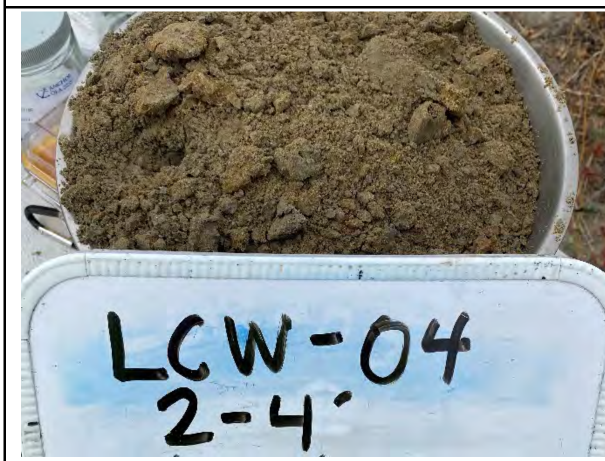
SIZE (%) G Max.	S Range	F Att. Limits	PID or other	SAMPLE ID	SAMPLE RECOVERY (depth, feet)	DESCRIPTION: Den., moist., color, minor, MAJOR CONSTITUENT, NON-SOIL SUBSTANCES: Odor, staining, sheen, scrag, slag, etc.
			0.1	LCW-12-061722 LCW-12/13-061722	0	0 to 8.4 feet: Very soft, damp, dark gray, gravelly CLAY with sand (CL).
			0.1		1	
			0		2	
					3	
			0.1		4	4 to 8.4 feet: Very soft, damp, gray, sandy CLAY (CL), <15% sand
					5	
					6	@6 feet: trace gravel
					7	
					8	End of boring at 8.4 feet
					9	
					10	

Notes: Hole diameter of 3 inches
1145 Start

ANCHOR QEA

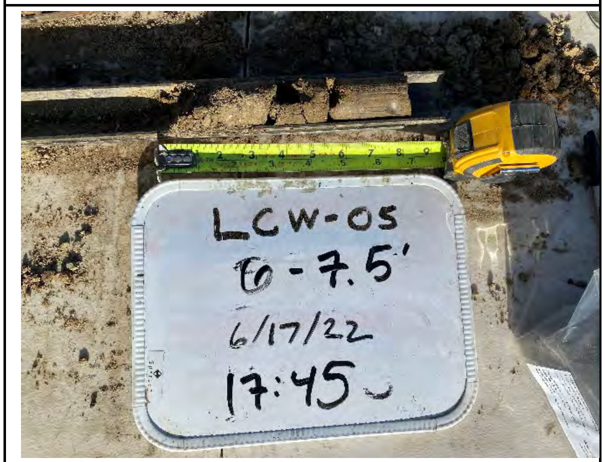
Appendix C
Sample Photographs

Appendix C: Sample Photographs

	
LCW-01	LCW-02
	
LCW-03	LCW-04
	
LCW-05 (1 of 7)	LCW-05 (2 of 7)

LCW-05 (3 of 7)

LCW-05 (4 of 7)



LCW-05 (5 of 7)

LCW-05 (6 of 7)

LCW-05 (7 of 7)

LCW-07 (1 of 4)

LCW-07 (2 of 4)

LCW-07 (3 of 4)

LCW-07 (4 of 4)

LCW-08

LCW-09 (1 of 6)

LCW-09 (2 of 6)

LCW-09 (3 of 6)

LCW-09 (4 of 6)

LCW-09 (5 of 6)

LCW-09 (6 of 6)

LCW-10 (1 of 2)

LCW-10 (2 of 2)

LCW-11

LCW-13 (1 of 7)

LCW-13 (2 of 7)

LCW-13 (3 of 7)

LCW-13 (4 of 7)

LCW-13 (5 of 7)

LCW-13 (6 of 7)

LCW-13 (7 of 7)

LCW-17 (1 of 6)

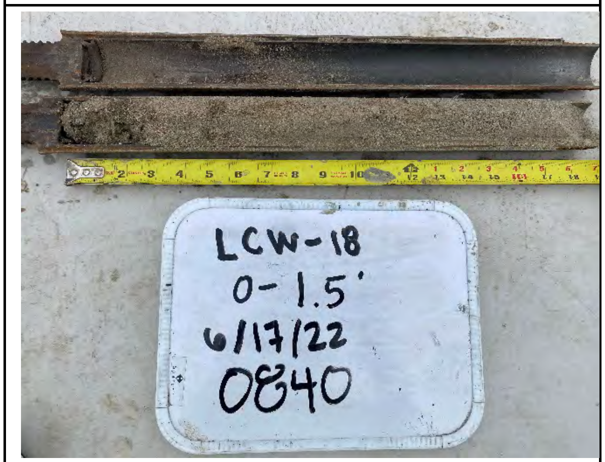
LCW-17 (2 of 6)

LCW-17 (3 of 6)

LCW-17 (4 of 6)

LCW-17 (5 of 6)

LCW-17 (6 of 6)



LCW-18 (1 of 5)

LCW-18 (2 of 5)

LCW-18 (3 of 5)

LCW-18 (4 of 5)

LCW-18 (5 of 5)

Appendix D
Chemistry Laboratory Reports

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Tel: (714)895-5494

Laboratory Job ID: 570-100189-1
Client Project/Site: Los Cerritos Wetlands Restoration Project

For:
Anchor QEA LLC
9700 Research Drive
Irvine, California 92618

Attn: Chris Osuch

Kathleen M. Burney

Authorized for release by:
7/7/2022 1:22:42 PM
Kathleen Burney, Project Mgmt. Assistant
Kathleen.Burney@et.eurofinsus.com

Designee for

Lori Thompson, Project Manager I
(657)212-3035
Lori.Thompson@et.eurofinsus.com

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Client: Anchor QEA LLC Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
me	LCS Recovery is within Marginal Exdeedance (ME) control limit range (± 4 SD from the mean).

GC/MS Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC Semi VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
S1+	Surrogate recovery exceeds control limits, high biased.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Anchor QEA LLC
Project/Site: Los Cerritos Wetlands Restoration Project

Job ID: 570-100189-1

Job ID: 570-100189-1

Laboratory: Eurofins Calscience

Narrative

Job Narrative
570-100189-1

Comments
No additional comments.

Receipt
The samples were received on 6/17/2022 7:20 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 5.7º C.

GC/MS VOA
Method 8260B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 570-243789. The laboratory control sample (LCS) was performed in duplicate (LCSD) to provide precision data for this batch.

Method 8260B: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 570-243789 recovered outside control limits for the following analytes: Vinyl chloride, Chloromethane, Ethanol and Chloroethane. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260B: The following sample was diluted due to the nature of the sample matrix: LCW-12-061622 (570-100189-12). Elevated reporting limits (RLs) are provided.

Method 8260B: The laboratory control sample (LCS) for analytical batch 570-244174 recovered outside control limit for the following analyte: Trichlorofluoromethane. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Method 8260B: The following analyte recovered outside control limits for the LCS associated with analytical batch 570-244174: Chloroethane. This is not indicative of a systematic control problem because this was a random marginal exceedance. Qualified results have been reported.

Method 8260B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 570-244174. The laboratory control sample (LCS) was performed in duplicate (LCSD) to provide precision data for this batch.

Method 8260B: The laboratory control sample duplicate (LCSD) for analytical batch 570-244174 recovered outside control limits for the following analytes: Vinyl chloride, Chloroethane, Chloromethane, Bromomethane and Trichlorofluoromethane. These analytes were biased high in the LCSD and were not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
Method 8270C SIM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 570-244076 and analytical batch 570-246665 were outside control limits. The associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) were within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method 8081A: The continuing calibration verification (CCV) associated with batch 570-245037 recovered above the upper control limit for Endrin. Non-detections of the affected analyte are reported. Any detections are considered estimated.

Method 8081A: The laboratory control sample duplicate (LCSD) for preparation batch 570-244075 and analytical batch 570-245037 recovered outside control limits for the following analyte: Methoxychlor. The analyte was biased high in the LCSD and was not detected in the associated samples; therefore, the data have been reported.

Job ID: 570-100189-1 (Continued)

Laboratory: Eurofins Calscience (Continued)

Method 8081A: The laboratory control sample duplicate (LCSD) for preparation batch 570-244075 and analytical batch 570-245099 recovered outside control limits for the following analyte: Methoxychlor. The analyte was biased high in the LCSD and was not detected in the associated samples; therefore, the data have been reported.

Method 8081A: The native sample, matrix spike, and matrix spike duplicate (MS/MSD) associated with preparation batch 570-244075 and analytical batch 570-245099 were performed at the same dilution. Due to the additional level of analyte present in the spiked samples, the concentrations of several compounds in the MS/MSD were above the instrument calibration range. The data have been reported and qualified.

Method 8081A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-244075 and analytical batch 570-245099 were outside control limits. The associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) were within acceptance limits.

Method 8081A: Surrogate recovery for the following sample was outside control limits: LCW-08/09-061722 (570-100189-5 MS). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
Method 6020: Due to sample matrix effect on the internal standard (ISTD), a dilution was required for the following samples: LCW-01/02-061522 (570-100189-1), LCW-03/04-061522 (570-100189-2), LCW-05-061722 (570-100189-3), LCW-07-061722 (570-100189-4), LCW-08/09-061722 (570-100189-5) and LCW-10/11-061722 (570-100189-6).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
Method 9060A: The method blank for analytical batch 580-395749 contained TOC above the method detection limit. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Anchor QEA LLC

Job ID: 570-100189-1

Project/Site: Los Cerritos Wetlands Restoration Project

Client Sample ID: LCW-01/02-061522 — Lab Sample ID: 570-100189-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acenaphthylene	3.5	J	6.2	2.6	ug/Kg	1	☼	8270C SIM	Total/NA
Anthracene	29		6.2	2.4	ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[a]anthracene	8.1		6.2	2.8	ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[a]pyrene	13		6.2	3.7	ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[e]pyrene	13		6.2	1.6	ug/Kg	1	☼	8270C SIM	Total/NA
Chrysene	14		6.2	2.1	ug/Kg	1	☼	8270C SIM	Total/NA
Dibenz(a,h)anthracene	2.8	J	6.2	2.4	ug/Kg	1	☼	8270C SIM	Total/NA
Fluoranthene	18		6.2	3.5	ug/Kg	1	☼	8270C SIM	Total/NA
Perylene	7.8		6.2	3.4	ug/Kg	1	☼	8270C SIM	Total/NA
Phenanthrene	10		6.2	2.7	ug/Kg	1	☼	8270C SIM	Total/NA
Pyrene	19		6.2	4.0	ug/Kg	1	☼	8270C SIM	Total/NA
C6-C44	21		6.2	4.8	mg/Kg	1	☼	8015B	Total/NA
4,4'-DDD	1.2	J	1.3	0.63	ug/Kg	1	☼	8081A	Total/NA
Antimony	0.510	J	2.49	0.150	mg/Kg	20	☼	6020	Total/NA
Arsenic	9.75		1.24	0.372	mg/Kg	20	☼	6020	Total/NA
Barium	180		1.24	0.114	mg/Kg	20	☼	6020	Total/NA
Cadmium	0.219	J	1.24	0.108	mg/Kg	20	☼	6020	Total/NA
Cobalt	15.7		1.24	0.183	mg/Kg	20	☼	6020	Total/NA
Lead	12.6		1.24	0.133	mg/Kg	20	☼	6020	Total/NA
Nickel	27.1		1.24	0.114	mg/Kg	20	☼	6020	Total/NA
Thallium	0.216	J	1.24	0.133	mg/Kg	20	☼	6020	Total/NA
Vanadium	60.7		2.49	0.134	mg/Kg	20	☼	6020	Total/NA
Chromium - DL	29.5		12.4	1.86	mg/Kg	100	☼	6020	Total/NA
Copper - DL	35.6		6.22	0.653	mg/Kg	100	☼	6020	Total/NA
Molybdenum - DL	0.928	J	6.22	0.659	mg/Kg	100	☼	6020	Total/NA
Zinc - DL	84.6		31.1	5.70	mg/Kg	100	☼	6020	Total/NA
Mercury	0.0705	J	0.109	0.0177	mg/Kg	1	☼	7471A	Total/NA
Total Organic Carbon - Quad	0.790	B	0.251	0.0121	%	1	☼	9060A	Total/NA

Client Sample ID: LCW-03/04-061522 — Lab Sample ID: 570-100189-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzo[a]anthracene	2.6	J	5.7	2.6	ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[e]pyrene	4.5	J	5.7	1.4	ug/Kg	1	☼	8270C SIM	Total/NA
Chrysene	4.0	J	5.7	1.9	ug/Kg	1	☼	8270C SIM	Total/NA
Fluoranthene	4.4	J	5.7	3.2	ug/Kg	1	☼	8270C SIM	Total/NA
Perylene	12		5.7	3.1	ug/Kg	1	☼	8270C SIM	Total/NA
Phenanthrene	2.6	J	5.7	2.5	ug/Kg	1	☼	8270C SIM	Total/NA
Pyrene	4.7	J	5.7	3.7	ug/Kg	1	☼	8270C SIM	Total/NA
C23-C24	7.0		5.7	4.4	mg/Kg	1	☼	8015B	Total/NA
C25-C28	22		5.7	4.4	mg/Kg	1	☼	8015B	Total/NA
C29-C32	34		5.7	4.4	mg/Kg	1	☼	8015B	Total/NA
C33-C36	30		5.7	4.4	mg/Kg	1	☼	8015B	Total/NA
C37-C40	29		5.7	4.4	mg/Kg	1	☼	8015B	Total/NA
C41-C44	12		5.7	4.4	mg/Kg	1	☼	8015B	Total/NA
C6-C44	140		5.7	4.4	mg/Kg	1	☼	8015B	Total/NA
Diesel Range Organics [C10-C28]	33		5.7	4.4	mg/Kg	1	☼	8015B	Total/NA
cis-Nonachlor	2.9		1.1	0.054	ug/Kg	1	☼	8081A	Total/NA
Aroclor-1254	39		11	5.7	ug/Kg	1	☼	8082	Total/NA
Antimony	0.255	J	2.29	0.138	mg/Kg	20	☼	6020	Total/NA
Arsenic	10.8		1.14	0.342	mg/Kg	20	☼	6020	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Anchor QEA LLC

Job ID: 570-100189-1

Project/Site: Los Cerritos Wetlands Restoration Project

Client Sample ID: LCW-03/04-061522 (Continued)

Lab Sample ID: 570-100189-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	372		1.14	0.105	mg/Kg	20	☼	6020	Total/NA
Cadmium	0.218	J	1.14	0.0995	mg/Kg	20	☼	6020	Total/NA
Cobalt	12.4		1.14	0.168	mg/Kg	20	☼	6020	Total/NA
Lead	16.2		1.14	0.122	mg/Kg	20	☼	6020	Total/NA
Nickel	24.6		1.14	0.105	mg/Kg	20	☼	6020	Total/NA
Thallium	0.220	J	1.14	0.122	mg/Kg	20	☼	6020	Total/NA
Vanadium	54.9		2.29	0.124	mg/Kg	20	☼	6020	Total/NA
Chromium - DL	27.5		11.4	1.71	mg/Kg	100	☼	6020	Total/NA
Copper - DL	27.2		5.72	0.601	mg/Kg	100	☼	6020	Total/NA
Molybdenum - DL	1.33	J	5.72	0.606	mg/Kg	100	☼	6020	Total/NA
Zinc - DL	84.4		28.6	5.24	mg/Kg	100	☼	6020	Total/NA
Mercury	0.0383	J	0.0958	0.0155	mg/Kg	1	☼	7471A	Total/NA
Total Organic Carbon - Quad	0.757	B	0.230	0.0111	%	1	☼	9060A	Total/NA

Client Sample ID: LCW-05-061722

Lab Sample ID: 570-100189-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	21	J	23	11	ug/Kg	1	☼	8260B	Total/NA
Benzene	1.5		1.2	0.30	ug/Kg	1	☼	8260B	Total/NA
Carbon disulfide	15		12	0.46	ug/Kg	1	☼	8260B	Total/NA
Toluene	0.72	J	1.2	0.31	ug/Kg	1	☼	8260B	Total/NA
Benzo[e]pyrene - DL	8.5	J	28	7.0	ug/Kg	5	☼	8270C SIM	Total/NA
Perylene - DL	62		28	15	ug/Kg	5	☼	8270C SIM	Total/NA
C17-C18	4.5	J	5.7	4.3	mg/Kg	1	☼	8015B	Total/NA
C19-C20	8.2		5.7	4.3	mg/Kg	1	☼	8015B	Total/NA
C21-C22	13		5.7	4.3	mg/Kg	1	☼	8015B	Total/NA
C23-C24	25		5.7	4.3	mg/Kg	1	☼	8015B	Total/NA
C25-C28	80		5.7	4.3	mg/Kg	1	☼	8015B	Total/NA
C29-C32	120		5.7	4.3	mg/Kg	1	☼	8015B	Total/NA
C33-C36	73		5.7	4.3	mg/Kg	1	☼	8015B	Total/NA
C37-C40	41		5.7	4.3	mg/Kg	1	☼	8015B	Total/NA
C41-C44	16		5.7	4.3	mg/Kg	1	☼	8015B	Total/NA
C6-C44	370		5.7	4.3	mg/Kg	1	☼	8015B	Total/NA
Diesel Range Organics [C10-C28]	130		5.7	4.3	mg/Kg	1	☼	8015B	Total/NA
4,4'-DDE	0.72	J	1.1	0.30	ug/Kg	1	☼	8081A	Total/NA
4,4'-DDT	1.9		1.1	0.35	ug/Kg	1	☼	8081A	Total/NA
Antimony	0.318	J	2.30	0.139	mg/Kg	20	☼	6020	Total/NA
Arsenic	7.65		1.15	0.344	mg/Kg	20	☼	6020	Total/NA
Barium	142		1.15	0.106	mg/Kg	20	☼	6020	Total/NA
Cadmium	0.251	J	1.15	0.100	mg/Kg	20	☼	6020	Total/NA
Cobalt	12.9		1.15	0.169	mg/Kg	20	☼	6020	Total/NA
Lead	19.9		1.15	0.123	mg/Kg	20	☼	6020	Total/NA
Nickel	25.2		1.15	0.106	mg/Kg	20	☼	6020	Total/NA
Thallium	0.182	J	1.15	0.123	mg/Kg	20	☼	6020	Total/NA
Vanadium	56.5		2.30	0.124	mg/Kg	20	☼	6020	Total/NA
Chromium - DL	30.0		11.5	1.72	mg/Kg	100	☼	6020	Total/NA
Copper - DL	38.5		5.75	0.604	mg/Kg	100	☼	6020	Total/NA
Molybdenum - DL	0.721	J	5.75	0.610	mg/Kg	100	☼	6020	Total/NA
Zinc - DL	85.3		28.8	5.27	mg/Kg	100	☼	6020	Total/NA
Mercury	0.0410	J	0.0983	0.0159	mg/Kg	1	☼	7471A	Total/NA
Total Organic Carbon - Quad	0.973	B	0.227	0.0110	%	1	☼	9060A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Anchor QEA LLC | Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Client Sample ID: LCW-07-061722 | Lab Sample ID: 570-100189-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
C25-C28	8.9		5.8	4.5	mg/Kg	1	☼	8015B	Total/NA
C29-C32	9.4		5.8	4.5	mg/Kg	1	☼	8015B	Total/NA
C33-C36	6.5		5.8	4.5	mg/Kg	1	☼	8015B	Total/NA
C6-C44	30		5.8	4.5	mg/Kg	1	☼	8015B	Total/NA
Diesel Range Organics [C10-C28]	10		5.8	4.5	mg/Kg	1	☼	8015B	Total/NA
Antimony	0.242	J	2.35	0.142	mg/Kg	20	☼	6020	Total/NA
Arsenic	4.19		1.17	0.351	mg/Kg	20	☼	6020	Total/NA
Barium	103		1.17	0.108	mg/Kg	20	☼	6020	Total/NA
Cadmium	0.138	J	1.17	0.102	mg/Kg	20	☼	6020	Total/NA
Cobalt	11.4		1.17	0.172	mg/Kg	20	☼	6020	Total/NA
Lead	7.73		1.17	0.126	mg/Kg	20	☼	6020	Total/NA
Nickel	21.9		1.17	0.108	mg/Kg	20	☼	6020	Total/NA
Thallium	0.164	J	1.17	0.126	mg/Kg	20	☼	6020	Total/NA
Vanadium	50.7		2.35	0.127	mg/Kg	20	☼	6020	Total/NA
Chromium - DL	24.1		11.7	1.75	mg/Kg	100	☼	6020	Total/NA
Copper - DL	20.0		5.87	0.616	mg/Kg	100	☼	6020	Total/NA
Zinc - DL	59.1		29.3	5.37	mg/Kg	100	☼	6020	Total/NA
Mercury	0.0316	J	0.0978	0.0158	mg/Kg	1	☼	7471A	Total/NA
Total Organic Carbon - Quad	0.285	B	0.235	0.0113	%	1	☼	9060A	Total/NA

Client Sample ID: LCW-08/09-061722 | Lab Sample ID: 570-100189-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1-Methylnaphthalene	29		6.0	2.3	ug/Kg	1	☼	8270C SIM	Total/NA
2,6-Dimethylnaphthalene	90		6.0	1.5	ug/Kg	1	☼	8270C SIM	Total/NA
2-Methylnaphthalene	32		6.0	2.2	ug/Kg	1	☼	8270C SIM	Total/NA
Acenaphthene	3.1	J	6.0	2.6	ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[a]anthracene	4.8	J	6.0	2.7	ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[e]pyrene	10		6.0	1.5	ug/Kg	1	☼	8270C SIM	Total/NA
Chrysene	21		6.0	2.0	ug/Kg	1	☼	8270C SIM	Total/NA
Fluoranthene	7.0		6.0	3.3	ug/Kg	1	☼	8270C SIM	Total/NA
Fluorene	8.6		6.0	2.6	ug/Kg	1	☼	8270C SIM	Total/NA
Perylene	33		6.0	3.2	ug/Kg	1	☼	8270C SIM	Total/NA
Phenanthrene	32		6.0	2.6	ug/Kg	1	☼	8270C SIM	Total/NA
Pyrene	9.3		6.0	3.8	ug/Kg	1	☼	8270C SIM	Total/NA
C11-C12	8.9		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
C13-C14	28		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
C15-C16	41		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
C17-C18	54		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
C19-C20	65		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
C21-C22	67		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
C23-C24	77		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
C25-C28	170		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
C29-C32	160		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
C33-C36	84		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
C37-C40	45		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
C41-C44	18		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
C6-C44	800		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
Diesel Range Organics [C10-C28]	510		5.9	4.6	mg/Kg	1	☼	8015B	Total/NA
2,4'-DDD	0.84	J p	1.2	0.076	ug/Kg	1	☼	8081A	Total/NA
4,4'-DDD	2.5		1.2	0.60	ug/Kg	1	☼	8081A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Anchor QEA LLC Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Client Sample ID: LCW-08/09-061722 (Continued) Lab Sample ID: 570-100189-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
4,4'-DDE	2.3	p	1.2	0.32	ug/Kg	1	☼	8081A	Total/NA
Antimony	0.224	J	2.37	0.143	mg/Kg	20	☼	6020	Total/NA
Arsenic	9.82		1.18	0.354	mg/Kg	20	☼	6020	Total/NA
Barium	119		1.18	0.109	mg/Kg	20	☼	6020	Total/NA
Cadmium	0.220	J	1.18	0.103	mg/Kg	20	☼	6020	Total/NA
Cobalt	10.4		1.18	0.174	mg/Kg	20	☼	6020	Total/NA
Lead	16.1		1.18	0.127	mg/Kg	20	☼	6020	Total/NA
Nickel	20.0		1.18	0.109	mg/Kg	20	☼	6020	Total/NA
Thallium	0.158	J	1.18	0.127	mg/Kg	20	☼	6020	Total/NA
Vanadium	46.2		2.37	0.128	mg/Kg	20	☼	6020	Total/NA
Chromium - DL	24.5		11.8	1.77	mg/Kg	100	☼	6020	Total/NA
Copper - DL	28.0		5.91	0.621	mg/Kg	100	☼	6020	Total/NA
Molybdenum - DL	1.39	J	5.91	0.627	mg/Kg	100	☼	6020	Total/NA
Zinc - DL	71.0		29.6	5.42	mg/Kg	100	☼	6020	Total/NA
Mercury	0.0784	J	0.0995	0.0161	mg/Kg	1	☼	7471A	Total/NA
Total Organic Carbon - Quad	0.923	B	0.239	0.0116	%	1	☼	9060A	Total/NA

Client Sample ID: LCW-10/11-061722 Lab Sample ID: 570-100189-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzo[a]anthracene	3.8	J	6.7	3.0	ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[a]pyrene	5.0	J	6.7	4.0	ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[e]pyrene	7.2		6.7	1.7	ug/Kg	1	☼	8270C SIM	Total/NA
Chrysene	6.8		6.7	2.2	ug/Kg	1	☼	8270C SIM	Total/NA
Fluoranthene	6.6	J	6.7	3.8	ug/Kg	1	☼	8270C SIM	Total/NA
Perylene	7.3		6.7	3.7	ug/Kg	1	☼	8270C SIM	Total/NA
Phenanthrene	3.7	J	6.7	2.9	ug/Kg	1	☼	8270C SIM	Total/NA
Pyrene	11		6.7	4.3	ug/Kg	1	☼	8270C SIM	Total/NA
C6-C44	15		6.7	5.2	mg/Kg	1	☼	8015B	Total/NA
4,4'-DDD	1.2	J	1.3	0.67	ug/Kg	1	☼	8081A	Total/NA
4,4'-DDE	1.8		1.3	0.36	ug/Kg	1	☼	8081A	Total/NA
Antimony	0.303	J	2.70	0.164	mg/Kg	20	☼	6020	Total/NA
Arsenic	7.89		1.35	0.404	mg/Kg	20	☼	6020	Total/NA
Barium	186		1.35	0.124	mg/Kg	20	☼	6020	Total/NA
Cadmium	0.272	J	1.35	0.118	mg/Kg	20	☼	6020	Total/NA
Cobalt	15.2		1.35	0.199	mg/Kg	20	☼	6020	Total/NA
Lead	14.8		1.35	0.145	mg/Kg	20	☼	6020	Total/NA
Nickel	30.5		1.35	0.124	mg/Kg	20	☼	6020	Total/NA
Thallium	0.220	J	1.35	0.145	mg/Kg	20	☼	6020	Total/NA
Vanadium	68.5		2.70	0.146	mg/Kg	20	☼	6020	Total/NA
Chromium - DL	36.8		13.5	2.02	mg/Kg	100	☼	6020	Total/NA
Copper - DL	40.0		6.76	0.710	mg/Kg	100	☼	6020	Total/NA
Molybdenum - DL	2.01	J	6.76	0.717	mg/Kg	100	☼	6020	Total/NA
Zinc - DL	103		33.8	6.19	mg/Kg	100	☼	6020	Total/NA
Mercury	0.0442	J	0.115	0.0186	mg/Kg	1	☼	7471A	Total/NA
Total Organic Carbon - Quad	1.05	B	0.270	0.0131	%	1	☼	9060A	Total/NA

Client Sample ID: LCW-12/13-061722 Lab Sample ID: 570-100189-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzo[e]pyrene	17	J	31	7.7	ug/Kg	5	☼	8270C SIM	Total/NA
Chrysene	19	J	31	10	ug/Kg	5	☼	8270C SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Anchor QEA LLC | Job ID: 570-100189-1

Project/Site: Los Cerritos Wetlands Restoration Project

Client Sample ID: LCW-12/13-061722 (Continued) | Lab Sample ID: 570-100189-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perylene	52		31	17	ug/Kg	5	☼	8270C SIM	Total/NA
C13-C14	8.8		6.1	4.7	mg/Kg	1	☼	8015B	Total/NA
C15-C16	25		6.1	4.7	mg/Kg	1	☼	8015B	Total/NA
C17-C18	47		6.1	4.7	mg/Kg	1	☼	8015B	Total/NA
C19-C20	68		6.1	4.7	mg/Kg	1	☼	8015B	Total/NA
C21-C22	74		6.1	4.7	mg/Kg	1	☼	8015B	Total/NA
C23-C24	91		6.1	4.7	mg/Kg	1	☼	8015B	Total/NA
C25-C28	180		6.1	4.7	mg/Kg	1	☼	8015B	Total/NA
C29-C32	180		6.1	4.7	mg/Kg	1	☼	8015B	Total/NA
C33-C36	100		6.1	4.7	mg/Kg	1	☼	8015B	Total/NA
C37-C40	55		6.1	4.7	mg/Kg	1	☼	8015B	Total/NA
C41-C44	21		6.1	4.7	mg/Kg	1	☼	8015B	Total/NA
C6-C44	850		6.1	4.7	mg/Kg	1	☼	8015B	Total/NA
Diesel Range Organics [C10-C28]	500		6.1	4.7	mg/Kg	1	☼	8015B	Total/NA
2,4'-DDD	0.76	J p	1.2	0.079	ug/Kg	1	☼	8081A	Total/NA
4,4'-DDD	3.0		1.2	0.61	ug/Kg	1	☼	8081A	Total/NA
4,4'-DDE	1.4	p	1.2	0.33	ug/Kg	1	☼	8081A	Total/NA
4,4'-DDT	1.1	J p	1.2	0.38	ug/Kg	1	☼	8081A	Total/NA
Dieldrin	0.18	J p	0.25	0.081	ug/Kg	1	☼	8081A	Total/NA
Antimony	0.163	J	2.48	0.150	mg/Kg	20	☼	6020	Total/NA
Arsenic	7.79		1.24	0.371	mg/Kg	20	☼	6020	Total/NA
Barium	137		1.24	0.114	mg/Kg	20	☼	6020	Total/NA
Beryllium	0.785	J	1.24	0.156	mg/Kg	20	☼	6020	Total/NA
Cadmium	0.542	J	1.24	0.108	mg/Kg	20	☼	6020	Total/NA
Chromium	28.3		2.48	0.371	mg/Kg	20	☼	6020	Total/NA
Cobalt	11.4		1.24	0.182	mg/Kg	20	☼	6020	Total/NA
Copper	28.0		1.24	0.130	mg/Kg	20	☼	6020	Total/NA
Lead	11.1		1.24	0.133	mg/Kg	20	☼	6020	Total/NA
Molybdenum	1.27		1.24	0.131	mg/Kg	20	☼	6020	Total/NA
Nickel	22.9		1.24	0.114	mg/Kg	20	☼	6020	Total/NA
Thallium	0.234	J	1.24	0.133	mg/Kg	20	☼	6020	Total/NA
Vanadium	46.5		2.48	0.134	mg/Kg	20	☼	6020	Total/NA
Zinc	95.0		6.20	1.14	mg/Kg	20	☼	6020	Total/NA
Mercury	0.0403	J	0.103	0.0167	mg/Kg	1	☼	7471A	Total/NA
Total Organic Carbon - Quad	1.20	B	0.247	0.0119	%	1	☼	9060A	Total/NA

Client Sample ID: LCW-02-061522 | Lab Sample ID: 570-100189-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.3		1.3	0.34	ug/Kg	1	☼	8260B	Total/NA
Toluene	0.57	J	1.3	0.36	ug/Kg	1	☼	8260B	Total/NA

Client Sample ID: LCW-04-061522 | Lab Sample ID: 570-100189-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	37		27	13	ug/Kg	1	☼	8260B	Total/NA
Benzene	2.0		1.4	0.35	ug/Kg	1	☼	8260B	Total/NA
Carbon disulfide	2.3	J	14	0.55	ug/Kg	1	☼	8260B	Total/NA
Toluene	1.2	J	1.4	0.37	ug/Kg	1	☼	8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Anchor QEA LLC	Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

## Client Sample ID: LCW-09-061722	Lab Sample ID: 570-100189-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2-Butanone	8.0	J	25	5.7	ug/Kg	1	☼	8260B	Total/NA
Acetone	58		25	12	ug/Kg	1	☼	8260B	Total/NA
Benzene	0.90	J	1.3	0.32	ug/Kg	1	☼	8260B	Total/NA
Ethylbenzene	0.48	J	1.3	0.26	ug/Kg	1	☼	8260B	Total/NA
m,p-Xylene	1.7	J	2.5	0.60	ug/Kg	1	☼	8260B	Total/NA
o-Xylene	0.50	J	1.3	0.32	ug/Kg	1	☼	8260B	Total/NA
Toluene	0.57	J	1.3	0.34	ug/Kg	1	☼	8260B	Total/NA
Xylenes, Total	2.2	J	2.5	0.76	ug/Kg	1	☼	8260B	Total/NA

## Client Sample ID: LCW-11-061622	Lab Sample ID: 570-100189-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.4	J	1.5	0.38	ug/Kg	1	☼	8260B	Total/NA
Toluene	0.59	J	1.5	0.40	ug/Kg	1	☼	8260B	Total/NA

## Client Sample ID: LCW-12-061622	Lab Sample ID: 570-100189-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Carbon disulfide	320	J	780	31	ug/Kg	50	☼	8260B	Total/NA
Toluene	24	J	78	21	ug/Kg	50	☼	8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: LCW-05-061722
Date Collected: 06/17/22 17:10
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-3
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.2	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,1,1-Trichloroethane	ND		1.2	0.27	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,1,2,2-Tetrachloroethane	ND		2.3	0.63	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		12	0.54	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,1,2-Trichloroethane	ND		1.2	0.54	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,1-Dichloroethane	ND		1.2	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,1-Dichloroethene	ND		1.2	0.31	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,1-Dichloropropene	ND		2.3	0.45	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,2,3-Trichlorobenzene	ND		2.3	1.2	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,2,3-Trichloropropane	ND		2.3	0.49	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,2,4-Trichlorobenzene	ND		2.3	0.47	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,2,4-Trimethylbenzene	ND		2.3	0.69	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,2-Dibromo-3-Chloropropane	ND		12	7.8	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,2-Dibromoethane	ND		1.2	0.24	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,2-Dichlorobenzene	ND		1.2	0.29	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,2-Dichloroethane	ND		1.2	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,2-Dichloropropane	ND		1.2	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,3,5-Trimethylbenzene	ND		2.3	0.31	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,3-Dichlorobenzene	ND		1.2	0.29	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,3-Dichloropropane	ND		1.2	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
1,4-Dichlorobenzene	ND		1.2	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
2,2-Dichloropropane	ND		5.8	0.31	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
2-Butanone	ND		23	5.2	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
2-Chlorotoluene	ND		1.2	0.29	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
2-Hexanone	ND		23	3.6	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
4-Chlorotoluene	ND		1.2	0.28	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
4-Methyl-2-pentanone	ND		23	3.4	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Acetone	**21**	**J**	23	11	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Benzene	**1.5**		1.2	0.30	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Bromobenzene	ND		1.2	0.24	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Bromochloromethane	ND		2.3	0.51	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Bromodichloromethane	ND		1.2	0.38	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Bromoform	ND		5.8	1.5	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Bromomethane	ND		23	7.6	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Carbon disulfide	**15**		12	0.46	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Carbon tetrachloride	ND		1.2	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Chlorobenzene	ND		1.2	0.31	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Chloroethane	ND	*+	2.3	0.86	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Chloroform	ND		1.2	0.68	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Chloromethane	ND	*+	23	1.8	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
cis-1,2-Dichloroethene	ND		1.2	0.39	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
cis-1,3-Dichloropropene	ND		1.2	0.40	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Dibromochloromethane	ND		2.3	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Dibromomethane	ND		1.2	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Dichlorodifluoromethane	ND		2.3	0.52	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Di-isopropyl ether (DIPE)	ND		1.2	0.58	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Ethanol	ND	*+	290	76	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Ethylbenzene	ND		1.2	0.24	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Ethyl-t-butyl ether (ETBE)	ND		1.2	0.27	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: LCW-05-061722
Date Collected: 06/17/22 17:10
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-3
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND		1.2	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
m,p-Xylene	ND		2.3	0.55	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Methylene Chloride	ND		12	3.6	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Methyl-t-Butyl Ether (MTBE)	ND		2.3	0.22	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Naphthalene	ND		12	6.0	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
n-Butylbenzene	ND		1.2	0.24	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
N-Propylbenzene	ND		2.3	0.30	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
o-Xylene	ND		1.2	0.30	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
p-Isopropyltoluene	ND		1.2	0.33	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
sec-Butylbenzene	ND		1.2	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Styrene	ND		1.2	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Tert-amyl-methyl ether (TAME)	ND		1.2	0.22	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
tert-Butyl alcohol (TBA)	ND		23	8.1	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
tert-Butylbenzene	ND		1.2	0.29	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Tetrachloroethene	ND		1.2	0.26	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Toluene	**0.72**	**J**	1.2	0.31	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
trans-1,2-Dichloroethene	ND		1.2	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
trans-1,3-Dichloropropene	ND		2.3	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Trichloroethene	ND		2.3	0.45	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Trichlorofluoromethane	ND		12	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Vinyl acetate	ND		12	4.5	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Vinyl chloride	ND	*+	1.2	0.44	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1
Xylenes, Total	ND		2.3	0.69	ug/Kg	☼	06/18/22 10:45	06/23/22 14:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*126*		*80 - 142*	*06/18/22 10:45*	*06/23/22 14:39*	*1*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*	*06/18/22 10:45*	*06/23/22 14:39*	*1*
Dibromofluoromethane (Surr)	*112*		*80 - 123*	*06/18/22 10:45*	*06/23/22 14:39*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*	*06/18/22 10:45*	*06/23/22 14:39*	*1*

Client Sample ID: LCW-02-061522
Date Collected: 06/15/22 13:00
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-8
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.3	0.39	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,1,1-Trichloroethane	ND		1.3	0.31	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,1,2,2-Tetrachloroethane	ND		2.7	0.72	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		13	0.61	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,1,2-Trichloroethane	ND		1.3	0.62	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,1-Dichloroethane	ND		1.3	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,1-Dichloroethene	ND		1.3	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,1-Dichloropropene	ND		2.7	0.52	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,2,3-Trichlorobenzene	ND		2.7	1.3	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,2,3-Trichloropropane	ND		2.7	0.56	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,2,4-Trichlorobenzene	ND		2.7	0.55	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,2,4-Trimethylbenzene	ND		2.7	0.80	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,2-Dibromo-3-Chloropropane	ND		13	9.0	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,2-Dibromoethane	ND		1.3	0.27	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,2-Dichlorobenzene	ND		1.3	0.33	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,2-Dichloroethane	ND		1.3	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1

Client Sample Results

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: LCW-02-061522
Lab Sample ID: 570-100189-8
Date Collected: 06/15/22 13:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	ND		1.3	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,3,5-Trimethylbenzene	ND		2.7	0.36	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,3-Dichlorobenzene	ND		1.3	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,3-Dichloropropane	ND		1.3	0.39	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
1,4-Dichlorobenzene	ND		1.3	0.41	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
2,2-Dichloropropane	ND		6.6	0.36	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
2-Butanone	ND		27	6.0	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
2-Chlorotoluene	ND		1.3	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
2-Hexanone	ND		27	4.1	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
4-Chlorotoluene	ND		1.3	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
4-Methyl-2-pentanone	ND		27	3.9	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Acetone	ND		27	13	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Benzene	**1.3**		1.3	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Bromobenzene	ND		1.3	0.28	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Bromochloromethane	ND		2.7	0.59	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Bromodichloromethane	ND		1.3	0.43	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Bromoform	ND		6.6	1.8	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Bromomethane	ND		27	8.7	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Carbon disulfide	ND		13	0.53	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Carbon tetrachloride	ND		1.3	0.40	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Chlorobenzene	ND		1.3	0.36	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Chloroethane	ND	*+	2.7	0.99	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Chloroform	ND		1.3	0.78	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Chloromethane	ND	*+	27	2.0	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
cis-1,2-Dichloroethene	ND		1.3	0.45	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
cis-1,3-Dichloropropene	ND		1.3	0.46	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Dibromochloromethane	ND		2.7	0.36	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Dibromomethane	ND		1.3	0.41	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Dichlorodifluoromethane	ND		2.7	0.60	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Di-isopropyl ether (DIPE)	ND		1.3	0.66	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Ethanol	ND	*+	330	88	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Ethylbenzene	ND		1.3	0.27	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Ethyl-t-butyl ether (ETBE)	ND		1.3	0.31	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Isopropylbenzene	ND		1.3	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
m,p-Xylene	ND		2.7	0.63	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Methylene Chloride	ND		13	4.2	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Methyl-t-Butyl Ether (MTBE)	ND		2.7	0.25	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Naphthalene	ND		13	6.9	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
n-Butylbenzene	ND		1.3	0.28	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
N-Propylbenzene	ND		2.7	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
o-Xylene	ND		1.3	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
p-Isopropyltoluene	ND		1.3	0.38	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
sec-Butylbenzene	ND		1.3	0.36	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Styrene	ND		1.3	0.42	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Tert-amyl-methyl ether (TAME)	ND		1.3	0.26	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
tert-Butyl alcohol (TBA)	ND		27	9.3	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
tert-Butylbenzene	ND		1.3	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Tetrachloroethene	ND		1.3	0.30	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Toluene	**0.57**	**J**	1.3	0.36	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1

Client Sample Results

Client: Anchor QEA LLC
Project/Site: Los Cerritos Wetlands Restoration Project

Job ID: 570-100189-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: LCW-02-061522
Date Collected: 06/15/22 13:00
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-8
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	ND		1.3	0.40	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
trans-1,3-Dichloropropene	ND		2.7	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Trichloroethene	ND		2.7	0.51	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Trichlorofluoromethane	ND		13	0.36	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Vinyl acetate	ND		13	5.2	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Vinyl chloride	ND	*+	1.3	0.50	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1
Xylenes, Total	ND		2.7	0.80	ug/Kg	☼	06/18/22 10:45	06/23/22 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*127*		*80 - 142*	*06/18/22 10:45*	*06/23/22 15:03*	*1*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*	*06/18/22 10:45*	*06/23/22 15:03*	*1*
Dibromofluoromethane (Surr)	*114*		*80 - 123*	*06/18/22 10:45*	*06/23/22 15:03*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*	*06/18/22 10:45*	*06/23/22 15:03*	*1*

Client Sample ID: LCW-04-061522
Date Collected: 06/15/22 13:00
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-9
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.4	0.40	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,1,1-Trichloroethane	ND		1.4	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,1,2,2-Tetrachloroethane	ND		2.7	0.74	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		14	0.63	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,1,2-Trichloroethane	ND		1.4	0.63	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,1-Dichloroethane	ND		1.4	0.38	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,1-Dichloroethene	ND		1.4	0.36	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,1-Dichloropropene	ND		2.7	0.53	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,2,3-Trichlorobenzene	ND		2.7	1.4	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,2,3-Trichloropropane	ND		2.7	0.57	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,2,4-Trichlorobenzene	ND		2.7	0.56	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,2,4-Trimethylbenzene	ND		2.7	0.82	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,2-Dibromo-3-Chloropropane	ND		14	9.3	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,2-Dibromoethane	ND		1.4	0.28	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,2-Dichlorobenzene	ND		1.4	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,2-Dichloroethane	ND		1.4	0.38	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,2-Dichloropropane	ND		1.4	0.38	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,3,5-Trimethylbenzene	ND		2.7	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,3-Dichlorobenzene	ND		1.4	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,3-Dichloropropane	ND		1.4	0.40	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
1,4-Dichlorobenzene	ND		1.4	0.42	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
2,2-Dichloropropane	ND		6.8	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
2-Butanone	ND		27	6.2	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
2-Chlorotoluene	ND		1.4	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
2-Hexanone	ND		27	4.2	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
4-Chlorotoluene	ND		1.4	0.33	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
4-Methyl-2-pentanone	ND		27	4.0	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Acetone	**37**		27	13	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Benzene	**2.0**		1.4	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Bromobenzene	ND		1.4	0.29	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Bromochloromethane	ND		2.7	0.61	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Bromodichloromethane	ND		1.4	0.44	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1

Client Sample Results

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: LCW-04-061522
Lab Sample ID: 570-100189-9
Date Collected: 06/15/22 13:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromoform	ND		6.8	1.8	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Bromomethane	ND		27	9.0	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Carbon disulfide	**2.3**	**J**	14	0.55	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Carbon tetrachloride	ND		1.4	0.41	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Chlorobenzene	ND		1.4	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Chloroethane	ND	*+	2.7	1.0	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Chloroform	ND		1.4	0.81	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Chloromethane	ND	*+	27	2.1	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
cis-1,2-Dichloroethene	ND		1.4	0.46	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
cis-1,3-Dichloropropene	ND		1.4	0.48	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Dibromochloromethane	ND		2.7	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Dibromomethane	ND		1.4	0.42	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Dichlorodifluoromethane	ND		2.7	0.62	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Di-isopropyl ether (DIPE)	ND		1.4	0.68	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Ethanol	ND	*+	340	90	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Ethylbenzene	ND		1.4	0.28	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Ethyl-t-butyl ether (ETBE)	ND		1.4	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Isopropylbenzene	ND		1.4	0.38	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
m,p-Xylene	ND		2.7	0.65	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Methylene Chloride	ND		14	4.3	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Methyl-t-Butyl Ether (MTBE)	ND		2.7	0.26	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Naphthalene	ND		14	7.1	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
n-Butylbenzene	ND		1.4	0.29	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
N-Propylbenzene	ND		2.7	0.36	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
o-Xylene	ND		1.4	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
p-Isopropyltoluene	ND		1.4	0.39	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
sec-Butylbenzene	ND		1.4	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Styrene	ND		1.4	0.43	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Tert-amyl-methyl ether (TAME)	ND		1.4	0.27	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
tert-Butyl alcohol (TBA)	ND		27	9.6	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
tert-Butylbenzene	ND		1.4	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Tetrachloroethene	ND		1.4	0.31	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Toluene	**1.2**	**J**	1.4	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
trans-1,2-Dichloroethene	ND		1.4	0.41	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
trans-1,3-Dichloropropene	ND		2.7	0.38	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Trichloroethene	ND		2.7	0.53	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Trichlorofluoromethane	ND		14	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Vinyl acetate	ND		14	5.4	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Vinyl chloride	ND	*+	1.4	0.52	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1
Xylenes, Total	ND		2.7	0.82	ug/Kg	☼	06/18/22 10:45	06/23/22 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*124*		*80 - 142*	*06/18/22 10:45*	*06/23/22 15:27*	*1*
4-Bromofluorobenzene (Surr)	*90*		*80 - 120*	*06/18/22 10:45*	*06/23/22 15:27*	*1*
Dibromofluoromethane (Surr)	*110*		*80 - 123*	*06/18/22 10:45*	*06/23/22 15:27*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*	*06/18/22 10:45*	*06/23/22 15:27*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: LCW-09-061722　　**Lab Sample ID: 570-100189-10**
Date Collected: 06/17/22 15:20　　**Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.3	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,1,1-Trichloroethane	ND		1.3	0.29	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,1,2,2-Tetrachloroethane	ND		2.5	0.69	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		13	0.58	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,1,2-Trichloroethane	ND		1.3	0.59	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,1-Dichloroethane	ND		1.3	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,1-Dichloroethene	ND		1.3	0.33	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,1-Dichloropropene	ND		2.5	0.49	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,2,3-Trichlorobenzene	ND		2.5	1.3	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,2,3-Trichloropropane	ND		2.5	0.53	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,2,4-Trichlorobenzene	ND		2.5	0.52	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,2,4-Trimethylbenzene	ND		2.5	0.76	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,2-Dibromo-3-Chloropropane	ND		13	8.5	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,2-Dibromoethane	ND		1.3	0.26	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,2-Dichlorobenzene	ND		1.3	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,2-Dichloroethane	ND		1.3	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,2-Dichloropropane	ND		1.3	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,3,5-Trimethylbenzene	ND		2.5	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,3-Dichlorobenzene	ND		1.3	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,3-Dichloropropane	ND		1.3	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
1,4-Dichlorobenzene	ND		1.3	0.39	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
2,2-Dichloropropane	ND		6.3	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
2-Butanone	**8.0**	**J**	25	5.7	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
2-Chlorotoluene	ND		1.3	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
2-Hexanone	ND		25	3.9	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
4-Chlorotoluene	ND		1.3	0.30	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
4-Methyl-2-pentanone	ND		25	3.7	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Acetone	**58**		25	12	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Benzene	**0.90**	**J**	1.3	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Bromobenzene	ND		1.3	0.26	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Bromochloromethane	ND		2.5	0.56	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Bromodichloromethane	ND		1.3	0.41	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Bromoform	ND		6.3	1.7	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Bromomethane	ND		25	8.3	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Carbon disulfide	ND		13	0.50	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Carbon tetrachloride	ND		1.3	0.38	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Chlorobenzene	ND		1.3	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Chloroethane	ND	*+	2.5	0.94	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Chloroform	ND		1.3	0.74	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Chloromethane	ND	*+	25	1.9	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
cis-1,2-Dichloroethene	ND		1.3	0.43	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
cis-1,3-Dichloropropene	ND		1.3	0.44	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Dibromochloromethane	ND		2.5	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Dibromomethane	ND		1.3	0.38	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Dichlorodifluoromethane	ND		2.5	0.57	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Di-isopropyl ether (DIPE)	ND		1.3	0.63	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Ethanol	ND	*+	310	83	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Ethylbenzene	**0.48**	**J**	1.3	0.26	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Ethyl-t-butyl ether (ETBE)	ND		1.3	0.30	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1

Client: Anchor QEA LLC Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: LCW-09-061722 **Lab Sample ID: 570-100189-10**
Date Collected: 06/17/22 15:20 **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND		1.3	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
m,p-Xylene	**1.7**	**J**	2.5	0.60	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Methylene Chloride	ND		13	3.9	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Methyl-t-Butyl Ether (MTBE)	ND		2.5	0.24	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Naphthalene	ND		13	6.6	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
n-Butylbenzene	ND		1.3	0.27	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
N-Propylbenzene	ND		2.5	0.33	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
o-Xylene	**0.50**	**J**	1.3	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
p-Isopropyltoluene	ND		1.3	0.36	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
sec-Butylbenzene	ND		1.3	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Styrene	ND		1.3	0.40	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Tert-amyl-methyl ether (TAME)	ND		1.3	0.24	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
tert-Butyl alcohol (TBA)	ND		25	8.8	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
tert-Butylbenzene	ND		1.3	0.32	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Tetrachloroethene	ND		1.3	0.28	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Toluene	**0.57**	**J**	1.3	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
trans-1,2-Dichloroethene	ND		1.3	0.38	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
trans-1,3-Dichloropropene	ND		2.5	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Trichloroethene	ND		2.5	0.49	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Trichlorofluoromethane	ND		13	0.34	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Vinyl acetate	ND		13	4.9	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Vinyl chloride	ND	*+	1.3	0.48	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1
Xylenes, Total	**2.2**	**J**	2.5	0.76	ug/Kg	☼	06/18/22 10:45	06/23/22 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*125*		*80 - 142*	*06/18/22 10:45*	*06/23/22 15:51*	*1*
4-Bromofluorobenzene (Surr)	*89*		*80 - 120*	*06/18/22 10:45*	*06/23/22 15:51*	*1*
Dibromofluoromethane (Surr)	*110*		*80 - 123*	*06/18/22 10:45*	*06/23/22 15:51*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*	*06/18/22 10:45*	*06/23/22 15:51*	*1*

Client Sample ID: LCW-11-061622 **Lab Sample ID: 570-100189-11**
Date Collected: 06/16/22 12:45 **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.5	0.43	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,1,1-Trichloroethane	ND		1.5	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.81	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		15	0.68	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,1,2-Trichloroethane	ND		1.5	0.69	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,1-Dichloroethane	ND		1.5	0.41	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,1-Dichloroethene	ND		1.5	0.39	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,1-Dichloropropene	ND		3.0	0.57	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,2,3-Trichlorobenzene	ND		3.0	1.5	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,2,3-Trichloropropane	ND		3.0	0.62	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,2,4-Trichlorobenzene	ND		3.0	0.61	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,2,4-Trimethylbenzene	ND		3.0	0.89	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,2-Dibromo-3-Chloropropane	ND		15	10	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,2-Dibromoethane	ND		1.5	0.30	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,2-Dichlorobenzene	ND		1.5	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,2-Dichloroethane	ND		1.5	0.41	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: LCW-11-061622 | **Lab Sample ID: 570-100189-11**

Date Collected: 06/16/22 12:45 | **Matrix: Soil**

Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	ND		1.5	0.41	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,3,5-Trimethylbenzene	ND		3.0	0.40	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,3-Dichlorobenzene	ND		1.5	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,3-Dichloropropane	ND		1.5	0.44	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
1,4-Dichlorobenzene	ND		1.5	0.45	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
2,2-Dichloropropane	ND		7.4	0.40	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
2-Butanone	ND		30	6.7	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
2-Chlorotoluene	ND		1.5	0.37	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
2-Hexanone	ND		30	4.6	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
4-Chlorotoluene	ND		1.5	0.36	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
4-Methyl-2-pentanone	ND		30	4.3	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Acetone	ND		30	15	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Benzene	**1.4**	**J**	1.5	0.38	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Bromobenzene	ND		1.5	0.31	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Bromochloromethane	ND		3.0	0.66	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Bromodichloromethane	ND		1.5	0.48	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Bromoform	ND		7.4	2.0	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Bromomethane	ND		30	9.7	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Carbon disulfide	ND		15	0.59	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Carbon tetrachloride	ND		1.5	0.44	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Chlorobenzene	ND		1.5	0.40	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Chloroethane	ND	*+	3.0	1.1	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Chloroform	ND		1.5	0.87	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Chloromethane	ND	*+	30	2.3	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
cis-1,2-Dichloroethene	ND		1.5	0.50	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
cis-1,3-Dichloropropene	ND		1.5	0.52	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Dibromochloromethane	ND		3.0	0.40	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Dibromomethane	ND		1.5	0.45	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Dichlorodifluoromethane	ND		3.0	0.67	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Di-isopropyl ether (DIPE)	ND		1.5	0.74	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Ethanol	ND	*+	370	98	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Ethylbenzene	ND		1.5	0.31	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Ethyl-t-butyl ether (ETBE)	ND		1.5	0.35	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Isopropylbenzene	ND		1.5	0.41	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
m,p-Xylene	ND		3.0	0.70	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Methylene Chloride	ND		15	4.6	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Methyl-t-Butyl Ether (MTBE)	ND		3.0	0.28	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Naphthalene	ND		15	7.7	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
n-Butylbenzene	ND		1.5	0.31	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
N-Propylbenzene	ND		3.0	0.39	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
o-Xylene	ND		1.5	0.38	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
p-Isopropyltoluene	ND		1.5	0.42	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
sec-Butylbenzene	ND		1.5	0.41	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Styrene	ND		1.5	0.47	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Tert-amyl-methyl ether (TAME)	ND		1.5	0.29	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
tert-Butyl alcohol (TBA)	ND		30	10	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
tert-Butylbenzene	ND		1.5	0.38	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Tetrachloroethene	ND		1.5	0.33	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Toluene	**0.59**	**J**	1.5	0.40	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1

Client Sample Results

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: LCW-11-061622
Lab Sample ID: 570-100189-11
Date Collected: 06/16/22 12:45
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	ND		1.5	0.45	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
trans-1,3-Dichloropropene	ND		3.0	0.41	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Trichloroethene	ND		3.0	0.57	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Trichlorofluoromethane	ND		15	0.40	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Vinyl acetate	ND		15	5.8	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Vinyl chloride	ND	*+	1.5	0.56	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1
Xylenes, Total	ND		3.0	0.89	ug/Kg	☼	06/18/22 10:45	06/23/22 16:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*124*		*80 - 142*	*06/18/22 10:45*	*06/23/22 16:15*	*1*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*	*06/18/22 10:45*	*06/23/22 16:15*	*1*
Dibromofluoromethane (Surr)	*110*		*80 - 123*	*06/18/22 10:45*	*06/23/22 16:15*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*	*06/18/22 10:45*	*06/23/22 16:15*	*1*

Client Sample ID: LCW-12-061622
Lab Sample ID: 570-100189-12
Date Collected: 06/16/22 11:45
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		78	23	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,1,1-Trichloroethane	ND		78	18	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,1,2,2-Tetrachloroethane	ND		160	43	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		780	36	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,1,2-Trichloroethane	ND		78	36	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,1-Dichloroethane	ND		78	22	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,1-Dichloroethene	ND		78	21	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,1-Dichloropropene	ND		160	30	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,2,3-Trichlorobenzene	ND		160	78	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,2,3-Trichloropropane	ND		160	33	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,2,4-Trichlorobenzene	ND		160	32	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,2,4-Trimethylbenzene	ND		160	47	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,2-Dibromo-3-Chloropropane	ND		780	530	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,2-Dibromoethane	ND		78	16	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,2-Dichlorobenzene	ND		78	20	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,2-Dichloroethane	ND		78	22	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,2-Dichloropropane	ND		78	22	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,3,5-Trimethylbenzene	ND		160	21	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,3-Dichlorobenzene	ND		78	20	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,3-Dichloropropane	ND		78	23	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
1,4-Dichlorobenzene	ND		78	24	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
2,2-Dichloropropane	ND		390	21	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
2-Butanone	ND		1600	350	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
2-Chlorotoluene	ND		78	20	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
2-Hexanone	ND		1600	240	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
4-Chlorotoluene	ND		78	19	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
4-Methyl-2-pentanone	ND		1600	230	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Acetone	ND		1600	770	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Benzene	ND		78	20	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Bromobenzene	ND		78	16	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Bromochloromethane	ND		160	35	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Bromodichloromethane	ND		78	26	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: LCW-12-061622 **Lab Sample ID: 570-100189-12**
Date Collected: 06/16/22 11:45 **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromoform	ND		390	100	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Bromomethane	ND	*+	1600	520	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Carbon disulfide	**320**	**J**	780	31	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Carbon tetrachloride	ND		78	23	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Chlorobenzene	ND		78	21	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Chloroethane	ND	*+	160	58	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Chloroform	ND		78	46	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Chloromethane	ND	*+	1600	120	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
cis-1,2-Dichloroethene	ND		78	26	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
cis-1,3-Dichloropropene	ND		78	27	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Dibromochloromethane	ND		160	21	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Dibromomethane	ND		78	24	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Dichlorodifluoromethane	ND		160	36	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Di-isopropyl ether (DIPE)	ND		78	39	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Ethanol	ND		20000	5200	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Ethylbenzene	ND		78	16	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Ethyl-t-butyl ether (ETBE)	ND		78	19	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Isopropylbenzene	ND		78	22	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
m,p-Xylene	ND		160	37	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Methylene Chloride	ND		780	240	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Methyl-t-Butyl Ether (MTBE)	ND		160	15	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Naphthalene	ND		780	410	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
n-Butylbenzene	ND		78	16	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
N-Propylbenzene	ND		160	20	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
o-Xylene	ND		78	20	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
p-Isopropyltoluene	ND		78	22	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
sec-Butylbenzene	ND		78	21	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Styrene	ND		78	25	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Tert-amyl-methyl ether (TAME)	ND		78	15	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
tert-Butyl alcohol (TBA)	ND		1600	550	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
tert-Butylbenzene	ND		78	20	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Tetrachloroethene	ND		78	18	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Toluene	**24**	**J**	78	21	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
trans-1,2-Dichloroethene	ND		78	24	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
trans-1,3-Dichloropropene	ND		160	22	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Trichloroethene	ND		160	30	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Trichlorofluoromethane	ND	*+	780	21	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Vinyl acetate	ND		780	310	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Vinyl chloride	ND	*+	78	30	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50
Xylenes, Total	ND		160	47	ug/Kg	☼	06/18/22 10:42	06/24/22 11:51	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 142*	*06/18/22 10:42*	*06/24/22 11:51*	*50*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*	*06/18/22 10:42*	*06/24/22 11:51*	*50*
Dibromofluoromethane (Surr)	*99*		*80 - 123*	*06/18/22 10:42*	*06/24/22 11:51*	*50*
Toluene-d8 (Surr)	*97*		*80 - 120*	*06/18/22 10:42*	*06/24/22 11:51*	*50*

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 8270C SIM - Semivolatile Organic Compound (GC/MS SIM LL)

Client Sample ID: LCW-01/02-061522 — **Lab Sample ID: 570-100189-1**

Date Collected: 06/15/22 13:00 — **Matrix: Soil**

Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		6.2	2.4	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
1-Methylphenanthrene	ND		6.2	2.7	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
2,6-Dimethylnaphthalene	ND		6.2	1.6	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
2-Methylnaphthalene	ND		6.2	2.3	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Acenaphthene	ND		6.2	2.7	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Acenaphthylene	**3.5**	**J**	6.2	2.6	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Anthracene	**29**		6.2	2.4	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Benzo[a]anthracene	**8.1**		6.2	2.8	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Benzo[a]pyrene	**13**		6.2	3.7	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Benzo[e]pyrene	**13**		6.2	1.6	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Biphenyl	ND		6.2	1.8	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Chrysene	**14**		6.2	2.1	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Dibenz(a,h)anthracene	**2.8**	**J**	6.2	2.4	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Fluoranthene	**18**		6.2	3.5	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Fluorene	ND		6.2	2.7	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Naphthalene	ND		6.2	1.8	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Perylene	**7.8**		6.2	3.4	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Phenanthrene	**10**		6.2	2.7	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1
Pyrene	**19**		6.2	4.0	ug/Kg	☼	06/23/22 21:28	07/05/22 13:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*94*		*26 - 136*	*06/23/22 21:28*	*07/05/22 13:32*	*1*
Nitrobenzene-d5 (Surr)	*84*		*16 - 124*	*06/23/22 21:28*	*07/05/22 13:32*	*1*
p-Terphenyl-d14 (Surr)	*87*		*36 - 125*	*06/23/22 21:28*	*07/05/22 13:32*	*1*

Client Sample ID: LCW-03/04-061522 — **Lab Sample ID: 570-100189-2**

Date Collected: 06/15/22 13:00 — **Matrix: Soil**

Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		5.7	2.2	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
1-Methylphenanthrene	ND		5.7	2.5	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
2,6-Dimethylnaphthalene	ND		5.7	1.5	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
2-Methylnaphthalene	ND		5.7	2.1	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Acenaphthene	ND		5.7	2.5	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Acenaphthylene	ND		5.7	2.4	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Anthracene	ND		5.7	2.2	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Benzo[a]anthracene	**2.6**	**J**	5.7	2.6	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Benzo[a]pyrene	ND		5.7	3.4	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Benzo[e]pyrene	**4.5**	**J**	5.7	1.4	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Biphenyl	ND		5.7	1.7	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Chrysene	**4.0**	**J**	5.7	1.9	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Dibenz(a,h)anthracene	ND		5.7	2.2	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Fluoranthene	**4.4**	**J**	5.7	3.2	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Fluorene	ND		5.7	2.5	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Naphthalene	ND		5.7	1.6	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Perylene	**12**		5.7	3.1	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Phenanthrene	**2.6**	**J**	5.7	2.5	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1
Pyrene	**4.7**	**J**	5.7	3.7	ug/Kg	☼	06/23/22 21:28	07/05/22 13:53	1

Method: 8270C SIM - Semivolatile Organic Compound (GC/MS SIM LL) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	88		26 - 136	06/23/22 21:28	07/05/22 13:53	1
Nitrobenzene-d5 (Surr)	84		16 - 124	06/23/22 21:28	07/05/22 13:53	1
p-Terphenyl-d14 (Surr)	88		36 - 125	06/23/22 21:28	07/05/22 13:53	1

Client Sample ID: LCW-07-061722
Lab Sample ID: 570-100189-4
Date Collected: 06/17/22 11:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		5.9	2.3	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
1-Methylphenanthrene	ND		5.9	2.6	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
2,6-Dimethylnaphthalene	ND		5.9	1.5	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
2-Methylnaphthalene	ND		5.9	2.2	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Acenaphthene	ND		5.9	2.5	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Acenaphthylene	ND		5.9	2.5	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Anthracene	ND		5.9	2.2	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Benzo[a]anthracene	ND		5.9	2.6	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Benzo[a]pyrene	ND		5.9	3.5	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Benzo[e]pyrene	ND		5.9	1.5	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Biphenyl	ND		5.9	1.7	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Chrysene	ND		5.9	1.9	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Dibenz(a,h)anthracene	ND		5.9	2.3	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Fluoranthene	ND		5.9	3.3	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Fluorene	ND		5.9	2.6	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Naphthalene	ND		5.9	1.7	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Perylene	ND		5.9	3.2	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Phenanthrene	ND		5.9	2.5	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1
Pyrene	ND		5.9	3.7	ug/Kg	☼	06/23/22 21:28	07/05/22 14:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	80		26 - 136	06/23/22 21:28	07/05/22 14:36	1
Nitrobenzene-d5 (Surr)	68		16 - 124	06/23/22 21:28	07/05/22 14:36	1
p-Terphenyl-d14 (Surr)	80		36 - 125	06/23/22 21:28	07/05/22 14:36	1

Client Sample ID: LCW-08/09-061722
Lab Sample ID: 570-100189-5
Date Collected: 06/17/22 17:15
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	**29**		6.0	2.3	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
1-Methylphenanthrene	ND		6.0	2.6	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
2,6-Dimethylnaphthalene	**90**		6.0	1.5	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
2-Methylnaphthalene	**32**		6.0	2.2	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Acenaphthene	**3.1**	**J**	6.0	2.6	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Acenaphthylene	ND		6.0	2.5	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Anthracene	ND		6.0	2.3	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Benzo[a]anthracene	**4.8**	**J**	6.0	2.7	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Benzo[a]pyrene	ND		6.0	3.5	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Benzo[e]pyrene	**10**		6.0	1.5	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Biphenyl	ND		6.0	1.7	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Chrysene	**21**		6.0	2.0	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Dibenz(a,h)anthracene	ND		6.0	2.3	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Fluoranthene	**7.0**		6.0	3.3	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Fluorene	**8.6**		6.0	2.6	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Naphthalene	ND		6.0	1.7	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 8270C SIM - Semivolatile Organic Compound (GC/MS SIM LL) (Continued)

Client Sample ID: LCW-08/09-061722
Date Collected: 06/17/22 17:15
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-5
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perylene	**33**		6.0	3.2	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Phenanthrene	**32**		6.0	2.6	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1
Pyrene	**9.3**		6.0	3.8	ug/Kg	☼	06/23/22 21:28	07/05/22 14:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*84*		*26 - 136*	*06/23/22 21:28*	*07/05/22 14:58*	*1*
Nitrobenzene-d5 (Surr)	*78*		*16 - 124*	*06/23/22 21:28*	*07/05/22 14:58*	*1*
p-Terphenyl-d14 (Surr)	*81*		*36 - 125*	*06/23/22 21:28*	*07/05/22 14:58*	*1*

Client Sample ID: LCW-10/11-061722
Date Collected: 06/17/22 10:00
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-6
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		6.7	2.6	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
1-Methylphenanthrene	ND		6.7	2.9	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
2,6-Dimethylnaphthalene	ND		6.7	1.7	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
2-Methylnaphthalene	ND		6.7	2.5	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Acenaphthene	ND		6.7	2.9	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Acenaphthylene	ND		6.7	2.8	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Anthracene	ND		6.7	2.6	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Benzo[a]anthracene	**3.8**	**J**	6.7	3.0	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Benzo[a]pyrene	**5.0**	**J**	6.7	4.0	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Benzo[e]pyrene	**7.2**		6.7	1.7	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Biphenyl	ND		6.7	2.0	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Chrysene	**6.8**		6.7	2.2	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Dibenz(a,h)anthracene	ND		6.7	2.6	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Fluoranthene	**6.6**	**J**	6.7	3.8	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Fluorene	ND		6.7	3.0	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Naphthalene	ND		6.7	1.9	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Perylene	**7.3**		6.7	3.7	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Phenanthrene	**3.7**	**J**	6.7	2.9	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1
Pyrene	**11**		6.7	4.3	ug/Kg	☼	06/23/22 21:28	07/05/22 15:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*89*		*26 - 136*	*06/23/22 21:28*	*07/05/22 15:19*	*1*
Nitrobenzene-d5 (Surr)	*69*		*16 - 124*	*06/23/22 21:28*	*07/05/22 15:19*	*1*
p-Terphenyl-d14 (Surr)	*88*		*36 - 125*	*06/23/22 21:28*	*07/05/22 15:19*	*1*

Client Sample ID: LCW-12/13-061722
Date Collected: 06/17/22 17:15
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-7
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		31	12	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
1-Methylphenanthrene	ND		31	13	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
2,6-Dimethylnaphthalene	ND		31	7.9	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
2-Methylnaphthalene	ND		31	11	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Acenaphthene	ND		31	13	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Acenaphthylene	ND		31	13	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Anthracene	ND		31	12	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Benzo[a]anthracene	ND		31	14	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5

Client Sample Results

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8270C SIM - Semivolatile Organic Compound (GC/MS SIM LL) (Continued)

Client Sample ID: LCW-12/13-061722
Lab Sample ID: 570-100189-7
Date Collected: 06/17/22 17:15
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]pyrene	ND		31	18	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Benzo[e]pyrene	**17**	**J**	31	7.7	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Biphenyl	ND		31	9.0	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Chrysene	**19**	**J**	31	10	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Dibenz(a,h)anthracene	ND		31	12	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Fluoranthene	ND		31	17	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Fluorene	ND		31	14	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Naphthalene	ND		31	8.7	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Perylene	**52**		31	17	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Phenanthrene	ND		31	13	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5
Pyrene	ND		31	20	ug/Kg	☼	06/23/22 21:28	07/06/22 16:37	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*61*		*26 - 136*	*06/23/22 21:28*	*07/06/22 16:37*	*5*
Nitrobenzene-d5 (Surr)	*47*		*16 - 124*	*06/23/22 21:28*	*07/06/22 16:37*	*5*
p-Terphenyl-d14 (Surr)	*72*		*36 - 125*	*06/23/22 21:28*	*07/06/22 16:37*	*5*

Client: Anchor QEA LLC   Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8270C SIM - Semivolatile Organic Compound (GC/MS SIM LL) - DL

Client Sample ID: LCW-05-061722   **Lab Sample ID: 570-100189-3**
Date Collected: 06/17/22 17:10   **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		28	11	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
1-Methylphenanthrene	ND		28	12	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
2,6-Dimethylnaphthalene	ND		28	7.2	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
2-Methylnaphthalene	ND		28	10	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Acenaphthene	ND		28	12	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Acenaphthylene	ND		28	12	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Anthracene	ND	F2 F1	28	11	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Benzo[a]anthracene	ND	F2 F1	28	13	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Benzo[a]pyrene	ND	F2 F1	28	17	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Benzo[e]pyrene	**8.5**	**J**	28	7.0	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Biphenyl	ND		28	8.2	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Chrysene	ND	F2 F1	28	9.3	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Dibenz(a,h)anthracene	ND	F1	28	11	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Fluoranthene	ND	F2 F1	28	16	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Fluorene	ND		28	12	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Naphthalene	ND		28	8.0	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Perylene	**62**		28	15	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Phenanthrene	ND	F2 F1	28	12	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5
Pyrene	ND	F2 F1	28	18	ug/Kg	☼	06/23/22 21:28	07/05/22 14:15	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*100*		*26 - 136*	*06/23/22 21:28*	*07/05/22 14:15*	*5*
Nitrobenzene-d5 (Surr)	*55*		*16 - 124*	*06/23/22 21:28*	*07/05/22 14:15*	*5*
p-Terphenyl-d14 (Surr)	*65*		*36 - 125*	*06/23/22 21:28*	*07/05/22 14:15*	*5*

Client: Anchor QEA LLC Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8015B - Diesel Range Organics (DRO) (GC)

Client Sample ID: LCW-01/02-061522 **Lab Sample ID: 570-100189-1**
Date Collected: 06/15/22 13:00 **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6 as C6	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C7 as C7	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C8 as C8	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C9-C10	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C11-C12	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C13-C14	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C15-C16	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C17-C18	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C19-C20	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C21-C22	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C23-C24	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C25-C28	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C29-C32	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C33-C36	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C37-C40	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C41-C44	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
C6-C44	**21**		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1
Diesel Range Organics [C10-C28]	ND		6.2	4.8	mg/Kg	☼	06/20/22 18:36	06/23/22 01:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*118*		*60 - 138*	*06/20/22 18:36*	*06/23/22 01:58*	*1*

Client Sample ID: LCW-03/04-061522 **Lab Sample ID: 570-100189-2**
Date Collected: 06/15/22 13:00 **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6 as C6	ND		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C7 as C7	ND		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C8 as C8	ND		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C9-C10	ND		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C11-C12	ND		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C13-C14	ND		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C15-C16	ND		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C17-C18	ND		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C19-C20	ND		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C21-C22	ND		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C23-C24	**7.0**		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C25-C28	**22**		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C29-C32	**34**		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C33-C36	**30**		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C37-C40	**29**		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C41-C44	**12**		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
C6-C44	**140**		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1
Diesel Range Organics [C10-C28]	**33**		5.7	4.4	mg/Kg	☼	06/20/22 18:36	06/23/22 02:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*116*		*60 - 138*	*06/20/22 18:36*	*06/23/22 02:19*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Client Sample ID: LCW-05-061722 **Lab Sample ID: 570-100189-3**
Date Collected: 06/17/22 17:10 **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6 as C6	ND		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C7 as C7	ND		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C8 as C8	ND		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C9-C10	ND		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C11-C12	ND		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C13-C14	ND		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C15-C16	ND		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C17-C18	**4.5**	**J**	5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C19-C20	**8.2**		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C21-C22	**13**		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C23-C24	**25**		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C25-C28	**80**		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C29-C32	**120**		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C33-C36	**73**		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C37-C40	**41**		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C41-C44	**16**		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
C6-C44	**370**		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1
Diesel Range Organics [C10-C28]	**130**		5.7	4.3	mg/Kg	☼	06/20/22 18:36	06/23/22 02:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*104*		*60 - 138*	*06/20/22 18:36*	*06/23/22 02:40*	*1*

Client Sample ID: LCW-07-061722 **Lab Sample ID: 570-100189-4**
Date Collected: 06/17/22 11:00 **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6 as C6	ND		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C7 as C7	ND		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C8 as C8	ND		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C9-C10	ND		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C11-C12	ND		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C13-C14	ND		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C15-C16	ND		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C17-C18	ND		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C19-C20	ND		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C21-C22	ND		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C23-C24	ND		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C25-C28	**8.9**		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C29-C32	**9.4**		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C33-C36	**6.5**		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C37-C40	ND		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C41-C44	ND		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
C6-C44	**30**		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1
Diesel Range Organics [C10-C28]	**10**		5.8	4.5	mg/Kg	☼	06/20/22 18:36	06/23/22 03:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*96*		*60 - 138*	*06/20/22 18:36*	*06/23/22 03:01*	*1*

Client: Anchor QEA LLC Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8015B - Diesel Range Organics (DRO) (GC)

Client Sample ID: LCW-08/09-061722 **Lab Sample ID: 570-100189-5**
Date Collected: 06/17/22 17:15 **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6 as C6	ND		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C7 as C7	ND		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C8 as C8	ND		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C9-C10	ND		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C11-C12	**8.9**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C13-C14	**28**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C15-C16	**41**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C17-C18	**54**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C19-C20	**65**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C21-C22	**67**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C23-C24	**77**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C25-C28	**170**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C29-C32	**160**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C33-C36	**84**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C37-C40	**45**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C41-C44	**18**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
C6-C44	**800**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1
Diesel Range Organics [C10-C28]	**510**		5.9	4.6	mg/Kg	☼	06/20/22 18:36	06/23/22 03:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*104*		*60 - 138*	*06/20/22 18:36*	*06/23/22 03:22*	*1*

Client Sample ID: LCW-10/11-061722 **Lab Sample ID: 570-100189-6**
Date Collected: 06/17/22 10:00 **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6 as C6	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C7 as C7	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C8 as C8	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C9-C10	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C11-C12	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C13-C14	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C15-C16	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C17-C18	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C19-C20	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C21-C22	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C23-C24	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C25-C28	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C29-C32	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C33-C36	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C37-C40	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C41-C44	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
C6-C44	**15**		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1
Diesel Range Organics [C10-C28]	ND		6.7	5.2	mg/Kg	☼	06/20/22 18:36	06/23/22 04:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*108*		*60 - 138*	*06/20/22 18:36*	*06/23/22 04:25*	*1*

Client Sample Results

Client: Anchor QEA LLC Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8015B - Diesel Range Organics (DRO) (GC)

Client Sample ID: LCW-12/13-061722
Date Collected: 06/17/22 17:15
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-7
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6 as C6	ND		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C7 as C7	ND		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C8 as C8	ND		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C9-C10	ND		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C11-C12	ND		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C13-C14	**8.8**		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C15-C16	**25**		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C17-C18	**47**		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C19-C20	**68**		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C21-C22	**74**		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C23-C24	**91**		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C25-C28	**180**		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C29-C32	**180**		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C33-C36	**100**		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C37-C40	**55**		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C41-C44	**21**		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
C6-C44	**850**		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1
Diesel Range Organics [C10-C28]	**500**		6.1	4.7	mg/Kg	☼	06/20/22 18:36	06/23/22 04:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*112*		*60 - 138*	*06/20/22 18:36*	*06/23/22 04:46*	*1*

Client Sample Results

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8081A - Organochlorine Pesticides (GC)

Client Sample ID: LCW-01/02-061522
Lab Sample ID: 570-100189-1
Date Collected: 06/15/22 13:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.3	0.080	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
2,4'-DDE	ND		2.5	1.3	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
2,4'-DDT	ND		1.3	0.12	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
4,4'-DDD	**1.2**	**J**	1.3	0.63	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
4,4'-DDE	ND		1.3	0.34	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
4,4'-DDT	ND		1.3	0.39	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
Aldrin	ND		1.3	0.46	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
alpha-BHC	ND		1.3	0.10	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
alpha-Chlordane	ND		1.3	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
beta-BHC	ND		1.3	0.24	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
Chlordane	ND		6.3	0.90	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
cis-Nonachlor	ND		1.3	0.059	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
delta-BHC	ND		1.3	0.19	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
Dieldrin	ND		0.25	0.083	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
Endosulfan I	ND		1.3	0.15	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
Endosulfan II	ND		1.3	0.28	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
Endosulfan sulfate	ND		1.3	0.14	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
Endrin	ND		1.3	0.24	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
Endrin aldehyde	ND		1.3	1.2	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
gamma-BHC	ND		1.3	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
gamma-Chlordane	ND		1.3	0.44	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
Heptachlor	ND		1.3	0.075	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
Heptachlor epoxide	ND		1.3	0.11	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
Oxychlordane	ND		1.3	0.19	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
Toxaphene	ND		6.3	1.2	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1
trans-Nonachlor	ND		1.3	0.14	ug/Kg	☼	06/23/22 21:11	06/28/22 13:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*112*		*20 - 180*	*06/23/22 21:11*	*06/28/22 13:30*	*1*
Tetrachloro-m-xylene (Surr)	*107*		*20 - 131*	*06/23/22 21:11*	*06/28/22 13:30*	*1*

Client Sample ID: LCW-03/04-061522
Lab Sample ID: 570-100189-2
Date Collected: 06/15/22 13:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.1	0.074	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
2,4'-DDE	ND		2.3	1.2	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
2,4'-DDT	ND		1.1	0.11	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
4,4'-DDD	ND		1.1	0.57	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
4,4'-DDE	ND		1.1	0.31	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
4,4'-DDT	ND		1.1	0.35	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
Aldrin	ND		1.1	0.42	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
alpha-BHC	ND		1.1	0.092	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
alpha-Chlordane	ND		1.1	0.12	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
beta-BHC	ND		1.1	0.22	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
Chlordane	ND		5.7	0.82	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
cis-Nonachlor	**2.9**		1.1	0.054	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
delta-BHC	ND		1.1	0.17	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
Dieldrin	ND		0.23	0.076	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
Endosulfan I	ND		1.1	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: LCW-03/04-061522
Lab Sample ID: 570-100189-2
Date Collected: 06/15/22 13:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan II	ND		1.1	0.26	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
Endosulfan sulfate	ND		1.1	0.12	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
Endrin	ND		1.1	0.22	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
Endrin aldehyde	ND		1.1	1.1	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
gamma-BHC	ND		1.1	0.12	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
gamma-Chlordane	ND		1.1	0.40	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
Heptachlor	ND		1.1	0.068	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
Heptachlor epoxide	ND		1.1	0.098	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
Oxychlordane	ND		1.1	0.17	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
Toxaphene	ND		5.7	1.1	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1
trans-Nonachlor	ND		1.1	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 13:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*136*		*20 - 180*	*06/23/22 21:11*	*06/28/22 13:45*	*1*
Tetrachloro-m-xylene (Surr)	*83*		*20 - 131*	*06/23/22 21:11*	*06/28/22 13:45*	*1*

Client Sample ID: LCW-05-061722
Lab Sample ID: 570-100189-3
Date Collected: 06/17/22 17:10
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.1	0.072	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
2,4'-DDE	ND		2.3	1.2	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
2,4'-DDT	ND		1.1	0.10	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
4,4'-DDD	ND		1.1	0.56	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
4,4'-DDE	**0.72**	**J**	1.1	0.30	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
4,4'-DDT	**1.9**		1.1	0.35	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
Aldrin	ND		1.1	0.41	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
alpha-BHC	ND		1.1	0.090	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
alpha-Chlordane	ND		1.1	0.12	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
beta-BHC	ND		1.1	0.22	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
Chlordane	ND		5.6	0.81	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
cis-Nonachlor	ND		1.1	0.053	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
delta-BHC	ND		1.1	0.17	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
Dieldrin	ND		0.23	0.075	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
Endosulfan I	ND		1.1	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
Endosulfan II	ND		1.1	0.26	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
Endosulfan sulfate	ND		1.1	0.12	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
Endrin	ND		1.1	0.21	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
Endrin aldehyde	ND		1.1	1.1	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
gamma-BHC	ND		1.1	0.12	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
gamma-Chlordane	ND		1.1	0.40	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
Heptachlor	ND		1.1	0.067	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
Heptachlor epoxide	ND		1.1	0.096	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
Oxychlordane	ND		1.1	0.17	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
Toxaphene	ND		5.6	1.1	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1
trans-Nonachlor	ND		1.1	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 13:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*127*		*20 - 180*	*06/23/22 21:11*	*06/28/22 13:59*	*1*
Tetrachloro-m-xylene (Surr)	*84*		*20 - 131*	*06/23/22 21:11*	*06/28/22 13:59*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Client Sample ID: LCW-07-061722 **Lab Sample ID: 570-100189-4**
Date Collected: 06/17/22 11:00 **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.2	0.075	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
2,4'-DDE	ND		2.3	1.2	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
2,4'-DDT	ND		1.2	0.11	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
4,4'-DDD	ND		1.2	0.58	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
4,4'-DDE	ND		1.2	0.32	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
4,4'-DDT	ND		1.2	0.36	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
Aldrin	ND		1.2	0.43	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
alpha-BHC	ND		1.2	0.094	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
alpha-Chlordane	ND		1.2	0.12	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
beta-BHC	ND		1.2	0.22	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
Chlordane	ND		5.8	0.83	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
cis-Nonachlor	ND		1.2	0.055	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
delta-BHC	ND		1.2	0.18	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
Dieldrin	ND		0.23	0.077	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
Endosulfan I	ND		1.2	0.14	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
Endosulfan II	ND		1.2	0.26	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
Endosulfan sulfate	ND		1.2	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
Endrin	ND		1.2	0.22	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
Endrin aldehyde	ND		1.2	1.1	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
gamma-BHC	ND		1.2	0.12	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
gamma-Chlordane	ND		1.2	0.41	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
Heptachlor	ND		1.2	0.070	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
Heptachlor epoxide	ND		1.2	0.10	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
Oxychlordane	ND		1.2	0.17	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
Toxaphene	ND		5.8	1.2	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1
trans-Nonachlor	ND		1.2	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 14:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*109*		*20 - 180*	*06/23/22 21:11*	*06/28/22 14:14*	*1*
Tetrachloro-m-xylene (Surr)	*75*		*20 - 131*	*06/23/22 21:11*	*06/28/22 14:14*	*1*

Client Sample ID: LCW-08/09-061722 **Lab Sample ID: 570-100189-5**
Date Collected: 06/17/22 17:15 **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	**0.84**	**J p**	1.2	0.076	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
2,4'-DDE	ND		2.4	1.2	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
2,4'-DDT	ND		1.2	0.11	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
4,4'-DDD	**2.5**		1.2	0.60	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
4,4'-DDE	**2.3**	**p**	1.2	0.32	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
4,4'-DDT	ND	F1	1.2	0.37	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
Aldrin	ND		1.2	0.44	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
alpha-BHC	ND		1.2	0.096	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
alpha-Chlordane	ND		1.2	0.12	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
beta-BHC	ND		1.2	0.23	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
Chlordane	ND		6.0	0.85	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
cis-Nonachlor	ND		1.2	0.056	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
delta-BHC	ND		1.2	0.18	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
Dieldrin	ND		0.24	0.079	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
Endosulfan I	ND		1.2	0.14	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: LCW-08/09-061722
Lab Sample ID: 570-100189-5
Date Collected: 06/17/22 17:15
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan II	ND		1.2	0.27	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
Endosulfan sulfate	ND		1.2	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
Endrin	ND	F1	1.2	0.23	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
Endrin aldehyde	ND		1.2	1.2	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
gamma-BHC	ND		1.2	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
gamma-Chlordane	ND		1.2	0.42	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
Heptachlor	ND		1.2	0.071	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
Heptachlor epoxide	ND		1.2	0.10	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
Oxychlordane	ND		1.2	0.18	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
Toxaphene	ND		6.0	1.2	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1
trans-Nonachlor	ND		1.2	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 14:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*131*		*20 - 180*	*06/23/22 21:11*	*06/28/22 14:29*	*1*
Tetrachloro-m-xylene (Surr)	*88*		*20 - 131*	*06/23/22 21:11*	*06/28/22 14:29*	*1*

Client Sample ID: LCW-10/11-061722
Lab Sample ID: 570-100189-6
Date Collected: 06/17/22 10:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.3	0.086	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
2,4'-DDE	ND		2.7	1.4	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
2,4'-DDT	ND		1.3	0.12	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
4,4'-DDD	**1.2**	**J**	1.3	0.67	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
4,4'-DDE	**1.8**		1.3	0.36	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
4,4'-DDT	ND		1.3	0.42	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
Aldrin	ND		1.3	0.49	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
alpha-BHC	ND		1.3	0.11	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
alpha-Chlordane	ND		1.3	0.14	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
beta-BHC	ND		1.3	0.26	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
Chlordane	ND		6.7	0.96	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
cis-Nonachlor	ND		1.3	0.064	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
delta-BHC	ND		1.3	0.20	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
Dieldrin	ND		0.27	0.089	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
Endosulfan I	ND		1.3	0.16	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
Endosulfan II	ND		1.3	0.31	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
Endosulfan sulfate	ND		1.3	0.15	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
Endrin	ND		1.3	0.26	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
Endrin aldehyde	ND		1.3	1.3	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
gamma-BHC	ND		1.3	0.14	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
gamma-Chlordane	ND		1.3	0.47	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
Heptachlor	ND		1.3	0.080	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
Heptachlor epoxide	ND		1.3	0.12	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
Oxychlordane	ND		1.3	0.20	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
Toxaphene	ND		6.7	1.3	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1
trans-Nonachlor	ND		1.3	0.15	ug/Kg	☼	06/23/22 21:11	06/28/22 14:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*121*		*20 - 180*	*06/23/22 21:11*	*06/28/22 14:44*	*1*
Tetrachloro-m-xylene (Surr)	*83*		*20 - 131*	*06/23/22 21:11*	*06/28/22 14:44*	*1*

Client Sample Results

Client: Anchor QEA LLC
Project/Site: Los Cerritos Wetlands Restoration Project

Job ID: 570-100189-1

Method: 8081A - Organochlorine Pesticides (GC)

Client Sample ID: LCW-12/13-061722
Date Collected: 06/17/22 17:15
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-7
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	**0.76**	**J p**	1.2	0.079	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
2,4'-DDE	ND		2.5	1.3	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
2,4'-DDT	ND		1.2	0.11	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
4,4'-DDD	**3.0**		1.2	0.61	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
4,4'-DDE	**1.4**	**p**	1.2	0.33	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
4,4'-DDT	**1.1**	**J p**	1.2	0.38	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
Aldrin	ND		1.2	0.45	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
alpha-BHC	ND		1.2	0.099	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
alpha-Chlordane	ND		1.2	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
beta-BHC	ND		1.2	0.24	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
Chlordane	ND		6.2	0.88	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
cis-Nonachlor	ND		1.2	0.058	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
delta-BHC	ND		1.2	0.18	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
Dieldrin	**0.18**	**J p**	0.25	0.081	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
Endosulfan I	ND		1.2	0.14	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
Endosulfan II	ND		1.2	0.28	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
Endosulfan sulfate	ND		1.2	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
Endrin	ND		1.2	0.23	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
Endrin aldehyde	ND		1.2	1.2	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
gamma-BHC	ND		1.2	0.13	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
gamma-Chlordane	ND		1.2	0.43	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
Heptachlor	ND		1.2	0.073	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
Heptachlor epoxide	ND		1.2	0.10	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
Oxychlordane	ND		1.2	0.18	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
Toxaphene	ND		6.2	1.2	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1
trans-Nonachlor	ND		1.2	0.14	ug/Kg	☼	06/23/22 21:11	06/28/22 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*154*		*20 - 180*	*06/23/22 21:11*	*06/28/22 14:59*	*1*
Tetrachloro-m-xylene (Surr)	*86*		*20 - 131*	*06/23/22 21:11*	*06/28/22 14:59*	*1*

Client Sample Results

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: LCW-01/02-061522
Lab Sample ID: 570-100189-1
Date Collected: 06/15/22 13:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		13	6.9	ug/Kg	☼	06/23/22 21:11	06/27/22 09:22	1
Aroclor-1221	ND		13	6.9	ug/Kg	☼	06/23/22 21:11	06/27/22 09:22	1
Aroclor-1232	ND		13	6.9	ug/Kg	☼	06/23/22 21:11	06/27/22 09:22	1
Aroclor-1242	ND		13	6.9	ug/Kg	☼	06/23/22 21:11	06/27/22 09:22	1
Aroclor-1248	ND		13	6.9	ug/Kg	☼	06/23/22 21:11	06/27/22 09:22	1
Aroclor-1254	ND		13	6.2	ug/Kg	☼	06/23/22 21:11	06/27/22 09:22	1
Aroclor-1260	ND		13	6.2	ug/Kg	☼	06/23/22 21:11	06/27/22 09:22	1
Aroclor-1262	ND		13	6.2	ug/Kg	☼	06/23/22 21:11	06/27/22 09:22	1
Aroclor-1268	ND		13	6.2	ug/Kg	☼	06/23/22 21:11	06/27/22 09:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*96*		*20 - 143*	*06/23/22 21:11*	*06/27/22 09:22*	*1*
DCB Decachlorobiphenyl (Surr)	*90*		*20 - 180*	*06/23/22 21:11*	*06/27/22 09:22*	*1*

Client Sample ID: LCW-03/04-061522
Lab Sample ID: 570-100189-2
Date Collected: 06/15/22 13:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		11	6.3	ug/Kg	☼	06/23/22 21:11	06/27/22 09:41	1
Aroclor-1221	ND		11	6.3	ug/Kg	☼	06/23/22 21:11	06/27/22 09:41	1
Aroclor-1232	ND		11	6.3	ug/Kg	☼	06/23/22 21:11	06/27/22 09:41	1
Aroclor-1242	ND		11	6.3	ug/Kg	☼	06/23/22 21:11	06/27/22 09:41	1
Aroclor-1248	ND		11	6.3	ug/Kg	☼	06/23/22 21:11	06/27/22 09:41	1
Aroclor-1254	**39**		11	5.7	ug/Kg	☼	06/23/22 21:11	06/27/22 09:41	1
Aroclor-1260	ND		11	5.7	ug/Kg	☼	06/23/22 21:11	06/27/22 09:41	1
Aroclor-1262	ND		11	5.7	ug/Kg	☼	06/23/22 21:11	06/27/22 09:41	1
Aroclor-1268	ND		11	5.7	ug/Kg	☼	06/23/22 21:11	06/27/22 09:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*77*		*20 - 143*	*06/23/22 21:11*	*06/27/22 09:41*	*1*
DCB Decachlorobiphenyl (Surr)	*66*		*20 - 180*	*06/23/22 21:11*	*06/27/22 09:41*	*1*

Client Sample ID: LCW-05-061722
Lab Sample ID: 570-100189-3
Date Collected: 06/17/22 17:10
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		11	6.2	ug/Kg	☼	06/23/22 21:11	06/27/22 10:00	1
Aroclor-1221	ND		11	6.2	ug/Kg	☼	06/23/22 21:11	06/27/22 10:00	1
Aroclor-1232	ND		11	6.2	ug/Kg	☼	06/23/22 21:11	06/27/22 10:00	1
Aroclor-1242	ND		11	6.2	ug/Kg	☼	06/23/22 21:11	06/27/22 10:00	1
Aroclor-1248	ND		11	6.2	ug/Kg	☼	06/23/22 21:11	06/27/22 10:00	1
Aroclor-1254	ND		11	5.6	ug/Kg	☼	06/23/22 21:11	06/27/22 10:00	1
Aroclor-1260	ND		11	5.6	ug/Kg	☼	06/23/22 21:11	06/27/22 10:00	1
Aroclor-1262	ND		11	5.6	ug/Kg	☼	06/23/22 21:11	06/27/22 10:00	1
Aroclor-1268	ND		11	5.6	ug/Kg	☼	06/23/22 21:11	06/27/22 10:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*71*		*20 - 143*	*06/23/22 21:11*	*06/27/22 10:00*	*1*
DCB Decachlorobiphenyl (Surr)	*66*		*20 - 180*	*06/23/22 21:11*	*06/27/22 10:00*	*1*

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: LCW-07-061722
Lab Sample ID: 570-100189-4
Date Collected: 06/17/22 11:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		12	6.4	ug/Kg	☼	06/23/22 21:11	06/27/22 10:19	1
Aroclor-1221	ND		12	6.4	ug/Kg	☼	06/23/22 21:11	06/27/22 10:19	1
Aroclor-1232	ND		12	6.4	ug/Kg	☼	06/23/22 21:11	06/27/22 10:19	1
Aroclor-1242	ND		12	6.4	ug/Kg	☼	06/23/22 21:11	06/27/22 10:19	1
Aroclor-1248	ND		12	6.4	ug/Kg	☼	06/23/22 21:11	06/27/22 10:19	1
Aroclor-1254	ND		12	5.8	ug/Kg	☼	06/23/22 21:11	06/27/22 10:19	1
Aroclor-1260	ND		12	5.8	ug/Kg	☼	06/23/22 21:11	06/27/22 10:19	1
Aroclor-1262	ND		12	5.8	ug/Kg	☼	06/23/22 21:11	06/27/22 10:19	1
Aroclor-1268	ND		12	5.8	ug/Kg	☼	06/23/22 21:11	06/27/22 10:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*83*		*20 - 143*	*06/23/22 21:11*	*06/27/22 10:19*	*1*
DCB Decachlorobiphenyl (Surr)	*68*		*20 - 180*	*06/23/22 21:11*	*06/27/22 10:19*	*1*

Client Sample ID: LCW-08/09-061722
Lab Sample ID: 570-100189-5
Date Collected: 06/17/22 17:15
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		12	6.6	ug/Kg	☼	06/23/22 21:11	06/27/22 10:38	1
Aroclor-1221	ND		12	6.6	ug/Kg	☼	06/23/22 21:11	06/27/22 10:38	1
Aroclor-1232	ND		12	6.6	ug/Kg	☼	06/23/22 21:11	06/27/22 10:38	1
Aroclor-1242	ND		12	6.6	ug/Kg	☼	06/23/22 21:11	06/27/22 10:38	1
Aroclor-1248	ND		12	6.6	ug/Kg	☼	06/23/22 21:11	06/27/22 10:38	1
Aroclor-1254	ND		12	5.9	ug/Kg	☼	06/23/22 21:11	06/27/22 10:38	1
Aroclor-1260	ND		12	5.9	ug/Kg	☼	06/23/22 21:11	06/27/22 10:38	1
Aroclor-1262	ND		12	5.9	ug/Kg	☼	06/23/22 21:11	06/27/22 10:38	1
Aroclor-1268	ND		12	5.9	ug/Kg	☼	06/23/22 21:11	06/27/22 10:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*62*		*20 - 143*	*06/23/22 21:11*	*06/27/22 10:38*	*1*
DCB Decachlorobiphenyl (Surr)	*63*		*20 - 180*	*06/23/22 21:11*	*06/27/22 10:38*	*1*

Client Sample ID: LCW-10/11-061722
Lab Sample ID: 570-100189-6
Date Collected: 06/17/22 10:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		13	7.4	ug/Kg	☼	06/23/22 21:11	06/27/22 10:57	1
Aroclor-1221	ND		13	7.4	ug/Kg	☼	06/23/22 21:11	06/27/22 10:57	1
Aroclor-1232	ND		13	7.4	ug/Kg	☼	06/23/22 21:11	06/27/22 10:57	1
Aroclor-1242	ND		13	7.4	ug/Kg	☼	06/23/22 21:11	06/27/22 10:57	1
Aroclor-1248	ND		13	7.4	ug/Kg	☼	06/23/22 21:11	06/27/22 10:57	1
Aroclor-1254	ND		13	6.7	ug/Kg	☼	06/23/22 21:11	06/27/22 10:57	1
Aroclor-1260	ND		13	6.7	ug/Kg	☼	06/23/22 21:11	06/27/22 10:57	1
Aroclor-1262	ND		13	6.7	ug/Kg	☼	06/23/22 21:11	06/27/22 10:57	1
Aroclor-1268	ND		13	6.7	ug/Kg	☼	06/23/22 21:11	06/27/22 10:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*78*		*20 - 143*	*06/23/22 21:11*	*06/27/22 10:57*	*1*
DCB Decachlorobiphenyl (Surr)	*69*		*20 - 180*	*06/23/22 21:11*	*06/27/22 10:57*	*1*

Client Sample Results

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: LCW-12/13-061722
Lab Sample ID: 570-100189-7
Date Collected: 06/17/22 17:15
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		12	6.8	ug/Kg	☼	06/23/22 21:11	06/27/22 11:16	1
Aroclor-1221	ND		12	6.8	ug/Kg	☼	06/23/22 21:11	06/27/22 11:16	1
Aroclor-1232	ND		12	6.8	ug/Kg	☼	06/23/22 21:11	06/27/22 11:16	1
Aroclor-1242	ND		12	6.8	ug/Kg	☼	06/23/22 21:11	06/27/22 11:16	1
Aroclor-1248	ND		12	6.8	ug/Kg	☼	06/23/22 21:11	06/27/22 11:16	1
Aroclor-1254	ND		12	6.1	ug/Kg	☼	06/23/22 21:11	06/27/22 11:16	1
Aroclor-1260	ND		12	6.1	ug/Kg	☼	06/23/22 21:11	06/27/22 11:16	1
Aroclor-1262	ND		12	6.1	ug/Kg	☼	06/23/22 21:11	06/27/22 11:16	1
Aroclor-1268	ND		12	6.1	ug/Kg	☼	06/23/22 21:11	06/27/22 11:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*62*		*20 - 143*	*06/23/22 21:11*	*06/27/22 11:16*	*1*
DCB Decachlorobiphenyl (Surr)	*63*		*20 - 180*	*06/23/22 21:11*	*06/27/22 11:16*	*1*

Method: 6020 - Metals (ICP/MS)

Client Sample ID: LCW-01/02-061522
Lab Sample ID: 570-100189-1
Date Collected: 06/15/22 13:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.510	J	2.49	0.150	mg/Kg	☼	06/28/22 14:30	06/29/22 19:26	20
Arsenic	9.75		1.24	0.372	mg/Kg	☼	06/28/22 14:30	06/29/22 19:26	20
Barium	180		1.24	0.114	mg/Kg	☼	06/28/22 14:30	06/29/22 19:26	20
Cadmium	0.219	J	1.24	0.108	mg/Kg	☼	06/28/22 14:30	06/29/22 19:26	20
Cobalt	15.7		1.24	0.183	mg/Kg	☼	06/28/22 14:30	06/29/22 19:26	20
Lead	12.6		1.24	0.133	mg/Kg	☼	06/28/22 14:30	06/29/22 19:26	20
Nickel	27.1		1.24	0.114	mg/Kg	☼	06/28/22 14:30	06/29/22 19:26	20
Selenium	ND		1.24	0.866	mg/Kg	☼	06/28/22 14:30	06/29/22 19:26	20
Silver	ND		1.24	0.272	mg/Kg	☼	06/28/22 14:30	06/29/22 19:26	20
Thallium	0.216	J	1.24	0.133	mg/Kg	☼	06/28/22 14:30	06/29/22 19:26	20
Vanadium	60.7		2.49	0.134	mg/Kg	☼	06/28/22 14:30	06/29/22 19:26	20

Client Sample ID: LCW-03/04-061522
Lab Sample ID: 570-100189-2
Date Collected: 06/15/22 13:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.255	J	2.29	0.138	mg/Kg	☼	06/28/22 14:30	06/29/22 19:30	20
Arsenic	10.8		1.14	0.342	mg/Kg	☼	06/28/22 14:30	06/29/22 19:30	20
Barium	372		1.14	0.105	mg/Kg	☼	06/28/22 14:30	06/29/22 19:30	20
Cadmium	0.218	J	1.14	0.0995	mg/Kg	☼	06/28/22 14:30	06/29/22 19:30	20
Cobalt	12.4		1.14	0.168	mg/Kg	☼	06/28/22 14:30	06/29/22 19:30	20
Lead	16.2		1.14	0.122	mg/Kg	☼	06/28/22 14:30	06/29/22 19:30	20
Nickel	24.6		1.14	0.105	mg/Kg	☼	06/28/22 14:30	06/29/22 19:30	20
Selenium	ND		1.14	0.796	mg/Kg	☼	06/28/22 14:30	06/29/22 19:30	20
Silver	ND		1.14	0.251	mg/Kg	☼	06/28/22 14:30	06/29/22 19:30	20
Thallium	0.220	J	1.14	0.122	mg/Kg	☼	06/28/22 14:30	06/29/22 19:30	20
Vanadium	54.9		2.29	0.124	mg/Kg	☼	06/28/22 14:30	06/29/22 19:30	20

Client Sample ID: LCW-05-061722
Lab Sample ID: 570-100189-3
Date Collected: 06/17/22 17:10
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.318	J	2.30	0.139	mg/Kg	☼	06/28/22 14:30	06/29/22 19:33	20
Arsenic	7.65		1.15	0.344	mg/Kg	☼	06/28/22 14:30	06/29/22 19:33	20
Barium	142		1.15	0.106	mg/Kg	☼	06/28/22 14:30	06/29/22 19:33	20
Cadmium	0.251	J	1.15	0.100	mg/Kg	☼	06/28/22 14:30	06/29/22 19:33	20
Cobalt	12.9		1.15	0.169	mg/Kg	☼	06/28/22 14:30	06/29/22 19:33	20
Lead	19.9		1.15	0.123	mg/Kg	☼	06/28/22 14:30	06/29/22 19:33	20
Nickel	25.2		1.15	0.106	mg/Kg	☼	06/28/22 14:30	06/29/22 19:33	20
Selenium	ND		1.15	0.800	mg/Kg	☼	06/28/22 14:30	06/29/22 19:33	20
Silver	ND		1.15	0.252	mg/Kg	☼	06/28/22 14:30	06/29/22 19:33	20
Thallium	0.182	J	1.15	0.123	mg/Kg	☼	06/28/22 14:30	06/29/22 19:33	20
Vanadium	56.5		2.30	0.124	mg/Kg	☼	06/28/22 14:30	06/29/22 19:33	20

Client Sample ID: LCW-07-061722
Lab Sample ID: 570-100189-4
Date Collected: 06/17/22 11:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.242	J	2.35	0.142	mg/Kg	☼	06/28/22 14:30	06/29/22 19:36	20
Arsenic	4.19		1.17	0.351	mg/Kg	☼	06/28/22 14:30	06/29/22 19:36	20

Method: 6020 - Metals (ICP/MS) (Continued)

Client Sample ID: LCW-07-061722
Lab Sample ID: 570-100189-4
Date Collected: 06/17/22 11:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**103**		1.17	0.108	mg/Kg	☼	06/28/22 14:30	06/29/22 19:36	20
Cadmium	**0.138**	**J**	1.17	0.102	mg/Kg	☼	06/28/22 14:30	06/29/22 19:36	20
Cobalt	**11.4**		1.17	0.172	mg/Kg	☼	06/28/22 14:30	06/29/22 19:36	20
Lead	**7.73**		1.17	0.126	mg/Kg	☼	06/28/22 14:30	06/29/22 19:36	20
Nickel	**21.9**		1.17	0.108	mg/Kg	☼	06/28/22 14:30	06/29/22 19:36	20
Selenium	ND		1.17	0.817	mg/Kg	☼	06/28/22 14:30	06/29/22 19:36	20
Silver	ND		1.17	0.257	mg/Kg	☼	06/28/22 14:30	06/29/22 19:36	20
Thallium	**0.164**	**J**	1.17	0.126	mg/Kg	☼	06/28/22 14:30	06/29/22 19:36	20
Vanadium	**50.7**		2.35	0.127	mg/Kg	☼	06/28/22 14:30	06/29/22 19:36	20

Client Sample ID: LCW-08/09-061722
Lab Sample ID: 570-100189-5
Date Collected: 06/17/22 17:15
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.224**	**J**	2.37	0.143	mg/Kg	☼	06/28/22 14:30	06/29/22 19:39	20
Arsenic	**9.82**		1.18	0.354	mg/Kg	☼	06/28/22 14:30	06/29/22 19:39	20
Barium	**119**		1.18	0.109	mg/Kg	☼	06/28/22 14:30	06/29/22 19:39	20
Cadmium	**0.220**	**J**	1.18	0.103	mg/Kg	☼	06/28/22 14:30	06/29/22 19:39	20
Cobalt	**10.4**		1.18	0.174	mg/Kg	☼	06/28/22 14:30	06/29/22 19:39	20
Lead	**16.1**		1.18	0.127	mg/Kg	☼	06/28/22 14:30	06/29/22 19:39	20
Nickel	**20.0**		1.18	0.109	mg/Kg	☼	06/28/22 14:30	06/29/22 19:39	20
Selenium	ND		1.18	0.823	mg/Kg	☼	06/28/22 14:30	06/29/22 19:39	20
Silver	ND		1.18	0.259	mg/Kg	☼	06/28/22 14:30	06/29/22 19:39	20
Thallium	**0.158**	**J**	1.18	0.127	mg/Kg	☼	06/28/22 14:30	06/29/22 19:39	20
Vanadium	**46.2**		2.37	0.128	mg/Kg	☼	06/28/22 14:30	06/29/22 19:39	20

Client Sample ID: LCW-10/11-061722
Lab Sample ID: 570-100189-6
Date Collected: 06/17/22 10:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.303**	**J**	2.70	0.164	mg/Kg	☼	06/28/22 14:30	06/29/22 19:42	20
Arsenic	**7.89**		1.35	0.404	mg/Kg	☼	06/28/22 14:30	06/29/22 19:42	20
Barium	**186**		1.35	0.124	mg/Kg	☼	06/28/22 14:30	06/29/22 19:42	20
Cadmium	**0.272**	**J**	1.35	0.118	mg/Kg	☼	06/28/22 14:30	06/29/22 19:42	20
Cobalt	**15.2**		1.35	0.199	mg/Kg	☼	06/28/22 14:30	06/29/22 19:42	20
Lead	**14.8**		1.35	0.145	mg/Kg	☼	06/28/22 14:30	06/29/22 19:42	20
Nickel	**30.5**		1.35	0.124	mg/Kg	☼	06/28/22 14:30	06/29/22 19:42	20
Selenium	ND		1.35	0.941	mg/Kg	☼	06/28/22 14:30	06/29/22 19:42	20
Silver	ND		1.35	0.296	mg/Kg	☼	06/28/22 14:30	06/29/22 19:42	20
Thallium	**0.220**	**J**	1.35	0.145	mg/Kg	☼	06/28/22 14:30	06/29/22 19:42	20
Vanadium	**68.5**		2.70	0.146	mg/Kg	☼	06/28/22 14:30	06/29/22 19:42	20

Client Sample ID: LCW-12/13-061722
Lab Sample ID: 570-100189-7
Date Collected: 06/17/22 17:15
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.163**	**J**	2.48	0.150	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Arsenic	**7.79**		1.24	0.371	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Barium	**137**		1.24	0.114	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Beryllium	**0.785**	**J**	1.24	0.156	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20

Method: 6020 - Metals (ICP/MS) (Continued)

Client Sample ID: LCW-12/13-061722
Lab Sample ID: 570-100189-7
Date Collected: 06/17/22 17:15
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.542**	**J**	1.24	0.108	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Chromium	**28.3**		2.48	0.371	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Cobalt	**11.4**		1.24	0.182	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Copper	**28.0**		1.24	0.130	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Lead	**11.1**		1.24	0.133	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Molybdenum	**1.27**		1.24	0.131	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Nickel	**22.9**		1.24	0.114	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Selenium	ND		1.24	0.863	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Silver	ND		1.24	0.272	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Thallium	**0.234**	**J**	1.24	0.133	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Vanadium	**46.5**		2.48	0.134	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20
Zinc	**95.0**		6.20	1.14	mg/Kg	☼	06/28/22 14:30	06/29/22 19:45	20

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 6020 - Metals (ICP/MS) - DL

Client Sample ID: LCW-01/02-061522
Lab Sample ID: 570-100189-1
Date Collected: 06/15/22 13:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		6.22	0.784	mg/Kg	☼	06/28/22 14:30	06/29/22 20:17	100
Chromium	**29.5**		12.4	1.86	mg/Kg	☼	06/28/22 14:30	06/29/22 20:17	100
Copper	**35.6**		6.22	0.653	mg/Kg	☼	06/28/22 14:30	06/29/22 20:17	100
Molybdenum	**0.928**	**J**	6.22	0.659	mg/Kg	☼	06/28/22 14:30	06/29/22 20:17	100
Zinc	**84.6**		31.1	5.70	mg/Kg	☼	06/28/22 14:30	06/29/22 20:17	100

Client Sample ID: LCW-03/04-061522
Lab Sample ID: 570-100189-2
Date Collected: 06/15/22 13:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		5.72	0.721	mg/Kg	☼	06/28/22 14:30	06/29/22 20:20	100
Chromium	**27.5**		11.4	1.71	mg/Kg	☼	06/28/22 14:30	06/29/22 20:20	100
Copper	**27.2**		5.72	0.601	mg/Kg	☼	06/28/22 14:30	06/29/22 20:20	100
Molybdenum	**1.33**	**J**	5.72	0.606	mg/Kg	☼	06/28/22 14:30	06/29/22 20:20	100
Zinc	**84.4**		28.6	5.24	mg/Kg	☼	06/28/22 14:30	06/29/22 20:20	100

Client Sample ID: LCW-05-061722
Lab Sample ID: 570-100189-3
Date Collected: 06/17/22 17:10
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		5.75	0.725	mg/Kg	☼	06/28/22 14:30	06/29/22 20:23	100
Chromium	**30.0**		11.5	1.72	mg/Kg	☼	06/28/22 14:30	06/29/22 20:23	100
Copper	**38.5**		5.75	0.604	mg/Kg	☼	06/28/22 14:30	06/29/22 20:23	100
Molybdenum	**0.721**	**J**	5.75	0.610	mg/Kg	☼	06/28/22 14:30	06/29/22 20:23	100
Zinc	**85.3**		28.8	5.27	mg/Kg	☼	06/28/22 14:30	06/29/22 20:23	100

Client Sample ID: LCW-07-061722
Lab Sample ID: 570-100189-4
Date Collected: 06/17/22 11:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		5.87	0.739	mg/Kg	☼	06/28/22 14:30	06/29/22 20:27	100
Chromium	**24.1**		11.7	1.75	mg/Kg	☼	06/28/22 14:30	06/29/22 20:27	100
Copper	**20.0**		5.87	0.616	mg/Kg	☼	06/28/22 14:30	06/29/22 20:27	100
Molybdenum	ND		5.87	0.622	mg/Kg	☼	06/28/22 14:30	06/29/22 20:27	100
Zinc	**59.1**		29.3	5.37	mg/Kg	☼	06/28/22 14:30	06/29/22 20:27	100

Client Sample ID: LCW-08/09-061722
Lab Sample ID: 570-100189-5
Date Collected: 06/17/22 17:15
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		5.91	0.745	mg/Kg	☼	06/28/22 14:30	06/29/22 20:30	100
Chromium	**24.5**		11.8	1.77	mg/Kg	☼	06/28/22 14:30	06/29/22 20:30	100
Copper	**28.0**		5.91	0.621	mg/Kg	☼	06/28/22 14:30	06/29/22 20:30	100
Molybdenum	**1.39**	**J**	5.91	0.627	mg/Kg	☼	06/28/22 14:30	06/29/22 20:30	100
Zinc	**71.0**		29.6	5.42	mg/Kg	☼	06/28/22 14:30	06/29/22 20:30	100

Client Sample ID: LCW-10/11-061722
Lab Sample ID: 570-100189-6
Date Collected: 06/17/22 10:00
Matrix: Soil
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		6.76	0.852	mg/Kg	☼	06/28/22 14:30	06/29/22 20:52	100

Method: 6020 - Metals (ICP/MS) - DL (Continued)

Client Sample ID: LCW-10/11-061722 **Lab Sample ID: 570-100189-6**
Date Collected: 06/17/22 10:00 **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	36.8		13.5	2.02	mg/Kg	☼	06/28/22 14:30	06/29/22 20:52	100
Copper	40.0		6.76	0.710	mg/Kg	☼	06/28/22 14:30	06/29/22 20:52	100
Molybdenum	2.01	J	6.76	0.717	mg/Kg	☼	06/28/22 14:30	06/29/22 20:52	100
Zinc	103		33.8	6.19	mg/Kg	☼	06/28/22 14:30	06/29/22 20:52	100

Method: 7471A - Mercury (CVAA)

Client Sample ID: LCW-01/02-061522 — **Lab Sample ID: 570-100189-1**
Date Collected: 06/15/22 13:00 — **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0705	J	0.109	0.0177	mg/Kg	☼	06/21/22 21:10	06/22/22 20:40	1

Client Sample ID: LCW-03/04-061522 — **Lab Sample ID: 570-100189-2**
Date Collected: 06/15/22 13:00 — **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0383	J	0.0958	0.0155	mg/Kg	☼	06/21/22 21:10	06/22/22 20:42	1

Client Sample ID: LCW-05-061722 — **Lab Sample ID: 570-100189-3**
Date Collected: 06/17/22 17:10 — **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0410	J	0.0983	0.0159	mg/Kg	☼	06/21/22 21:10	06/22/22 20:44	1

Client Sample ID: LCW-07-061722 — **Lab Sample ID: 570-100189-4**
Date Collected: 06/17/22 11:00 — **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0316	J	0.0978	0.0158	mg/Kg	☼	06/21/22 21:10	06/22/22 20:50	1

Client Sample ID: LCW-08/09-061722 — **Lab Sample ID: 570-100189-5**
Date Collected: 06/17/22 17:15 — **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0784	J	0.0995	0.0161	mg/Kg	☼	06/21/22 21:10	06/22/22 20:52	1

Client Sample ID: LCW-10/11-061722 — **Lab Sample ID: 570-100189-6**
Date Collected: 06/17/22 10:00 — **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0442	J	0.115	0.0186	mg/Kg	☼	06/21/22 21:10	06/22/22 20:53	1

Client Sample ID: LCW-12/13-061722 — **Lab Sample ID: 570-100189-7**
Date Collected: 06/17/22 17:15 — **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0403	J	0.103	0.0167	mg/Kg	☼	06/21/22 21:10	06/22/22 20:55	1

Client Sample Results

Client: Anchor QEA LLC
Project/Site: Los Cerritos Wetlands Restoration Project

Job ID: 570-100189-1

General Chemistry

Client Sample ID: LCW-01/02-061522
Date Collected: 06/15/22 13:00
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-1
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad	0.790	B	0.251	0.0121	%	☼		06/30/22 17:53	1
Percent Solids	79.6		0.100	0.100	%			06/22/22 15:57	1

Client Sample ID: LCW-03/04-061522
Date Collected: 06/15/22 13:00
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-2
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad	0.757	B	0.230	0.0111	%	☼		06/30/22 17:58	1
Percent Solids	87.0		0.100	0.100	%			06/22/22 15:57	1

Client Sample ID: LCW-05-061722
Date Collected: 06/17/22 17:10
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-3
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad	0.973	B	0.227	0.0110	%	☼		06/30/22 18:02	1
Percent Solids	88.3		0.100	0.100	%			06/22/22 15:57	1

Client Sample ID: LCW-07-061722
Date Collected: 06/17/22 11:00
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-4
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad	0.285	B	0.235	0.0113	%	☼		06/30/22 18:07	1
Percent Solids	85.2		0.100	0.100	%			06/22/22 15:57	1

Client Sample ID: LCW-08/09-061722
Date Collected: 06/17/22 17:15
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-5
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad	0.923	B	0.239	0.0116	%	☼		06/30/22 18:11	1
Percent Solids	83.7		0.100	0.100	%			06/22/22 15:57	1

Client Sample ID: LCW-10/11-061722
Date Collected: 06/17/22 10:00
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-6
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad	1.05	B	0.270	0.0131	%	☼		06/30/22 18:16	1
Percent Solids	74.0		0.100	0.100	%			06/22/22 15:57	1

Client Sample ID: LCW-12/13-061722
Date Collected: 06/17/22 17:15
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-7
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad	1.20	B	0.247	0.0119	%	☼		06/30/22 18:20	1
Percent Solids	81.0		0.100	0.100	%			06/22/22 15:57	1

Client Sample ID: LCW-02-061522
Date Collected: 06/15/22 13:00
Date Received: 06/17/22 19:20

Lab Sample ID: 570-100189-8
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	72.9		0.100	0.100	%			06/22/22 15:57	1

General Chemistry

Client Sample ID: LCW-04-061522
Date Collected: 06/15/22 13:00
Date Received: 06/17/22 19:20
Lab Sample ID: 570-100189-9
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	86.0		0.100	0.100	%			06/22/22 15:57	1

Client Sample ID: LCW-09-061722
Date Collected: 06/17/22 15:20
Date Received: 06/17/22 19:20
Lab Sample ID: 570-100189-10
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	88.1		0.100	0.100	%			06/22/22 15:57	1

Client Sample ID: LCW-11-061622
Date Collected: 06/16/22 12:45
Date Received: 06/17/22 19:20
Lab Sample ID: 570-100189-11
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	65.6		0.100	0.100	%			06/22/22 15:57	1

Client Sample ID: LCW-12-061622
Date Collected: 06/16/22 11:45
Date Received: 06/17/22 19:20
Lab Sample ID: 570-100189-12
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	62.0		0.100	0.100	%			06/22/22 15:57	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Soil | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-142)	(80-120)	(80-123)	(80-120)
570-100189-3	LCW-05-061722	126	92	112	101
570-100189-8	LCW-02-061522	127	92	114	101
570-100189-9	LCW-04-061522	124	90	110	101
570-100189-10	LCW-09-061722	125	89	110	100
570-100189-11	LCW-11-061622	124	92	110	101
570-100189-12	LCW-12-061622	104	94	99	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-142)	(80-120)	(80-123)	(80-120)
LCS 570-243789/4	Lab Control Sample	103	97	108	101
LCS 570-244174/4	Lab Control Sample	101	97	106	99
LCSD 570-243789/5	Lab Control Sample Dup	105	98	107	101
LCSD 570-244174/5	Lab Control Sample Dup	102	98	106	99
MB 570-243789/9	Method Blank	104	91	102	100
MB 570-244174/8	Method Blank	106	92	100	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8270C SIM - Semivolatile Organic Compound (GC/MS SIM LL)

Matrix: Soil | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		FBP	NBZ	TPHd14
Lab Sample ID	Client Sample ID	(26-136)	(16-124)	(36-125)
570-100189-1	LCW-01/02-061522	94	84	87
570-100189-2	LCW-03/04-061522	88	84	88
570-100189-3 - DL	LCW-05-061722	100	55	65
570-100189-3 MS - DL	LCW-05-061722	101	85	78
570-100189-3 MSD - DL	LCW-05-061722	109	90	78
570-100189-4	LCW-07-061722	80	68	80
570-100189-5	LCW-08/09-061722	84	78	81
570-100189-6	LCW-10/11-061722	89	69	88
570-100189-7	LCW-12/13-061722	61	47	72

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
NBZ = Nitrobenzene-d5 (Surr)
TPHd14 = p-Terphenyl-d14 (Surr)

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8270C SIM - Semivolatile Organic Compound (GC/MS SIM LL)

Matrix: Solid **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	FBP (26-136)	NBZ (16-124)	TPHd14 (36-125)
LCS 570-244076/2-A	Lab Control Sample	82	73	88
LCSD 570-244076/3-A	Lab Control Sample Dup	80	67	88
MB 570-244076/1-A	Method Blank	82	66	82

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
NBZ = Nitrobenzene-d5 (Surr)
TPHd14 = p-Terphenyl-d14 (Surr)

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Soil **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OTCSN1 (60-138)
570-100189-1	LCW-01/02-061522	118
570-100189-2	LCW-03/04-061522	116
570-100189-3	LCW-05-061722	104
570-100189-4	LCW-07-061722	96
570-100189-5	LCW-08/09-061722	104
570-100189-6	LCW-10/11-061722	108
570-100189-7	LCW-12/13-061722	112

Surrogate Legend

OTCSN = n-Octacosane (Surr)

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Solid **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OTCSN1 (60-138)
570-100039-D-1-A MS	Matrix Spike	111
570-100039-D-1-B MSD	Matrix Spike Duplicate	107
LCS 570-243003/2-A	Lab Control Sample	109
LCSD 570-243003/3-A	Lab Control Sample Dup	111
MB 570-243003/1-A	Method Blank	110

Surrogate Legend

OTCSN = n-Octacosane (Surr)

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Soil **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCB1 (20-180)	TCX1 (20-131)
570-100189-1	LCW-01/02-061522	112	107
570-100189-2	LCW-03/04-061522	136	83
570-100189-2 MS	LCW-03/04-061522	147	91
570-100189-2 MSD	LCW-03/04-061522	132	93
570-100189-3	LCW-05-061722	127	84

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Matrix: Soil **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCB1	TCX1
Lab Sample ID	Client Sample ID	(20-180)	(20-131)
570-100189-4	LCW-07-061722	109	75
570-100189-5	LCW-08/09-061722	131	88
570-100189-5 MS	LCW-08/09-061722	189 S1+	87
570-100189-5 MSD	LCW-08/09-061722	161	85
570-100189-6	LCW-10/11-061722	121	83
570-100189-7	LCW-12/13-061722	154	86

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene (Surr)

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCB1	TCX1
Lab Sample ID	Client Sample ID	(20-180)	(20-131)
LCS 570-244075/2-A	Lab Control Sample	86	73
LCS 570-244075/4-A	Lab Control Sample	113	98
LCSD 570-244075/3-A	Lab Control Sample Dup	122	96
LCSD 570-244075/5-A	Lab Control Sample Dup	108	92
MB 570-244075/1-A	Method Blank	92	71

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene (Surr)

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Soil **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		TCX1	DCB1
Lab Sample ID	Client Sample ID	(20-143)	(20-180)
570-100189-1	LCW-01/02-061522	96	90
570-100189-2	LCW-03/04-061522	77	66
570-100189-3	LCW-05-061722	71	66
570-100189-4	LCW-07-061722	83	68
570-100189-5	LCW-08/09-061722	62	63
570-100189-6	LCW-10/11-061722	78	69
570-100189-6 MS	LCW-10/11-061722	81	74
570-100189-6 MSD	LCW-10/11-061722	81	75
570-100189-7	LCW-12/13-061722	62	63

Surrogate Legend

TCX = Tetrachloro-m-xylene (Surr)
DCB = DCB Decachlorobiphenyl (Surr)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Surrogate Summary

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
		TCX1	DCB1
Lab Sample ID	Client Sample ID	(20-143)	(20-180)
LCS 570-244075/6-A	Lab Control Sample	91	99
LCSD 570-244075/7-A	Lab Control Sample Dup	83	80
MB 570-244075/1-A	Method Blank	90	100

Surrogate Legend

TCX = Tetrachloro-m-xylene (Surr)
DCB = DCB Decachlorobiphenyl (Surr)

QC Sample Results

Client: Anchor QEA LLC | Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 570-243789/9
Matrix: Solid
Analysis Batch: 243789

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.29	ug/Kg			06/23/22 11:26	1
1,1,1-Trichloroethane	ND		1.0	0.23	ug/Kg			06/23/22 11:26	1
1,1,2,2-Tetrachloroethane	ND		2.0	0.54	ug/Kg			06/23/22 11:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10	0.46	ug/Kg			06/23/22 11:26	1
1,1,2-Trichloroethane	ND		1.0	0.46	ug/Kg			06/23/22 11:26	1
1,1-Dichloroethane	ND		1.0	0.28	ug/Kg			06/23/22 11:26	1
1,1-Dichloroethene	ND		1.0	0.27	ug/Kg			06/23/22 11:26	1
1,1-Dichloropropene	ND		2.0	0.39	ug/Kg			06/23/22 11:26	1
1,2,3-Trichlorobenzene	ND		2.0	1.0	ug/Kg			06/23/22 11:26	1
1,2,3-Trichloropropane	ND		2.0	0.42	ug/Kg			06/23/22 11:26	1
1,2,4-Trichlorobenzene	ND		2.0	0.41	ug/Kg			06/23/22 11:26	1
1,2,4-Trimethylbenzene	ND		2.0	0.60	ug/Kg			06/23/22 11:26	1
1,2-Dibromo-3-Chloropropane	ND		10	6.8	ug/Kg			06/23/22 11:26	1
1,2-Dibromoethane	ND		1.0	0.21	ug/Kg			06/23/22 11:26	1
1,2-Dichlorobenzene	ND		1.0	0.25	ug/Kg			06/23/22 11:26	1
1,2-Dichloroethane	ND		1.0	0.28	ug/Kg			06/23/22 11:26	1
1,2-Dichloropropane	ND		1.0	0.28	ug/Kg			06/23/22 11:26	1
1,3,5-Trimethylbenzene	ND		2.0	0.27	ug/Kg			06/23/22 11:26	1
1,3-Dichlorobenzene	ND		1.0	0.25	ug/Kg			06/23/22 11:26	1
1,3-Dichloropropane	ND		1.0	0.30	ug/Kg			06/23/22 11:26	1
1,4-Dichlorobenzene	ND		1.0	0.31	ug/Kg			06/23/22 11:26	1
2,2-Dichloropropane	ND		5.0	0.27	ug/Kg			06/23/22 11:26	1
2-Butanone	ND		20	4.5	ug/Kg			06/23/22 11:26	1
2-Chlorotoluene	ND		1.0	0.25	ug/Kg			06/23/22 11:26	1
2-Hexanone	ND		20	3.1	ug/Kg			06/23/22 11:26	1
4-Chlorotoluene	ND		1.0	0.24	ug/Kg			06/23/22 11:26	1
4-Methyl-2-pentanone	ND		20	2.9	ug/Kg			06/23/22 11:26	1
Acetone	ND		20	9.8	ug/Kg			06/23/22 11:26	1
Benzene	ND		1.0	0.26	ug/Kg			06/23/22 11:26	1
Bromobenzene	ND		1.0	0.21	ug/Kg			06/23/22 11:26	1
Bromochloromethane	ND		2.0	0.44	ug/Kg			06/23/22 11:26	1
Bromodichloromethane	ND		1.0	0.33	ug/Kg			06/23/22 11:26	1
Bromoform	ND		5.0	1.3	ug/Kg			06/23/22 11:26	1
Bromomethane	ND		20	6.6	ug/Kg			06/23/22 11:26	1
Carbon disulfide	ND		10	0.40	ug/Kg			06/23/22 11:26	1
Carbon tetrachloride	ND		1.0	0.30	ug/Kg			06/23/22 11:26	1
Chlorobenzene	ND		1.0	0.27	ug/Kg			06/23/22 11:26	1
Chloroethane	ND		2.0	0.74	ug/Kg			06/23/22 11:26	1
Chloroform	ND		1.0	0.59	ug/Kg			06/23/22 11:26	1
Chloromethane	ND		20	1.5	ug/Kg			06/23/22 11:26	1
cis-1,2-Dichloroethene	ND		1.0	0.34	ug/Kg			06/23/22 11:26	1
cis-1,3-Dichloropropene	ND		1.0	0.35	ug/Kg			06/23/22 11:26	1
Dibromochloromethane	ND		2.0	0.27	ug/Kg			06/23/22 11:26	1
Dibromomethane	ND		1.0	0.31	ug/Kg			06/23/22 11:26	1
Dichlorodifluoromethane	ND		2.0	0.45	ug/Kg			06/23/22 11:26	1
Di-isopropyl ether (DIPE)	ND		1.0	0.50	ug/Kg			06/23/22 11:26	1
Ethanol	ND		250	66	ug/Kg			06/23/22 11:26	1
Ethylbenzene	ND		1.0	0.21	ug/Kg			06/23/22 11:26	1

Client: Anchor QEA LLC Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 570-243789/9 **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 243789

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethyl-t-butyl ether (ETBE)	ND		1.0	0.24	ug/Kg			06/23/22 11:26	1
Isopropylbenzene	ND		1.0	0.28	ug/Kg			06/23/22 11:26	1
m,p-Xylene	ND		2.0	0.47	ug/Kg			06/23/22 11:26	1
Methylene Chloride	ND		10	3.1	ug/Kg			06/23/22 11:26	1
Methyl-t-Butyl Ether (MTBE)	ND		2.0	0.19	ug/Kg			06/23/22 11:26	1
Naphthalene	ND		10	5.2	ug/Kg			06/23/22 11:26	1
n-Butylbenzene	ND		1.0	0.21	ug/Kg			06/23/22 11:26	1
N-Propylbenzene	ND		2.0	0.26	ug/Kg			06/23/22 11:26	1
o-Xylene	ND		1.0	0.26	ug/Kg			06/23/22 11:26	1
p-Isopropyltoluene	ND		1.0	0.28	ug/Kg			06/23/22 11:26	1
sec-Butylbenzene	ND		1.0	0.27	ug/Kg			06/23/22 11:26	1
Styrene	ND		1.0	0.32	ug/Kg			06/23/22 11:26	1
Tert-amyl-methyl ether (TAME)	ND		1.0	0.19	ug/Kg			06/23/22 11:26	1
tert-Butyl alcohol (TBA)	ND		20	7.0	ug/Kg			06/23/22 11:26	1
tert-Butylbenzene	ND		1.0	0.25	ug/Kg			06/23/22 11:26	1
Tetrachloroethene	ND		1.0	0.22	ug/Kg			06/23/22 11:26	1
Toluene	ND		1.0	0.27	ug/Kg			06/23/22 11:26	1
trans-1,2-Dichloroethene	ND		1.0	0.30	ug/Kg			06/23/22 11:26	1
trans-1,3-Dichloropropene	ND		2.0	0.28	ug/Kg			06/23/22 11:26	1
Trichloroethene	ND		2.0	0.39	ug/Kg			06/23/22 11:26	1
Trichlorofluoromethane	ND		10	0.27	ug/Kg			06/23/22 11:26	1
Vinyl acetate	ND		10	3.9	ug/Kg			06/23/22 11:26	1
Vinyl chloride	ND		1.0	0.38	ug/Kg			06/23/22 11:26	1
Xylenes, Total	ND		2.0	0.60	ug/Kg			06/23/22 11:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 142*		*06/23/22 11:26*	*1*
4-Bromofluorobenzene (Surr)	*91*		*80 - 120*		*06/23/22 11:26*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 123*		*06/23/22 11:26*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/23/22 11:26*	*1*

Lab Sample ID: LCS 570-243789/4 **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 243789

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	50.0	53.46		ug/Kg		107	80 - 127
1,1,1-Trichloroethane	50.0	54.63		ug/Kg		109	80 - 127
1,1,2,2-Tetrachloroethane	50.0	51.05		ug/Kg		102	80 - 126
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	54.74		ug/Kg		109	78 - 121
1,1,2-Trichloroethane	50.0	52.18		ug/Kg		104	80 - 120
1,1-Dichloroethane	50.0	55.13		ug/Kg		110	75 - 128
1,1-Dichloroethene	50.0	53.30		ug/Kg		107	70 - 131
1,1-Dichloropropene	50.0	53.51		ug/Kg		107	80 - 124
1,2,3-Trichlorobenzene	50.0	49.43		ug/Kg		99	80 - 124
1,2,3-Trichloropropane	50.0	51.60		ug/Kg		103	80 - 125
1,2,4-Trichlorobenzene	50.0	52.14		ug/Kg		104	80 - 131
1,2,4-Trimethylbenzene	50.0	51.89		ug/Kg		104	80 - 126

Client: Anchor QEA LLC	Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 570-243789/4
Matrix: Solid
Analysis Batch: 243789

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2-Dibromo-3-Chloropropane	50.0	47.11		ug/Kg		94	65 - 127
1,2-Dibromoethane	50.0	50.48		ug/Kg		101	80 - 120
1,2-Dichlorobenzene	50.0	51.23		ug/Kg		102	80 - 120
1,2-Dichloroethane	50.0	52.29		ug/Kg		105	80 - 120
1,2-Dichloropropane	50.0	52.29		ug/Kg		105	80 - 120
1,3,5-Trimethylbenzene	50.0	53.37		ug/Kg		107	80 - 123
1,3-Dichlorobenzene	50.0	50.14		ug/Kg		100	80 - 120
1,3-Dichloropropane	50.0	51.23		ug/Kg		102	80 - 120
1,4-Dichlorobenzene	50.0	50.34		ug/Kg		101	80 - 120
2,2-Dichloropropane	50.0	55.57		ug/Kg		111	65 - 150
2-Butanone	50.0	51.16		ug/Kg		102	73 - 129
2-Chlorotoluene	50.0	51.95		ug/Kg		104	80 - 120
2-Hexanone	50.0	48.57		ug/Kg		97	80 - 121
4-Chlorotoluene	50.0	51.56		ug/Kg		103	80 - 120
4-Methyl-2-pentanone	50.0	46.71		ug/Kg		93	80 - 120
Acetone	50.0	47.74		ug/Kg		95	55 - 142
Benzene	50.0	54.00		ug/Kg		108	80 - 120
Bromobenzene	50.0	51.27		ug/Kg		103	80 - 126
Bromochloromethane	50.0	50.41		ug/Kg		101	80 - 120
Bromodichloromethane	50.0	55.78		ug/Kg		112	80 - 120
Bromoform	50.0	53.57		ug/Kg		107	80 - 131
Bromomethane	50.0	60.97		ug/Kg		122	68 - 131
Carbon disulfide	50.0	54.51		ug/Kg		109	70 - 130
Carbon tetrachloride	50.0	58.78		ug/Kg		118	80 - 131
Chlorobenzene	50.0	52.02		ug/Kg		104	80 - 120
Chloroethane	50.0	63.90	*+ me	ug/Kg		128	80 - 124
Chloroform	50.0	54.88		ug/Kg		110	80 - 120
Chloromethane	50.0	78.34	*+	ug/Kg		157	68 - 135
cis-1,2-Dichloroethene	50.0	54.15		ug/Kg		108	80 - 122
cis-1,3-Dichloropropene	50.0	50.81		ug/Kg		102	80 - 125
Dibromochloromethane	50.0	55.47		ug/Kg		111	80 - 124
Dibromomethane	50.0	53.04		ug/Kg		106	80 - 120
Dichlorodifluoromethane	50.0	60.34		ug/Kg		121	60 - 166
Di-isopropyl ether (DIPE)	50.0	53.32		ug/Kg		107	77 - 130
Ethanol	500	697.7	*+ me	ug/Kg		140	66 - 129
Ethylbenzene	50.0	53.14		ug/Kg		106	80 - 120
Ethyl-t-butyl ether (ETBE)	50.0	50.09		ug/Kg		100	80 - 135
Isopropylbenzene	50.0	53.19		ug/Kg		106	80 - 120
m,p-Xylene	100	110.3		ug/Kg		110	80 - 120
Methylene Chloride	50.0	50.86		ug/Kg		102	80 - 120
Methyl-t-Butyl Ether (MTBE)	50.0	49.70		ug/Kg		99	80 - 122
Naphthalene	50.0	44.00		ug/Kg		88	77 - 120
n-Butylbenzene	50.0	49.41		ug/Kg		99	80 - 127
N-Propylbenzene	50.0	53.89		ug/Kg		108	80 - 120
o-Xylene	50.0	52.57		ug/Kg		105	80 - 120
p-Isopropyltoluene	50.0	52.51		ug/Kg		105	80 - 122
sec-Butylbenzene	50.0	51.57		ug/Kg		103	80 - 124
Styrene	50.0	50.35		ug/Kg		101	80 - 120
Tert-amyl-methyl ether (TAME)	50.0	49.52		ug/Kg		99	80 - 122

Client: Anchor QEA LLC Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 570-243789/4 **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 243789

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
tert-Butyl alcohol (TBA)	250	248.6		ug/Kg		99	80 - 120
tert-Butylbenzene	50.0	51.12		ug/Kg		102	80 - 120
Tetrachloroethene	50.0	52.00		ug/Kg		104	80 - 121
Toluene	50.0	52.50		ug/Kg		105	80 - 120
trans-1,2-Dichloroethene	50.0	53.62		ug/Kg		107	80 - 121
trans-1,3-Dichloropropene	50.0	49.60		ug/Kg		99	80 - 130
Trichloroethene	50.0	51.97		ug/Kg		104	80 - 120
Trichlorofluoromethane	50.0	65.10		ug/Kg		130	75 - 131
Vinyl acetate	50.0	49.69		ug/Kg		99	80 - 133
Vinyl chloride	50.0	66.56	*+ me	ug/Kg		133	80 - 129

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 142*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*
Dibromofluoromethane (Surr)	*108*		*80 - 123*
Toluene-d8 (Surr)	*101*		*80 - 120*

Lab Sample ID: LCSD 570-243789/5 **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 243789

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	50.0	54.07		ug/Kg		108	80 - 127	1	20
1,1,1-Trichloroethane	50.0	54.08		ug/Kg		108	80 - 127	1	20
1,1,2,2-Tetrachloroethane	50.0	52.84		ug/Kg		106	80 - 126	3	20
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	54.52		ug/Kg		109	78 - 121	0	20
1,1,2-Trichloroethane	50.0	53.42		ug/Kg		107	80 - 120	2	20
1,1-Dichloroethane	50.0	54.72		ug/Kg		109	75 - 128	1	20
1,1-Dichloroethene	50.0	53.00		ug/Kg		106	70 - 131	1	20
1,1-Dichloropropene	50.0	53.05		ug/Kg		106	80 - 124	1	20
1,2,3-Trichlorobenzene	50.0	50.28		ug/Kg		101	80 - 124	2	20
1,2,3-Trichloropropane	50.0	53.44		ug/Kg		107	80 - 125	3	20
1,2,4-Trichlorobenzene	50.0	51.76		ug/Kg		104	80 - 131	1	20
1,2,4-Trimethylbenzene	50.0	52.30		ug/Kg		105	80 - 126	1	20
1,2-Dibromo-3-Chloropropane	50.0	50.19		ug/Kg		100	65 - 127	6	20
1,2-Dibromoethane	50.0	52.96		ug/Kg		106	80 - 120	5	20
1,2-Dichlorobenzene	50.0	52.26		ug/Kg		105	80 - 120	2	20
1,2-Dichloroethane	50.0	53.74		ug/Kg		107	80 - 120	3	20
1,2-Dichloropropane	50.0	53.30		ug/Kg		107	80 - 120	2	20
1,3,5-Trimethylbenzene	50.0	52.89		ug/Kg		106	80 - 123	1	20
1,3-Dichlorobenzene	50.0	50.68		ug/Kg		101	80 - 120	1	20
1,3-Dichloropropane	50.0	52.43		ug/Kg		105	80 - 120	2	20
1,4-Dichlorobenzene	50.0	51.29		ug/Kg		103	80 - 120	2	20
2,2-Dichloropropane	50.0	54.96		ug/Kg		110	65 - 150	1	20
2-Butanone	50.0	50.91		ug/Kg		102	73 - 129	0	20
2-Chlorotoluene	50.0	52.15		ug/Kg		104	80 - 120	0	20
2-Hexanone	50.0	50.21		ug/Kg		100	80 - 121	3	20
4-Chlorotoluene	50.0	51.72		ug/Kg		103	80 - 120	0	20

Client: Anchor QEA LLC Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 570-243789/5 **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 243789

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
4-Methyl-2-pentanone	50.0	47.85		ug/Kg		96	80 - 120	2	20
Acetone	50.0	49.33		ug/Kg		99	55 - 142	3	22
Benzene	50.0	53.95		ug/Kg		108	80 - 120	0	20
Bromobenzene	50.0	51.45		ug/Kg		103	80 - 126	0	20
Bromochloromethane	50.0	51.52		ug/Kg		103	80 - 120	2	20
Bromodichloromethane	50.0	56.76		ug/Kg		114	80 - 120	2	20
Bromoform	50.0	54.66		ug/Kg		109	80 - 131	2	20
Bromomethane	50.0	65.14		ug/Kg		130	68 - 131	7	20
Carbon disulfide	50.0	53.68		ug/Kg		107	70 - 130	2	20
Carbon tetrachloride	50.0	58.63		ug/Kg		117	80 - 131	0	20
Chlorobenzene	50.0	52.19		ug/Kg		104	80 - 120	0	20
Chloroethane	50.0	65.85	*+	ug/Kg		132	80 - 124	3	20
Chloroform	50.0	55.10		ug/Kg		110	80 - 120	0	20
Chloromethane	50.0	80.37	*+	ug/Kg		161	68 - 135	3	20
cis-1,2-Dichloroethene	50.0	54.33		ug/Kg		109	80 - 122	0	20
cis-1,3-Dichloropropene	50.0	51.97		ug/Kg		104	80 - 125	2	20
Dibromochloromethane	50.0	56.19		ug/Kg		112	80 - 124	1	20
Dibromomethane	50.0	54.58		ug/Kg		109	80 - 120	3	20
Dichlorodifluoromethane	50.0	58.44		ug/Kg		117	60 - 166	3	20
Di-isopropyl ether (DIPE)	50.0	54.64		ug/Kg		109	77 - 130	2	20
Ethanol	500	679.5	*+ me	ug/Kg		136	66 - 129	3	22
Ethylbenzene	50.0	52.86		ug/Kg		106	80 - 120	1	20
Ethyl-t-butyl ether (ETBE)	50.0	51.69		ug/Kg		103	80 - 135	3	20
Isopropylbenzene	50.0	52.82		ug/Kg		106	80 - 120	1	20
m,p-Xylene	100	109.5		ug/Kg		109	80 - 120	1	20
Methylene Chloride	50.0	51.07		ug/Kg		102	80 - 120	0	20
Methyl-t-Butyl Ether (MTBE)	50.0	52.19		ug/Kg		104	80 - 122	5	20
Naphthalene	50.0	45.36		ug/Kg		91	77 - 120	3	20
n-Butylbenzene	50.0	48.81		ug/Kg		98	80 - 127	1	20
N-Propylbenzene	50.0	53.30		ug/Kg		107	80 - 120	1	20
o-Xylene	50.0	52.79		ug/Kg		106	80 - 120	0	20
p-Isopropyltoluene	50.0	51.73		ug/Kg		103	80 - 122	2	20
sec-Butylbenzene	50.0	50.90		ug/Kg		102	80 - 124	1	20
Styrene	50.0	50.64		ug/Kg		101	80 - 120	1	20
Tert-amyl-methyl ether (TAME)	50.0	51.43		ug/Kg		103	80 - 122	4	20
tert-Butyl alcohol (TBA)	250	251.9		ug/Kg		101	80 - 120	1	20
tert-Butylbenzene	50.0	50.64		ug/Kg		101	80 - 120	1	20
Tetrachloroethene	50.0	51.32		ug/Kg		103	80 - 121	1	20
Toluene	50.0	52.71		ug/Kg		105	80 - 120	0	20
trans-1,2-Dichloroethene	50.0	53.62		ug/Kg		107	80 - 121	0	20
trans-1,3-Dichloropropene	50.0	51.05		ug/Kg		102	80 - 130	3	20
Trichloroethene	50.0	52.17		ug/Kg		104	80 - 120	0	20
Trichlorofluoromethane	50.0	65.73		ug/Kg		131	75 - 131	1	20
Vinyl acetate	50.0	52.24		ug/Kg		104	80 - 133	5	20
Vinyl chloride	50.0	68.86	*+	ug/Kg		138	80 - 129	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 142*

Client: Anchor QEA LLC Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 570-243789/5 **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 243789

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	107		80 - 123
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: MB 570-244174/8 **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 244174

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		50	15	ug/Kg			06/24/22 11:21	50
1,1,1-Trichloroethane	ND		50	12	ug/Kg			06/24/22 11:21	50
1,1,2,2-Tetrachloroethane	ND		100	27	ug/Kg			06/24/22 11:21	50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		500	23	ug/Kg			06/24/22 11:21	50
1,1,2-Trichloroethane	ND		50	23	ug/Kg			06/24/22 11:21	50
1,1-Dichloroethane	ND		50	14	ug/Kg			06/24/22 11:21	50
1,1-Dichloroethene	ND		50	13	ug/Kg			06/24/22 11:21	50
1,1-Dichloropropene	ND		100	19	ug/Kg			06/24/22 11:21	50
1,2,3-Trichlorobenzene	ND		100	50	ug/Kg			06/24/22 11:21	50
1,2,3-Trichloropropane	ND		100	21	ug/Kg			06/24/22 11:21	50
1,2,4-Trichlorobenzene	ND		100	21	ug/Kg			06/24/22 11:21	50
1,2,4-Trimethylbenzene	ND		100	30	ug/Kg			06/24/22 11:21	50
1,2-Dibromo-3-Chloropropane	ND		500	340	ug/Kg			06/24/22 11:21	50
1,2-Dibromoethane	ND		50	10	ug/Kg			06/24/22 11:21	50
1,2-Dichlorobenzene	ND		50	13	ug/Kg			06/24/22 11:21	50
1,2-Dichloroethane	ND		50	14	ug/Kg			06/24/22 11:21	50
1,2-Dichloropropane	ND		50	14	ug/Kg			06/24/22 11:21	50
1,3,5-Trimethylbenzene	ND		100	13	ug/Kg			06/24/22 11:21	50
1,3-Dichlorobenzene	ND		50	13	ug/Kg			06/24/22 11:21	50
1,3-Dichloropropane	ND		50	15	ug/Kg			06/24/22 11:21	50
1,4-Dichlorobenzene	ND		50	15	ug/Kg			06/24/22 11:21	50
2,2-Dichloropropane	ND		250	14	ug/Kg			06/24/22 11:21	50
2-Butanone	ND		1000	230	ug/Kg			06/24/22 11:21	50
2-Chlorotoluene	ND		50	13	ug/Kg			06/24/22 11:21	50
2-Hexanone	ND		1000	150	ug/Kg			06/24/22 11:21	50
4-Chlorotoluene	ND		50	12	ug/Kg			06/24/22 11:21	50
4-Methyl-2-pentanone	ND		1000	150	ug/Kg			06/24/22 11:21	50
Acetone	ND		1000	490	ug/Kg			06/24/22 11:21	50
Benzene	ND		50	13	ug/Kg			06/24/22 11:21	50
Bromobenzene	ND		50	10	ug/Kg			06/24/22 11:21	50
Bromochloromethane	ND		100	22	ug/Kg			06/24/22 11:21	50
Bromodichloromethane	ND		50	16	ug/Kg			06/24/22 11:21	50
Bromoform	ND		250	66	ug/Kg			06/24/22 11:21	50
Bromomethane	ND		1000	330	ug/Kg			06/24/22 11:21	50
Carbon disulfide	ND		500	20	ug/Kg			06/24/22 11:21	50
Carbon tetrachloride	ND		50	15	ug/Kg			06/24/22 11:21	50
Chlorobenzene	ND		50	13	ug/Kg			06/24/22 11:21	50
Chloroethane	ND		100	37	ug/Kg			06/24/22 11:21	50
Chloroform	ND		50	29	ug/Kg			06/24/22 11:21	50

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 570-244174/8
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 244174

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloromethane	ND		1000	77	ug/Kg			06/24/22 11:21	50
cis-1,2-Dichloroethene	ND		50	17	ug/Kg			06/24/22 11:21	50
cis-1,3-Dichloropropene	ND		50	17	ug/Kg			06/24/22 11:21	50
Dibromochloromethane	ND		100	14	ug/Kg			06/24/22 11:21	50
Dibromomethane	ND		50	15	ug/Kg			06/24/22 11:21	50
Dichlorodifluoromethane	ND		100	23	ug/Kg			06/24/22 11:21	50
Di-isopropyl ether (DIPE)	ND		50	25	ug/Kg			06/24/22 11:21	50
Ethanol	ND		13000	3300	ug/Kg			06/24/22 11:21	50
Ethylbenzene	ND		50	10	ug/Kg			06/24/22 11:21	50
Ethyl-t-butyl ether (ETBE)	ND		50	12	ug/Kg			06/24/22 11:21	50
Isopropylbenzene	ND		50	14	ug/Kg			06/24/22 11:21	50
m,p-Xylene	ND		100	24	ug/Kg			06/24/22 11:21	50
Methylene Chloride	ND		500	160	ug/Kg			06/24/22 11:21	50
Methyl-t-Butyl Ether (MTBE)	ND		100	9.4	ug/Kg			06/24/22 11:21	50
Naphthalene	ND		500	260	ug/Kg			06/24/22 11:21	50
n-Butylbenzene	ND		50	11	ug/Kg			06/24/22 11:21	50
N-Propylbenzene	ND		100	13	ug/Kg			06/24/22 11:21	50
o-Xylene	ND		50	13	ug/Kg			06/24/22 11:21	50
p-Isopropyltoluene	ND		50	14	ug/Kg			06/24/22 11:21	50
sec-Butylbenzene	ND		50	14	ug/Kg			06/24/22 11:21	50
Styrene	ND		50	16	ug/Kg			06/24/22 11:21	50
Tert-amyl-methyl ether (TAME)	ND		50	9.7	ug/Kg			06/24/22 11:21	50
tert-Butyl alcohol (TBA)	ND		1000	350	ug/Kg			06/24/22 11:21	50
tert-Butylbenzene	ND		50	13	ug/Kg			06/24/22 11:21	50
Tetrachloroethene	ND		50	11	ug/Kg			06/24/22 11:21	50
Toluene	ND		50	13	ug/Kg			06/24/22 11:21	50
trans-1,2-Dichloroethene	ND		50	15	ug/Kg			06/24/22 11:21	50
trans-1,3-Dichloropropene	ND		100	14	ug/Kg			06/24/22 11:21	50
Trichloroethene	ND		100	19	ug/Kg			06/24/22 11:21	50
Trichlorofluoromethane	ND		500	14	ug/Kg			06/24/22 11:21	50
Vinyl acetate	ND		500	200	ug/Kg			06/24/22 11:21	50
Vinyl chloride	ND		50	19	ug/Kg			06/24/22 11:21	50
Xylenes, Total	ND		100	30	ug/Kg			06/24/22 11:21	50

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*80 - 142*		*06/24/22 11:21*	*50*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*		*06/24/22 11:21*	*50*
Dibromofluoromethane (Surr)	*100*		*80 - 123*		*06/24/22 11:21*	*50*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/24/22 11:21*	*50*

Lab Sample ID: LCS 570-244174/4
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 244174

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	50.0	53.94		ug/Kg		108	80 - 127
1,1,1-Trichloroethane	50.0	56.28		ug/Kg		113	80 - 127
1,1,2,2-Tetrachloroethane	50.0	54.79		ug/Kg		110	80 - 126

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 570-244174/4
Matrix: Solid
Analysis Batch: 244174

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	58.10		ug/Kg		116	78 - 121
1,1,2-Trichloroethane	50.0	52.67		ug/Kg		105	80 - 120
1,1-Dichloroethane	50.0	56.39		ug/Kg		113	75 - 128
1,1-Dichloroethene	50.0	57.40		ug/Kg		115	70 - 131
1,1-Dichloropropene	50.0	55.94		ug/Kg		112	80 - 124
1,2,3-Trichlorobenzene	50.0	53.09		ug/Kg		106	80 - 124
1,2,3-Trichloropropane	50.0	52.46		ug/Kg		105	80 - 125
1,2,4-Trichlorobenzene	50.0	54.34		ug/Kg		109	80 - 131
1,2,4-Trimethylbenzene	50.0	54.58		ug/Kg		109	80 - 126
1,2-Dibromo-3-Chloropropane	50.0	49.98		ug/Kg		100	65 - 127
1,2-Dibromoethane	50.0	53.20		ug/Kg		106	80 - 120
1,2-Dichlorobenzene	50.0	54.17		ug/Kg		108	80 - 120
1,2-Dichloroethane	50.0	51.78		ug/Kg		104	80 - 120
1,2-Dichloropropane	50.0	53.55		ug/Kg		107	80 - 120
1,3,5-Trimethylbenzene	50.0	53.26		ug/Kg		107	80 - 123
1,3-Dichlorobenzene	50.0	53.03		ug/Kg		106	80 - 120
1,3-Dichloropropane	50.0	53.06		ug/Kg		106	80 - 120
1,4-Dichlorobenzene	50.0	52.93		ug/Kg		106	80 - 120
2,2-Dichloropropane	50.0	57.60		ug/Kg		115	65 - 150
2-Butanone	50.0	56.65		ug/Kg		113	73 - 129
2-Chlorotoluene	50.0	52.07		ug/Kg		104	80 - 120
2-Hexanone	50.0	52.17		ug/Kg		104	80 - 121
4-Chlorotoluene	50.0	53.73		ug/Kg		107	80 - 120
4-Methyl-2-pentanone	50.0	50.86		ug/Kg		102	80 - 120
Acetone	50.0	57.84		ug/Kg		116	55 - 142
Benzene	50.0	54.26		ug/Kg		109	80 - 120
Bromobenzene	50.0	52.60		ug/Kg		105	80 - 126
Bromochloromethane	50.0	49.93		ug/Kg		100	80 - 120
Bromodichloromethane	50.0	57.55		ug/Kg		115	80 - 120
Bromoform	50.0	58.60		ug/Kg		117	80 - 131
Bromomethane	50.0	64.74		ug/Kg		129	68 - 131
Carbon disulfide	50.0	59.34		ug/Kg		119	70 - 130
Carbon tetrachloride	50.0	59.89		ug/Kg		120	80 - 131
Chlorobenzene	50.0	51.45		ug/Kg		103	80 - 120
Chloroethane	50.0	62.50	*+ me	ug/Kg		125	80 - 124
Chloroform	50.0	55.85		ug/Kg		112	80 - 120
Chloromethane	50.0	65.88		ug/Kg		132	68 - 135
cis-1,2-Dichloroethene	50.0	56.79		ug/Kg		114	80 - 122
cis-1,3-Dichloropropene	50.0	53.32		ug/Kg		107	80 - 125
Dibromochloromethane	50.0	56.81		ug/Kg		114	80 - 124
Dibromomethane	50.0	53.55		ug/Kg		107	80 - 120
Dichlorodifluoromethane	50.0	58.73		ug/Kg		117	60 - 166
Di-isopropyl ether (DIPE)	50.0	55.61		ug/Kg		111	77 - 130
Ethanol	500	392.2		ug/Kg		78	66 - 129
Ethylbenzene	50.0	54.31		ug/Kg		109	80 - 120
Ethyl-t-butyl ether (ETBE)	50.0	54.84		ug/Kg		110	80 - 135
Isopropylbenzene	50.0	53.69		ug/Kg		107	80 - 120
m,p-Xylene	100	110.8		ug/Kg		111	80 - 120

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 570-244174/4 **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 244174

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Methylene Chloride	50.0	52.07		ug/Kg		104	80 - 120
Methyl-t-Butyl Ether (MTBE)	50.0	54.58		ug/Kg		109	80 - 122
Naphthalene	50.0	50.95		ug/Kg		102	77 - 120
n-Butylbenzene	50.0	53.03		ug/Kg		106	80 - 127
N-Propylbenzene	50.0	54.20		ug/Kg		108	80 - 120
o-Xylene	50.0	53.54		ug/Kg		107	80 - 120
p-Isopropyltoluene	50.0	55.00		ug/Kg		110	80 - 122
sec-Butylbenzene	50.0	54.34		ug/Kg		109	80 - 124
Styrene	50.0	51.03		ug/Kg		102	80 - 120
Tert-amyl-methyl ether (TAME)	50.0	52.38		ug/Kg		105	80 - 122
tert-Butyl alcohol (TBA)	250	258.8		ug/Kg		104	80 - 120
tert-Butylbenzene	50.0	52.75		ug/Kg		105	80 - 120
Tetrachloroethene	50.0	53.81		ug/Kg		108	80 - 121
Toluene	50.0	53.80		ug/Kg		108	80 - 120
trans-1,2-Dichloroethene	50.0	56.38		ug/Kg		113	80 - 121
trans-1,3-Dichloropropene	50.0	51.32		ug/Kg		103	80 - 130
Trichloroethene	50.0	54.36		ug/Kg		109	80 - 120
Trichlorofluoromethane	50.0	70.92	*+	ug/Kg		142	75 - 131
Vinyl acetate	50.0	56.69		ug/Kg		113	80 - 133
Vinyl chloride	50.0	64.26		ug/Kg		129	80 - 129

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 142*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*
Dibromofluoromethane (Surr)	*106*		*80 - 123*
Toluene-d8 (Surr)	*99*		*80 - 120*

Lab Sample ID: LCSD 570-244174/5 **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 244174

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	50.0	55.55		ug/Kg		111	80 - 127	3	20
1,1,1-Trichloroethane	50.0	56.09		ug/Kg		112	80 - 127	0	20
1,1,2,2-Tetrachloroethane	50.0	55.88		ug/Kg		112	80 - 126	2	20
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	58.26		ug/Kg		117	78 - 121	0	20
1,1,2-Trichloroethane	50.0	55.23		ug/Kg		110	80 - 120	5	20
1,1-Dichloroethane	50.0	57.05		ug/Kg		114	75 - 128	1	20
1,1-Dichloroethene	50.0	58.22		ug/Kg		116	70 - 131	1	20
1,1-Dichloropropene	50.0	56.62		ug/Kg		113	80 - 124	1	20
1,2,3-Trichlorobenzene	50.0	54.32		ug/Kg		109	80 - 124	2	20
1,2,3-Trichloropropane	50.0	54.64		ug/Kg		109	80 - 125	4	20
1,2,4-Trichlorobenzene	50.0	54.94		ug/Kg		110	80 - 131	1	20
1,2,4-Trimethylbenzene	50.0	55.15		ug/Kg		110	80 - 126	1	20
1,2-Dibromo-3-Chloropropane	50.0	51.92		ug/Kg		104	65 - 127	4	20
1,2-Dibromoethane	50.0	55.42		ug/Kg		111	80 - 120	4	20
1,2-Dichlorobenzene	50.0	55.49		ug/Kg		111	80 - 120	2	20
1,2-Dichloroethane	50.0	53.51		ug/Kg		107	80 - 120	3	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 570-244174/5 | **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 244174

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2-Dichloropropane	50.0	55.11		ug/Kg		110	80 - 120	3	20
1,3,5-Trimethylbenzene	50.0	54.45		ug/Kg		109	80 - 123	2	20
1,3-Dichlorobenzene	50.0	54.24		ug/Kg		108	80 - 120	2	20
1,3-Dichloropropane	50.0	54.91		ug/Kg		110	80 - 120	3	20
1,4-Dichlorobenzene	50.0	54.34		ug/Kg		109	80 - 120	3	20
2,2-Dichloropropane	50.0	57.96		ug/Kg		116	65 - 150	1	20
2-Butanone	50.0	58.95		ug/Kg		118	73 - 129	4	20
2-Chlorotoluene	50.0	53.32		ug/Kg		107	80 - 120	2	20
2-Hexanone	50.0	55.30		ug/Kg		111	80 - 121	6	20
4-Chlorotoluene	50.0	54.50		ug/Kg		109	80 - 120	1	20
4-Methyl-2-pentanone	50.0	53.70		ug/Kg		107	80 - 120	5	20
Acetone	50.0	59.46		ug/Kg		119	55 - 142	3	22
Benzene	50.0	55.46		ug/Kg		111	80 - 120	2	20
Bromobenzene	50.0	54.32		ug/Kg		109	80 - 126	3	20
Bromochloromethane	50.0	51.21		ug/Kg		102	80 - 120	3	20
Bromodichloromethane	50.0	59.03		ug/Kg		118	80 - 120	3	20
Bromoform	50.0	59.11		ug/Kg		118	80 - 131	1	20
Bromomethane	50.0	70.19	*+ me	ug/Kg		140	68 - 131	8	20
Carbon disulfide	50.0	60.28		ug/Kg		121	70 - 130	2	20
Carbon tetrachloride	50.0	59.98		ug/Kg		120	80 - 131	0	20
Chlorobenzene	50.0	53.10		ug/Kg		106	80 - 120	3	20
Chloroethane	50.0	63.80	*+ me	ug/Kg		128	80 - 124	2	20
Chloroform	50.0	56.96		ug/Kg		114	80 - 120	2	20
Chloromethane	50.0	70.34	*+ me	ug/Kg		141	68 - 135	7	20
cis-1,2-Dichloroethene	50.0	57.62		ug/Kg		115	80 - 122	1	20
cis-1,3-Dichloropropene	50.0	54.25		ug/Kg		108	80 - 125	2	20
Dibromochloromethane	50.0	57.85		ug/Kg		116	80 - 124	2	20
Dibromomethane	50.0	55.90		ug/Kg		112	80 - 120	4	20
Dichlorodifluoromethane	50.0	58.51		ug/Kg		117	60 - 166	0	20
Di-isopropyl ether (DIPE)	50.0	56.90		ug/Kg		114	77 - 130	2	20
Ethanol	500	454.4		ug/Kg		91	66 - 129	15	22
Ethylbenzene	50.0	55.33		ug/Kg		111	80 - 120	2	20
Ethyl-t-butyl ether (ETBE)	50.0	56.19		ug/Kg		112	80 - 135	2	20
Isopropylbenzene	50.0	54.87		ug/Kg		110	80 - 120	2	20
m,p-Xylene	100	113.2		ug/Kg		113	80 - 120	2	20
Methylene Chloride	50.0	52.78		ug/Kg		106	80 - 120	1	20
Methyl-t-Butyl Ether (MTBE)	50.0	56.03		ug/Kg		112	80 - 122	3	20
Naphthalene	50.0	52.52		ug/Kg		105	77 - 120	3	20
n-Butylbenzene	50.0	52.95		ug/Kg		106	80 - 127	0	20
N-Propylbenzene	50.0	55.29		ug/Kg		111	80 - 120	2	20
o-Xylene	50.0	54.70		ug/Kg		109	80 - 120	2	20
p-Isopropyltoluene	50.0	54.66		ug/Kg		109	80 - 122	1	20
sec-Butylbenzene	50.0	54.43		ug/Kg		109	80 - 124	0	20
Styrene	50.0	52.32		ug/Kg		105	80 - 120	3	20
Tert-amyl-methyl ether (TAME)	50.0	53.96		ug/Kg		108	80 - 122	3	20
tert-Butyl alcohol (TBA)	250	262.3		ug/Kg		105	80 - 120	1	20
tert-Butylbenzene	50.0	53.18		ug/Kg		106	80 - 120	1	20
Tetrachloroethene	50.0	54.55		ug/Kg		109	80 - 121	1	20
Toluene	50.0	54.68		ug/Kg		109	80 - 120	2	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 570-244174/5
Matrix: Solid
Analysis Batch: 244174

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
trans-1,2-Dichloroethene	50.0	56.32		ug/Kg		113	80 - 121	0	20
trans-1,3-Dichloropropene	50.0	53.58		ug/Kg		107	80 - 130	4	20
Trichloroethene	50.0	55.11		ug/Kg		110	80 - 120	1	20
Trichlorofluoromethane	50.0	71.04	*+	ug/Kg		142	75 - 131	0	20
Vinyl acetate	50.0	58.90		ug/Kg		118	80 - 133	4	20
Vinyl chloride	50.0	66.22	*+ me	ug/Kg		132	80 - 129	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 142*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*106*		*80 - 123*
Toluene-d8 (Surr)	*99*		*80 - 120*

Method: 8270C SIM - Semivolatile Organic Compound (GC/MS SIM LL)

Lab Sample ID: MB 570-244076/1-A
Matrix: Solid
Analysis Batch: 246665

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 244076

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		5.0	2.0	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
1-Methylphenanthrene	ND		5.0	2.2	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
2,6-Dimethylnaphthalene	ND		5.0	1.3	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
2-Methylnaphthalene	ND		5.0	1.9	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Acenaphthene	ND		5.0	2.2	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Acenaphthylene	ND		5.0	2.1	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Anthracene	ND		5.0	1.9	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Benzo[a]anthracene	ND		5.0	2.2	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Benzo[a]pyrene	ND		5.0	3.0	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Benzo[e]pyrene	ND		5.0	1.2	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Biphenyl	ND		5.0	1.5	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Chrysene	ND		5.0	1.7	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Dibenz(a,h)anthracene	ND		5.0	1.9	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Fluoranthene	ND		5.0	2.8	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Fluorene	ND		5.0	2.2	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Naphthalene	ND		5.0	1.4	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Perylene	ND		5.0	2.7	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Phenanthrene	ND		5.0	2.2	ug/Kg		06/23/22 21:28	07/05/22 11:45	1
Pyrene	ND		5.0	3.2	ug/Kg		06/23/22 21:28	07/05/22 11:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*82*		*26 - 136*	*06/23/22 21:28*	*07/05/22 11:45*	*1*
Nitrobenzene-d5 (Surr)	*66*		*16 - 124*	*06/23/22 21:28*	*07/05/22 11:45*	*1*
p-Terphenyl-d14 (Surr)	*82*		*36 - 125*	*06/23/22 21:28*	*07/05/22 11:45*	*1*

Client: Anchor QEA LLC | Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8270C SIM - Semivolatile Organic Compound (GC/MS SIM LL) (Continued)

Lab Sample ID: LCS 570-244076/2-A | **Client Sample ID: Lab Control Sample**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 246665 | **Prep Batch: 244076**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1-Methylnaphthalene	50.0	48.72		ug/Kg		97	52 - 138
2-Methylnaphthalene	50.0	46.17		ug/Kg		92	43 - 151
Acenaphthene	50.0	47.12		ug/Kg		94	45 - 134
Acenaphthylene	50.0	52.66		ug/Kg		105	45 - 147
Anthracene	50.0	48.91		ug/Kg		98	45 - 139
Benzo[a]anthracene	50.0	52.35		ug/Kg		105	51 - 136
Benzo[a]pyrene	50.0	53.60		ug/Kg		107	44 - 145
Chrysene	50.0	54.62		ug/Kg		109	48 - 134
Dibenz(a,h)anthracene	50.0	51.74		ug/Kg		103	45 - 153
Fluoranthene	50.0	44.94		ug/Kg		90	45 - 137
Fluorene	50.0	46.85		ug/Kg		94	49 - 134
Naphthalene	50.0	46.45		ug/Kg		93	45 - 135
Phenanthrene	50.0	47.46		ug/Kg		95	45 - 133
Pyrene	50.0	57.40		ug/Kg		115	47 - 138

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*82*		*26 - 136*
Nitrobenzene-d5 (Surr)	*73*		*16 - 124*
p-Terphenyl-d14 (Surr)	*88*		*36 - 125*

Lab Sample ID: LCSD 570-244076/3-A | **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 246665 | **Prep Batch: 244076**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1-Methylnaphthalene	50.0	45.98		ug/Kg		92	52 - 138	6	26
2-Methylnaphthalene	50.0	44.38		ug/Kg		89	43 - 151	4	27
Acenaphthene	50.0	44.15		ug/Kg		88	45 - 134	7	25
Acenaphthylene	50.0	49.03		ug/Kg		98	45 - 147	7	28
Anthracene	50.0	47.08		ug/Kg		94	45 - 139	4	24
Benzo[a]anthracene	50.0	49.82		ug/Kg		100	51 - 136	5	24
Benzo[a]pyrene	50.0	50.79		ug/Kg		102	44 - 145	5	25
Chrysene	50.0	52.32		ug/Kg		105	48 - 134	4	22
Dibenz(a,h)anthracene	50.0	49.28		ug/Kg		99	45 - 153	5	26
Fluoranthene	50.0	44.18		ug/Kg		88	45 - 137	2	24
Fluorene	50.0	44.23		ug/Kg		88	49 - 134	6	27
Naphthalene	50.0	45.78		ug/Kg		92	45 - 135	1	26
Phenanthrene	50.0	45.28		ug/Kg		91	45 - 133	5	27
Pyrene	50.0	55.96		ug/Kg		112	47 - 138	3	27

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*80*		*26 - 136*
Nitrobenzene-d5 (Surr)	*67*		*16 - 124*
p-Terphenyl-d14 (Surr)	*88*		*36 - 125*

Method: 8270C SIM - Semivolatile Organic Compound (GC/MS SIM LL) - DL

Lab Sample ID: 570-100189-3 MS
Matrix: Soil
Analysis Batch: 246665

Client Sample ID: LCW-05-061722
Prep Type: Total/NA
Prep Batch: 244076

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1-Methylnaphthalene - DL	ND		56.5	59.66		ug/Kg	☼	106	34 - 136
2-Methylnaphthalene - DL	ND		56.5	54.25		ug/Kg	☼	96	29 - 137
Acenaphthene - DL	ND		56.5	58.07		ug/Kg	☼	103	29 - 137
Acenaphthylene - DL	ND		56.5	62.18		ug/Kg	☼	110	29 - 131
Anthracene - DL	ND	F2 F1	56.5	56.16		ug/Kg	☼	99	26 - 134
Benzo[a]anthracene - DL	ND	F2 F1	56.5	54.42		ug/Kg	☼	96	24 - 150
Benzo[a]pyrene - DL	ND	F2 F1	56.5	49.80		ug/Kg	☼	88	29 - 149
Chrysene - DL	ND	F2 F1	56.5	68.23		ug/Kg	☼	121	25 - 145
Dibenz(a,h)anthracene - DL	ND	F1	56.5	42.50		ug/Kg	☼	75	20 - 132
Fluoranthene - DL	ND	F2 F1	56.5	53.35		ug/Kg	☼	94	20 - 151
Fluorene - DL	ND		56.5	57.42		ug/Kg	☼	102	36 - 132
Naphthalene - DL	ND		56.5	61.43		ug/Kg	☼	109	20 - 150
Phenanthrene - DL	ND	F2 F1	56.5	61.70		ug/Kg	☼	109	20 - 144
Pyrene - DL	ND	F2 F1	56.5	61.78		ug/Kg	☼	109	20 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr) - DL	*101*		*26 - 136*
Nitrobenzene-d5 (Surr) - DL	*85*		*16 - 124*
p-Terphenyl-d14 (Surr) - DL	*78*		*36 - 125*

Lab Sample ID: 570-100189-3 MSD
Matrix: Soil
Analysis Batch: 246665

Client Sample ID: LCW-05-061722
Prep Type: Total/NA
Prep Batch: 244076

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1-Methylnaphthalene - DL	ND		56.4	64.62		ug/Kg	☼	114	34 - 136	8	29
2-Methylnaphthalene - DL	ND		56.4	56.45		ug/Kg	☼	100	29 - 137	4	31
Acenaphthene - DL	ND		56.4	55.58		ug/Kg	☼	98	29 - 137	4	28
Acenaphthylene - DL	ND		56.4	69.84		ug/Kg	☼	124	29 - 131	12	32
Anthracene - DL	ND	F2 F1	56.4	78.59	F1 F2	ug/Kg	☼	139	26 - 134	33	27
Benzo[a]anthracene - DL	ND	F2 F1	56.4	109.3	F1 F2	ug/Kg	☼	194	24 - 150	67	24
Benzo[a]pyrene - DL	ND	F2 F1	56.4	122.6	F1 F2	ug/Kg	☼	217	29 - 149	84	22
Chrysene - DL	ND	F2 F1	56.4	151.5	F1 F2	ug/Kg	☼	268	25 - 145	76	28
Dibenz(a,h)anthracene - DL	ND	F1	56.4	ND	F1	ug/Kg	☼	0	20 - 132	NC	26
Fluoranthene - DL	ND	F2 F1	56.4	173.4	F1 F2	ug/Kg	☼	307	20 - 151	106	26
Fluorene - DL	ND		56.4	56.06		ug/Kg	☼	99	36 - 132	2	27
Naphthalene - DL	ND		56.4	61.82		ug/Kg	☼	110	20 - 150	1	33
Phenanthrene - DL	ND	F2 F1	56.4	86.54	F1 F2	ug/Kg	☼	153	20 - 144	34	27
Pyrene - DL	ND	F2 F1	56.4	238.2	F1 F2	ug/Kg	☼	422	20 - 150	118	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr) - DL	*109*		*26 - 136*
Nitrobenzene-d5 (Surr) - DL	*90*		*16 - 124*
p-Terphenyl-d14 (Surr) - DL	*78*		*36 - 125*

QC Sample Results

Client: Anchor QEA LLC
Project/Site: Los Cerritos Wetlands Restoration Project

Job ID: 570-100189-1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 570-243003/1-A
Matrix: Solid
Analysis Batch: 243500

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 243003

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6 as C6	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C7 as C7	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C8 as C8	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C9-C10	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C11-C12	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C13-C14	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C15-C16	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C17-C18	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C19-C20	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C21-C22	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C23-C24	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C25-C28	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C29-C32	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C33-C36	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C37-C40	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C41-C44	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
C6-C44	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1
Diesel Range Organics [C10-C28]	ND		5.0	3.8	mg/Kg		06/20/22 18:36	06/22/22 21:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*110*		*60 - 138*	*06/20/22 18:36*	*06/22/22 21:03*	*1*

Lab Sample ID: LCS 570-243003/2-A
Matrix: Solid
Analysis Batch: 243500

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 243003

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Diesel Range Organics [C10-C28]	400	453.6		mg/Kg		113	80 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
n-Octacosane (Surr)	*109*		*60 - 138*

Lab Sample ID: LCSD 570-243003/3-A
Matrix: Solid
Analysis Batch: 243500

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 243003

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	400	460.4		mg/Kg		115	80 - 130	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
n-Octacosane (Surr)	*111*		*60 - 138*

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: 570-100039-D-1-A MS | **Client Sample ID: Matrix Spike**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 243500 | **Prep Batch: 243003**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Diesel Range Organics [C10-C28]	10		398	467.4		mg/Kg		115	43 - 165

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
n-Octacosane (Surr)	*111*		*60 - 138*

Lab Sample ID: 570-100039-D-1-B MSD | **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 243500 | **Prep Batch: 243003**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	10		397	435.8		mg/Kg		107	43 - 165	7	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
n-Octacosane (Surr)	*107*		*60 - 138*

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 570-244075/1-A | **Client Sample ID: Method Blank**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 245037 | **Prep Batch: 244075**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.0	0.064	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
2,4'-DDE	ND		2.0	1.0	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
2,4'-DDT	ND		1.0	0.092	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
4,4'-DDD	ND		1.0	0.50	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
4,4'-DDE	ND		1.0	0.27	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
4,4'-DDT	ND		1.0	0.31	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
Aldrin	ND		1.0	0.37	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
alpha-BHC	ND		1.0	0.080	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
alpha-Chlordane	ND		1.0	0.10	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
beta-BHC	ND		1.0	0.19	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
Chlordane	ND		5.0	0.71	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
cis-Nonachlor	ND		1.0	0.047	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
delta-BHC	ND		1.0	0.15	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
Dieldrin	ND		0.20	0.066	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
Endosulfan I	ND		1.0	0.12	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
Endosulfan II	ND		1.0	0.23	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
Endosulfan sulfate	ND		1.0	0.11	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
Endrin	ND		1.0	0.19	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
Endrin aldehyde	ND		1.0	0.98	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
gamma-BHC	ND		1.0	0.11	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
gamma-Chlordane	ND		1.0	0.35	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
Heptachlor	ND		1.0	0.060	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
Heptachlor epoxide	ND		1.0	0.085	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
Oxychlordane	ND		1.0	0.15	ug/Kg		06/23/22 21:11	06/28/22 13:12	1
Toxaphene	ND		5.0	1.0	ug/Kg		06/23/22 21:11	06/28/22 13:12	1

Client: Anchor QEA LLC Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 570-244075/1-A **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 245037 **Prep Batch: 244075**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-Nonachlor	ND		1.0	0.11	ug/Kg		06/23/22 21:11	06/28/22 13:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*92*		*20 - 180*	*06/23/22 21:11*	*06/28/22 13:12*	*1*
Tetrachloro-m-xylene (Surr)	*71*		*20 - 131*	*06/23/22 21:11*	*06/28/22 13:12*	*1*

Lab Sample ID: LCS 570-244075/2-A **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 245099 **Prep Batch: 244075**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
4,4'-DDD	5.00	5.801		ug/Kg		116	54 - 150
4,4'-DDE	5.00	5.766		ug/Kg		115	49 - 146
4,4'-DDT	5.00	5.720		ug/Kg		114	52 - 147
Aldrin	5.00	3.446		ug/Kg		69	28 - 116
alpha-BHC	5.00	4.558		ug/Kg		91	44 - 123
alpha-Chlordane	5.00	4.990		ug/Kg		100	48 - 125
beta-BHC	5.00	4.539		ug/Kg		91	48 - 127
delta-BHC	5.00	5.359		ug/Kg		107	10 - 149
Dieldrin	5.00	5.182		ug/Kg		104	48 - 132
Endosulfan I	5.00	4.739		ug/Kg		95	44 - 125
Endosulfan II	5.00	5.201		ug/Kg		104	47 - 136
Endosulfan sulfate	5.00	5.269		ug/Kg		105	46 - 133
Endrin	5.00	5.558		ug/Kg		111	43 - 142
Endrin aldehyde	5.00	4.686		ug/Kg		94	29 - 141
gamma-BHC	5.00	4.765		ug/Kg		95	44 - 126
gamma-Chlordane	5.00	4.691		ug/Kg		94	29 - 153
Heptachlor	5.00	4.794		ug/Kg		96	50 - 123
Heptachlor epoxide	5.00	4.937		ug/Kg		99	49 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*86*		*20 - 180*
Tetrachloro-m-xylene (Surr)	*73*		*20 - 131*

Lab Sample ID: LCS 570-244075/4-A **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 245099 **Prep Batch: 244075**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Oxychlordane	5.00	4.316		ug/Kg		86	20 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*113*		*20 - 180*
Tetrachloro-m-xylene (Surr)	*98*		*20 - 131*

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCSD 570-244075/3-A
Matrix: Solid
Analysis Batch: 245099

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 244075

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
4,4'-DDD			5.00	7.050		ug/Kg		141	54 - 150	19	29
4,4'-DDE			5.00	6.927		ug/Kg		139	49 - 146	18	28
4,4'-DDT			5.00	6.946		ug/Kg		139	52 - 147	19	32
Aldrin			5.00	4.289		ug/Kg		86	28 - 116	22	30
alpha-BHC			5.00	5.441		ug/Kg		109	44 - 123	18	27
alpha-Chlordane			5.00	5.970		ug/Kg		119	48 - 125	18	27
beta-BHC			5.00	5.460		ug/Kg		109	48 - 127	18	28
delta-BHC			5.00	6.426		ug/Kg		129	10 - 149	18	27
Dieldrin			5.00	6.256		ug/Kg		125	48 - 132	19	28
Endosulfan I			5.00	5.673		ug/Kg		113	44 - 125	18	29
Endosulfan II			5.00	6.255		ug/Kg		125	47 - 136	18	29
Endosulfan sulfate			5.00	6.367		ug/Kg		127	46 - 133	19	28
Endrin			5.00	6.706		ug/Kg		134	43 - 142	19	27
Endrin aldehyde			5.00	5.714		ug/Kg		114	29 - 141	20	40
gamma-BHC			5.00	5.692		ug/Kg		114	44 - 126	18	28
gamma-Chlordane			5.00	5.628		ug/Kg		113	29 - 153	18	40
Heptachlor			5.00	5.705		ug/Kg		114	50 - 123	17	28
Heptachlor epoxide			5.00	5.880		ug/Kg		118	49 - 125	17	28

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*122*		*20 - 180*
Tetrachloro-m-xylene (Surr)	*96*		*20 - 131*

Lab Sample ID: LCSD 570-244075/5-A
Matrix: Solid
Analysis Batch: 245099

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 244075

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Oxychlordane			5.00	4.237		ug/Kg		85	20 - 144	2	36

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*108*		*20 - 180*
Tetrachloro-m-xylene (Surr)	*92*		*20 - 131*

Lab Sample ID: 570-100189-2 MS
Matrix: Soil
Analysis Batch: 245099

Client Sample ID: LCW-03/04-061522
Prep Type: Total/NA
Prep Batch: 244075

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Oxychlordane	ND		5.74	4.727		ug/Kg	☼	82	10 - 167

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*147*		*20 - 180*
Tetrachloro-m-xylene (Surr)	*91*		*20 - 131*

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 570-100189-2 MSD
Client Sample ID: LCW-03/04-061522
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 245099 — **Prep Batch: 244075**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Oxychlordane	ND		5.74	4.851		ug/Kg	☼	84	10 - 167	3	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*132*		*20 - 180*
Tetrachloro-m-xylene (Surr)	*93*		*20 - 131*

Lab Sample ID: 570-100189-5 MS
Client Sample ID: LCW-08/09-061722
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 245099 — **Prep Batch: 244075**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
4,4'-DDD	2.5		5.95	10.86	E	ug/Kg	☼	141	17 - 180
4,4'-DDE	2.3	p	5.95	12.37	E	ug/Kg	☼	170	20 - 180
4,4'-DDT	ND	F1	5.95	12.53	E F1	ug/Kg	☼	211	10 - 180
Aldrin	ND		5.95	6.143		ug/Kg	☼	103	27 - 146
alpha-BHC	ND		5.95	5.484		ug/Kg	☼	92	33 - 160
alpha-Chlordane	ND		5.95	7.291		ug/Kg	☼	123	24 - 164
beta-BHC	ND		5.95	4.971		ug/Kg	☼	84	14 - 178
delta-BHC	ND		5.95	5.922		ug/Kg	☼	100	10 - 159
Dieldrin	ND		5.95	7.748		ug/Kg	☼	130	25 - 180
Endosulfan I	ND		5.95	7.249		ug/Kg	☼	122	31 - 146
Endosulfan II	ND		5.95	8.051		ug/Kg	☼	135	14 - 176
Endosulfan sulfate	ND		5.95	7.130		ug/Kg	☼	120	22 - 167
Endrin	ND	F1	5.95	10.39	E F1	ug/Kg	☼	175	23 - 174
Endrin aldehyde	ND		5.95	2.979	p	ug/Kg	☼	50	10 - 180
gamma-BHC	ND		5.95	5.846		ug/Kg	☼	98	27 - 160
gamma-Chlordane	ND		5.95	7.227		ug/Kg	☼	121	26 - 180
Heptachlor	ND		5.95	6.168		ug/Kg	☼	104	23 - 144
Heptachlor epoxide	ND		5.95	7.319		ug/Kg	☼	123	25 - 173

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*189*	*S1+*	*20 - 180*
Tetrachloro-m-xylene (Surr)	*87*		*20 - 131*

Lab Sample ID: 570-100189-5 MSD
Client Sample ID: LCW-08/09-061722
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 245099 — **Prep Batch: 244075**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
4,4'-DDD	2.5		5.95	11.33	E	ug/Kg	☼	149	17 - 180	4	40
4,4'-DDE	2.3	p	5.95	11.52	E	ug/Kg	☼	156	20 - 180	7	40
4,4'-DDT	ND	F1	5.95	9.393		ug/Kg	☼	158	10 - 180	29	40
Aldrin	ND		5.95	6.148		ug/Kg	☼	103	27 - 146	0	40
alpha-BHC	ND		5.95	5.926		ug/Kg	☼	100	33 - 160	8	36
alpha-Chlordane	ND		5.95	7.243		ug/Kg	☼	122	24 - 164	1	40
beta-BHC	ND		5.95	5.883		ug/Kg	☼	99	14 - 178	17	40
delta-BHC	ND		5.95	6.321		ug/Kg	☼	106	10 - 159	7	40
Dieldrin	ND		5.95	7.723		ug/Kg	☼	130	25 - 180	0	40

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 570-100189-5 MSD
Matrix: Soil
Analysis Batch: 245099

Client Sample ID: LCW-08/09-061722
Prep Type: Total/NA
Prep Batch: 244075

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Endosulfan I	ND		5.95	7.226		ug/Kg	☼	121	31 - 146	0	34
Endosulfan II	ND		5.95	8.037		ug/Kg	☼	135	14 - 176	0	40
Endosulfan sulfate	ND		5.95	6.665		ug/Kg	☼	112	22 - 167	7	40
Endrin	ND	F1	5.95	9.897	E	ug/Kg	☼	166	23 - 174	5	40
Endrin aldehyde	ND		5.95	3.350	p	ug/Kg	☼	56	10 - 180	12	40
gamma-BHC	ND		5.95	6.146		ug/Kg	☼	103	27 - 160	5	40
gamma-Chlordane	ND		5.95	7.731		ug/Kg	☼	130	26 - 180	7	40
Heptachlor	ND		5.95	6.175		ug/Kg	☼	104	23 - 144	0	40
Heptachlor epoxide	ND		5.95	7.535		ug/Kg	☼	127	25 - 173	3	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*161*		*20 - 180*
Tetrachloro-m-xylene (Surr)	*85*		*20 - 131*

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 570-244075/1-A
Matrix: Solid
Analysis Batch: 244614

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 244075

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		10	5.5	ug/Kg		06/23/22 21:11	06/27/22 08:25	1
Aroclor-1221	ND		10	5.5	ug/Kg		06/23/22 21:11	06/27/22 08:25	1
Aroclor-1232	ND		10	5.5	ug/Kg		06/23/22 21:11	06/27/22 08:25	1
Aroclor-1242	ND		10	5.5	ug/Kg		06/23/22 21:11	06/27/22 08:25	1
Aroclor-1248	ND		10	5.5	ug/Kg		06/23/22 21:11	06/27/22 08:25	1
Aroclor-1254	ND		10	5.0	ug/Kg		06/23/22 21:11	06/27/22 08:25	1
Aroclor-1260	ND		10	5.0	ug/Kg		06/23/22 21:11	06/27/22 08:25	1
Aroclor-1262	ND		10	5.0	ug/Kg		06/23/22 21:11	06/27/22 08:25	1
Aroclor-1268	ND		10	5.0	ug/Kg		06/23/22 21:11	06/27/22 08:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*90*		*20 - 143*	*06/23/22 21:11*	*06/27/22 08:25*	*1*
DCB Decachlorobiphenyl (Surr)	*100*		*20 - 180*	*06/23/22 21:11*	*06/27/22 08:25*	*1*

Lab Sample ID: LCS 570-244075/6-A
Matrix: Solid
Analysis Batch: 244614

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244075

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aroclor-1016	20.0	20.25		ug/Kg		101	47 - 163
Aroclor-1260	20.0	19.40		ug/Kg		97	57 - 167

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene (Surr)	*91*		*20 - 143*
DCB Decachlorobiphenyl (Surr)	*99*		*20 - 180*

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: LCSD 570-244075/7-A
Matrix: Solid
Analysis Batch: 244614

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 244075

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aroclor-1016			20.0	19.36		ug/Kg		97	47 - 163	4	30
Aroclor-1260			20.0	15.43		ug/Kg		77	57 - 167	23	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene (Surr)	*83*		*20 - 143*
DCB Decachlorobiphenyl (Surr)	*80*		*20 - 180*

Lab Sample ID: 570-100189-6 MS
Matrix: Soil
Analysis Batch: 244614

Client Sample ID: LCW-10/11-061722
Prep Type: Total/NA
Prep Batch: 244075

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Aroclor-1016	ND		27.0	24.96		ug/Kg	☼	92	20 - 180
Aroclor-1260	ND		27.0	19.91		ug/Kg	☼	74	20 - 180

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene (Surr)	*81*		*20 - 143*
DCB Decachlorobiphenyl (Surr)	*74*		*20 - 180*

Lab Sample ID: 570-100189-6 MSD
Matrix: Soil
Analysis Batch: 244614

Client Sample ID: LCW-10/11-061722
Prep Type: Total/NA
Prep Batch: 244075

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aroclor-1016	ND		27.0	25.07		ug/Kg	☼	93	20 - 180	0	40
Aroclor-1260	ND		27.0	21.12		ug/Kg	☼	78	20 - 180	6	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene (Surr)	*81*		*20 - 143*
DCB Decachlorobiphenyl (Surr)	*75*		*20 - 180*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 570-245183/1-A
Matrix: Solid
Analysis Batch: 244962

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 245183

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.99	0.120	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Arsenic	ND		0.995	0.298	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Barium	ND		0.995	0.0915	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Beryllium	ND		0.995	0.125	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Cadmium	ND		0.995	0.0866	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Chromium	ND		1.99	0.298	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Cobalt	ND		0.995	0.146	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Copper	ND		0.995	0.104	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Lead	ND		0.995	0.106	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Molybdenum	ND		0.995	0.105	mg/Kg		06/28/22 14:30	06/28/22 17:44	20

Client: Anchor QEA LLC Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 570-245183/1-A **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 244962 **Prep Batch: 245183**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		0.995	0.0915	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Selenium	ND		0.995	0.693	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Silver	ND		0.995	0.218	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Thallium	ND		0.995	0.106	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Vanadium	ND		1.99	0.107	mg/Kg		06/28/22 14:30	06/28/22 17:44	20
Zinc	ND		4.98	0.911	mg/Kg		06/28/22 14:30	06/28/22 17:44	20

Lab Sample ID: LCS 570-245183/2-A ^20 **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 244962 **Prep Batch: 245183**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	50.0	47.02		mg/Kg		94	80 - 120
Arsenic	50.0	47.82		mg/Kg		96	80 - 120
Barium	50.0	52.45		mg/Kg		105	80 - 120
Beryllium	50.0	49.47		mg/Kg		99	80 - 120
Cadmium	50.0	47.70		mg/Kg		95	80 - 120
Chromium	50.0	52.44		mg/Kg		105	80 - 120
Cobalt	50.0	45.50		mg/Kg		91	80 - 120
Copper	50.0	51.34		mg/Kg		103	80 - 120
Lead	50.0	47.31		mg/Kg		95	80 - 120
Molybdenum	50.0	49.31		mg/Kg		99	80 - 120
Nickel	50.0	47.95		mg/Kg		96	80 - 120
Selenium	50.0	45.16		mg/Kg		90	80 - 120
Silver	25.0	24.71		mg/Kg		99	80 - 120
Thallium	50.0	47.58		mg/Kg		95	80 - 120
Vanadium	50.0	45.17		mg/Kg		90	80 - 120
Zinc	50.0	49.33		mg/Kg		99	80 - 120

Lab Sample ID: LCSD 570-245183/3-A ^20 **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 244962 **Prep Batch: 245183**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	50.5	48.42		mg/Kg		96	80 - 120	3	20
Arsenic	50.5	47.30		mg/Kg		94	80 - 120	1	20
Barium	50.5	53.19		mg/Kg		105	80 - 120	1	20
Beryllium	50.5	48.24		mg/Kg		96	80 - 120	3	20
Cadmium	50.5	48.11		mg/Kg		95	80 - 120	1	20
Chromium	50.5	51.43		mg/Kg		102	80 - 120	2	20
Cobalt	50.5	47.29		mg/Kg		94	80 - 120	4	20
Copper	50.5	50.17		mg/Kg		99	80 - 120	2	20
Lead	50.5	47.83		mg/Kg		95	80 - 120	1	20
Molybdenum	50.5	49.71		mg/Kg		98	80 - 120	1	20
Nickel	50.5	49.55		mg/Kg		98	80 - 120	3	20
Selenium	50.5	45.59		mg/Kg		90	80 - 120	1	20
Silver	25.3	24.80		mg/Kg		98	80 - 120	0	20
Thallium	50.5	48.02		mg/Kg		95	80 - 120	1	20
Vanadium	50.5	47.69		mg/Kg		94	80 - 120	5	20

QC Sample Results

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 570-245183/3-A ^20
Client Sample ID: Lab Control Sample Dup
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 244962
Prep Batch: 245183

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Zinc			50.5	50.25		mg/Kg		100	80 - 120	2	20

Lab Sample ID: 570-101116-A-1-D MS ^20
Client Sample ID: Matrix Spike
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 244962
Prep Batch: 245183

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	ND		49.8	41.95		mg/Kg		84	1 - 97
Arsenic	ND		49.8	43.09		mg/Kg		87	72 - 132
Barium	5.78		49.8	52.13		mg/Kg		93	50 - 152
Beryllium	ND		49.8	44.84		mg/Kg		90	61 - 121
Cadmium	ND		49.8	44.17		mg/Kg		89	85 - 121
Chromium	0.488	J	49.8	47.54		mg/Kg		95	20 - 182
Cobalt	0.178	J	49.8	42.23		mg/Kg		85	40 - 166
Copper	1.88		49.8	47.34		mg/Kg		91	25 - 157
Lead	19.5		49.8	59.00		mg/Kg		79	62 - 134
Molybdenum	ND		49.8	43.71		mg/Kg		88	69 - 123
Nickel	0.797	J	49.8	44.85		mg/Kg		89	46 - 154
Selenium	ND		49.8	45.70		mg/Kg		92	54 - 132
Silver	ND		24.9	22.13		mg/Kg		89	78 - 126
Thallium	ND		49.8	42.40		mg/Kg		85	79 - 115
Vanadium	1.01	J	49.8	42.72		mg/Kg		84	28 - 178
Zinc	5.54		49.8	53.75		mg/Kg		97	23 - 173

Lab Sample ID: 570-101116-A-1-E MSD ^20
Client Sample ID: Matrix Spike Duplicate
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 244962
Prep Batch: 245183

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	ND		49.8	42.74		mg/Kg		86	1 - 97	2	39
Arsenic	ND		49.8	44.06		mg/Kg		89	72 - 132	2	13
Barium	5.78		49.8	51.98		mg/Kg		93	50 - 152	0	41
Beryllium	ND		49.8	44.98		mg/Kg		90	61 - 121	0	13
Cadmium	ND		49.8	44.07		mg/Kg		89	85 - 121	0	12
Chromium	0.488	J	49.8	47.17		mg/Kg		94	20 - 182	1	15
Cobalt	0.178	J	49.8	43.13		mg/Kg		86	40 - 166	2	14
Copper	1.88		49.8	47.34		mg/Kg		91	25 - 157	0	22
Lead	19.5		49.8	59.06		mg/Kg		79	62 - 134	0	23
Molybdenum	ND		49.8	43.78		mg/Kg		88	69 - 123	0	13
Nickel	0.797	J	49.8	43.71		mg/Kg		86	46 - 154	3	15
Selenium	ND		49.8	44.16		mg/Kg		89	54 - 132	3	14
Silver	ND		24.9	21.94		mg/Kg		88	78 - 126	1	15
Thallium	ND		49.8	41.17		mg/Kg		83	79 - 115	3	11
Vanadium	1.01	J	49.8	42.59		mg/Kg		84	28 - 178	0	28
Zinc	5.54		49.8	52.62		mg/Kg		95	23 - 173	2	18

QC Sample Results

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 570-243397/1-A
Matrix: Solid
Analysis Batch: 243719
Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 243397

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0833	0.0135	mg/Kg		06/21/22 21:10	06/22/22 20:09	1

Lab Sample ID: LCS 570-243397/2-A
Matrix: Solid
Analysis Batch: 243719
Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 243397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.392	0.4529		mg/Kg		116	85 - 121

Lab Sample ID: LCSD 570-243397/3-A
Matrix: Solid
Analysis Batch: 243719
Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 243397

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.392	0.4371		mg/Kg		111	85 - 121	4	10

Lab Sample ID: 570-100135-A-2-C MS
Matrix: Solid
Analysis Batch: 243719
Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 243397

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.0343	J	0.408	0.4549		mg/Kg		103	75 - 125

Lab Sample ID: 570-100135-A-2-D MSD
Matrix: Solid
Analysis Batch: 243719
Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 243397

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.0343	J	0.417	0.4623		mg/Kg		103	75 - 125	2	14

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 580-395749/5
Matrix: Solid
Analysis Batch: 395749
Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Quad	0.01180	J	0.200	0.00967	%			06/30/22 17:46	1

Lab Sample ID: LCS 580-395749/6
Matrix: Solid
Analysis Batch: 395749
Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon - Quad	12.0	11.12		%		93	80 - 120

Method: 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: LCSD 580-395749/7 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 395749

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Organic Carbon - Quad			12.0	11.15		%		93	80 - 120	0	20

Lab Sample ID: 570-100189-1 MS — **Client Sample ID: LCW-01/02-061522**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 395749

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon - Quad	0.820	B	15.1	15.44		%	☼	97	75 - 125

Lab Sample ID: 570-100189-1 MSD — **Client Sample ID: LCW-01/02-061522**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 395749

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Organic Carbon - Quad	0.820	B	15.1	15.72		%	☼	99	75 - 125	2	20

Lab Sample ID: 570-100189-1 DU — **Client Sample ID: LCW-01/02-061522**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 395749

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon - Quad	0.820	B	0.8095		%	☼	1	20

Method: Moisture - 2540 - Percent Moisture

Lab Sample ID: 570-100189-1 DU — **Client Sample ID: LCW-01/02-061522**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 243634

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Solids	79.6		79.4		%		0.2	10

Lab Sample ID: 570-100189-11 DU — **Client Sample ID: LCW-11-061622**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 243634

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Solids	65.6		65.5		%		0.2	10

Marginal Exceedance (ME) Summary

Client: Anchor QEA LLC	Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: LCS 570-243789/4	**Client Sample ID: Lab Control Sample**
Matrix: Solid	**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	%Rec	%Rec. Limits	ME %Rec. Limits	Marginal Exceedance Status
1,1,1,2-Tetrachloroethane	50.0	53.46		ug/Kg	107	80 - 127	72 - 135	
1,1,1-Trichloroethane	50.0	54.63		ug/Kg	109	80 - 127	72 - 135	
1,1,2,2-Tetrachloroethane	50.0	51.05		ug/Kg	102	80 - 126	72 - 134	
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	54.74		ug/Kg	109	78 - 121	71 - 128	
1,1,2-Trichloroethane	50.0	52.18		ug/Kg	104	80 - 120	73 - 127	
1,1-Dichloroethane	50.0	55.13		ug/Kg	110	75 - 128	66 - 137	
1,1-Dichloroethene	50.0	53.30		ug/Kg	107	70 - 131	60 - 141	
1,1-Dichloropropene	50.0	53.51		ug/Kg	107	80 - 124	73 - 131	
1,2,3-Trichlorobenzene	50.0	49.43		ug/Kg	99	80 - 124	73 - 131	
1,2,3-Trichloropropane	50.0	51.60		ug/Kg	103	80 - 125	73 - 133	
1,2,4-Trichlorobenzene	50.0	52.14		ug/Kg	104	80 - 131	72 - 140	
1,2,4-Trimethylbenzene	50.0	51.89		ug/Kg	104	80 - 126	72 - 134	
1,2-Dibromo-3-Chloropropane	50.0	47.11		ug/Kg	94	65 - 127	55 - 137	
1,2-Dibromoethane	50.0	50.48		ug/Kg	101	80 - 120	73 - 127	
1,2-Dichlorobenzene	50.0	51.23		ug/Kg	102	80 - 120	73 - 127	
1,2-Dichloroethane	50.0	52.29		ug/Kg	105	80 - 120	73 - 127	
1,2-Dichloropropane	50.0	52.29		ug/Kg	105	80 - 120	73 - 127	
1,3,5-Trimethylbenzene	50.0	53.37		ug/Kg	107	80 - 123	73 - 130	
1,3-Dichlorobenzene	50.0	50.14		ug/Kg	100	80 - 120	73 - 127	
1,3-Dichloropropane	50.0	51.23		ug/Kg	102	80 - 120	73 - 127	
1,4-Dichlorobenzene	50.0	50.34		ug/Kg	101	80 - 120	73 - 127	
2,2-Dichloropropane	50.0	55.57		ug/Kg	111	65 - 150	51 - 164	
2-Butanone	50.0	51.16		ug/Kg	102	73 - 129	64 - 138	
2-Chlorotoluene	50.0	51.95		ug/Kg	104	80 - 120	73 - 127	
2-Hexanone	50.0	48.57		ug/Kg	97	80 - 121	73 - 128	
4-Chlorotoluene	50.0	51.56		ug/Kg	103	80 - 120	73 - 127	
4-Methyl-2-pentanone	50.0	46.71		ug/Kg	93	80 - 120	73 - 127	
Acetone	50.0	47.74		ug/Kg	95	55 - 142	41 - 157	
Benzene	50.0	54.00		ug/Kg	108	80 - 120	73 - 127	
Bromobenzene	50.0	51.27		ug/Kg	103	80 - 126	72 - 134	
Bromochloromethane	50.0	50.41		ug/Kg	101	80 - 120	73 - 127	
Bromodichloromethane	50.0	55.78		ug/Kg	112	80 - 120	73 - 127	
Bromoform	50.0	53.57		ug/Kg	107	80 - 131	72 - 140	
Bromomethane	50.0	60.97		ug/Kg	122	68 - 131	58 - 142	
Carbon disulfide	50.0	54.51		ug/Kg	109	70 - 130	60 - 140	
Carbon tetrachloride	50.0	58.78		ug/Kg	118	80 - 131	72 - 140	
Chlorobenzene	50.0	52.02		ug/Kg	104	80 - 120	73 - 127	
Chloroethane	50.0	63.90	*+ me	ug/Kg	128	80 - 124	73 - 131	ME
Chloroform	50.0	54.88		ug/Kg	110	80 - 120	73 - 127	
Chloromethane	50.0	78.34	*+	ug/Kg	157	68 - 135	57 - 146	X
cis-1,2-Dichloroethene	50.0	54.15		ug/Kg	108	80 - 122	73 - 129	
cis-1,3-Dichloropropene	50.0	50.81		ug/Kg	102	80 - 125	73 - 133	
Dibromochloromethane	50.0	55.47		ug/Kg	111	80 - 124	73 - 131	
Dibromomethane	50.0	53.04		ug/Kg	106	80 - 120	73 - 127	
Dichlorodifluoromethane	50.0	60.34		ug/Kg	121	60 - 166	42 - 184	
Di-isopropyl ether (DIPE)	50.0	53.32		ug/Kg	107	77 - 130	68 - 139	
Ethanol	500	697.7	*+ me	ug/Kg	140	66 - 129	56 - 140	ME
Ethylbenzene	50.0	53.14		ug/Kg	106	80 - 120	73 - 127	
Ethyl-t-butyl ether (ETBE)	50.0	50.09		ug/Kg	100	80 - 135	71 - 144	

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 570-243789/4 — **Client Sample ID: Lab Control Sample**

Matrix: Solid — **Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	%Rec	%Rec. Limits	ME %Rec. Limits	Marginal Exceedance Status
Isopropylbenzene	50.0	53.19		ug/Kg	106	80 - 120	73 - 127	
m,p-Xylene	100	110.3		ug/Kg	110	80 - 120	73 - 127	
Methylene Chloride	50.0	50.86		ug/Kg	102	80 - 120	73 - 127	
Methyl-t-Butyl Ether (MTBE)	50.0	49.70		ug/Kg	99	80 - 122	73 - 129	
Naphthalene	50.0	44.00		ug/Kg	88	77 - 120	70 - 127	
n-Butylbenzene	50.0	49.41		ug/Kg	99	80 - 127	72 - 135	
N-Propylbenzene	50.0	53.89		ug/Kg	108	80 - 120	73 - 127	
o-Xylene	50.0	52.57		ug/Kg	105	80 - 120	73 - 127	
p-Isopropyltoluene	50.0	52.51		ug/Kg	105	80 - 122	73 - 129	
sec-Butylbenzene	50.0	51.57		ug/Kg	103	80 - 124	73 - 131	
Styrene	50.0	50.35		ug/Kg	101	80 - 120	73 - 127	
Tert-amyl-methyl ether (TAME)	50.0	49.52		ug/Kg	99	80 - 122	73 - 129	
tert-Butyl alcohol (TBA)	250	248.6		ug/Kg	99	80 - 120	73 - 127	
tert-Butylbenzene	50.0	51.12		ug/Kg	102	80 - 120	73 - 127	
Tetrachloroethene	50.0	52.00		ug/Kg	104	80 - 121	73 - 128	
Toluene	50.0	52.50		ug/Kg	105	80 - 120	73 - 127	
trans-1,2-Dichloroethene	50.0	53.62		ug/Kg	107	80 - 121	73 - 128	
trans-1,3-Dichloropropene	50.0	49.60		ug/Kg	99	80 - 130	72 - 138	
Trichloroethene	50.0	51.97		ug/Kg	104	80 - 120	73 - 127	
Trichlorofluoromethane	50.0	65.10		ug/Kg	130	75 - 131	66 - 140	
Vinyl acetate	50.0	49.69		ug/Kg	99	80 - 133	71 - 142	
Vinyl chloride	50.0	66.56	*+ me	ug/Kg	133	80 - 129	72 - 137	ME

Summary

Number of Analytes Reported	Number of Marginal Exceedances Allowed	Number of Marginal Exceedances Found
71	4	3

ME = Marginal Exceedance

X = % Recovery is greater than widest possible limit

Lab Sample ID: LCSD 570-243789/5 — **Client Sample ID: Lab Control Sample Dup**

Matrix: Solid — **Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	%Rec	%Rec. Limits	ME %Rec. Limits	Marginal Exceedance Status
1,1,1,2-Tetrachloroethane	50.0	54.07		ug/Kg	108	80 - 127	72 - 135	
1,1,1-Trichloroethane	50.0	54.08		ug/Kg	108	80 - 127	72 - 135	
1,1,2,2-Tetrachloroethane	50.0	52.84		ug/Kg	106	80 - 126	72 - 134	
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	54.52		ug/Kg	109	78 - 121	71 - 128	
1,1,2-Trichloroethane	50.0	53.42		ug/Kg	107	80 - 120	73 - 127	
1,1-Dichloroethane	50.0	54.72		ug/Kg	109	75 - 128	66 - 137	
1,1-Dichloroethene	50.0	53.00		ug/Kg	106	70 - 131	60 - 141	
1,1-Dichloropropene	50.0	53.05		ug/Kg	106	80 - 124	73 - 131	
1,2,3-Trichlorobenzene	50.0	50.28		ug/Kg	101	80 - 124	73 - 131	
1,2,3-Trichloropropane	50.0	53.44		ug/Kg	107	80 - 125	73 - 133	
1,2,4-Trichlorobenzene	50.0	51.76		ug/Kg	104	80 - 131	72 - 140	
1,2,4-Trimethylbenzene	50.0	52.30		ug/Kg	105	80 - 126	72 - 134	
1,2-Dibromo-3-Chloropropane	50.0	50.19		ug/Kg	100	65 - 127	55 - 137	
1,2-Dibromoethane	50.0	52.96		ug/Kg	106	80 - 120	73 - 127	
1,2-Dichlorobenzene	50.0	52.26		ug/Kg	105	80 - 120	73 - 127	

Marginal Exceedance (ME) Summary

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 570-243789/5
Client Sample ID: Lab Control Sample Dup
Matrix: Solid
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	%Rec	%Rec. Limits	ME %Rec. Limits	Marginal Exceedance Status
1,2-Dichloroethane	50.0	53.74		ug/Kg	107	80 - 120	73 - 127	
1,2-Dichloropropane	50.0	53.30		ug/Kg	107	80 - 120	73 - 127	
1,3,5-Trimethylbenzene	50.0	52.89		ug/Kg	106	80 - 123	73 - 130	
1,3-Dichlorobenzene	50.0	50.68		ug/Kg	101	80 - 120	73 - 127	
1,3-Dichloropropane	50.0	52.43		ug/Kg	105	80 - 120	73 - 127	
1,4-Dichlorobenzene	50.0	51.29		ug/Kg	103	80 - 120	73 - 127	
2,2-Dichloropropane	50.0	54.96		ug/Kg	110	65 - 150	51 - 164	
2-Butanone	50.0	50.91		ug/Kg	102	73 - 129	64 - 138	
2-Chlorotoluene	50.0	52.15		ug/Kg	104	80 - 120	73 - 127	
2-Hexanone	50.0	50.21		ug/Kg	100	80 - 121	73 - 128	
4-Chlorotoluene	50.0	51.72		ug/Kg	103	80 - 120	73 - 127	
4-Methyl-2-pentanone	50.0	47.85		ug/Kg	96	80 - 120	73 - 127	
Acetone	50.0	49.33		ug/Kg	99	55 - 142	41 - 157	
Benzene	50.0	53.95		ug/Kg	108	80 - 120	73 - 127	
Bromobenzene	50.0	51.45		ug/Kg	103	80 - 126	72 - 134	
Bromochloromethane	50.0	51.52		ug/Kg	103	80 - 120	73 - 127	
Bromodichloromethane	50.0	56.76		ug/Kg	114	80 - 120	73 - 127	
Bromoform	50.0	54.66		ug/Kg	109	80 - 131	72 - 140	
Bromomethane	50.0	65.14		ug/Kg	130	68 - 131	58 - 142	
Carbon disulfide	50.0	53.68		ug/Kg	107	70 - 130	60 - 140	
Carbon tetrachloride	50.0	58.63		ug/Kg	117	80 - 131	72 - 140	
Chlorobenzene	50.0	52.19		ug/Kg	104	80 - 120	73 - 127	
Chloroethane	50.0	65.85	*+	ug/Kg	132	80 - 124	73 - 131	X
Chloroform	50.0	55.10		ug/Kg	110	80 - 120	73 - 127	
Chloromethane	50.0	80.37	*+	ug/Kg	161	68 - 135	57 - 146	X
cis-1,2-Dichloroethene	50.0	54.33		ug/Kg	109	80 - 122	73 - 129	
cis-1,3-Dichloropropene	50.0	51.97		ug/Kg	104	80 - 125	73 - 133	
Dibromochloromethane	50.0	56.19		ug/Kg	112	80 - 124	73 - 131	
Dibromomethane	50.0	54.58		ug/Kg	109	80 - 120	73 - 127	
Dichlorodifluoromethane	50.0	58.44		ug/Kg	117	60 - 166	42 - 184	
Di-isopropyl ether (DIPE)	50.0	54.64		ug/Kg	109	77 - 130	68 - 139	
Ethanol	500	679.5	*+ me	ug/Kg	136	66 - 129	56 - 140	ME
Ethylbenzene	50.0	52.86		ug/Kg	106	80 - 120	73 - 127	
Ethyl-t-butyl ether (ETBE)	50.0	51.69		ug/Kg	103	80 - 135	71 - 144	
Isopropylbenzene	50.0	52.82		ug/Kg	106	80 - 120	73 - 127	
m,p-Xylene	100	109.5		ug/Kg	109	80 - 120	73 - 127	
Methylene Chloride	50.0	51.07		ug/Kg	102	80 - 120	73 - 127	
Methyl-t-Butyl Ether (MTBE)	50.0	52.19		ug/Kg	104	80 - 122	73 - 129	
Naphthalene	50.0	45.36		ug/Kg	91	77 - 120	70 - 127	
n-Butylbenzene	50.0	48.81		ug/Kg	98	80 - 127	72 - 135	
N-Propylbenzene	50.0	53.30		ug/Kg	107	80 - 120	73 - 127	
o-Xylene	50.0	52.79		ug/Kg	106	80 - 120	73 - 127	
p-Isopropyltoluene	50.0	51.73		ug/Kg	103	80 - 122	73 - 129	
sec-Butylbenzene	50.0	50.90		ug/Kg	102	80 - 124	73 - 131	
Styrene	50.0	50.64		ug/Kg	101	80 - 120	73 - 127	
Tert-amyl-methyl ether (TAME)	50.0	51.43		ug/Kg	103	80 - 122	73 - 129	
tert-Butyl alcohol (TBA)	250	251.9		ug/Kg	101	80 - 120	73 - 127	
tert-Butylbenzene	50.0	50.64		ug/Kg	101	80 - 120	73 - 127	
Tetrachloroethene	50.0	51.32		ug/Kg	103	80 - 121	73 - 128	
Toluene	50.0	52.71		ug/Kg	105	80 - 120	73 - 127	

Marginal Exceedance (ME) Summary

Client: Anchor QEA LLC Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 570-243789/5 **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	%Rec	%Rec. Limits	ME %Rec. Limits	Marginal Exceedance Status
trans-1,2-Dichloroethene	50.0	53.62		ug/Kg	107	80 - 121	73 - 128	
trans-1,3-Dichloropropene	50.0	51.05		ug/Kg	102	80 - 130	72 - 138	
Trichloroethene	50.0	52.17		ug/Kg	104	80 - 120	73 - 127	
Trichlorofluoromethane	50.0	65.73		ug/Kg	131	75 - 131	66 - 140	
Vinyl acetate	50.0	52.24		ug/Kg	104	80 - 133	71 - 142	
Vinyl chloride	50.0	68.86	*+	ug/Kg	138	80 - 129	72 - 137	X

Summary

Number of Analytes Reported	Number of Marginal Exceedances Allowed	Number of Marginal Exceedances Found
71	4	1

ME = Marginal Exceedance
X = % Recovery is greater than widest possible limit

Lab Sample ID: LCS 570-244174/4 **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	%Rec	%Rec. Limits	ME %Rec. Limits	Marginal Exceedance Status
1,1,1,2-Tetrachloroethane	50.0	53.94		ug/Kg	108	80 - 127	72 - 135	
1,1,1-Trichloroethane	50.0	56.28		ug/Kg	113	80 - 127	72 - 135	
1,1,2,2-Tetrachloroethane	50.0	54.79		ug/Kg	110	80 - 126	72 - 134	
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	58.10		ug/Kg	116	78 - 121	71 - 128	
1,1,2-Trichloroethane	50.0	52.67		ug/Kg	105	80 - 120	73 - 127	
1,1-Dichloroethane	50.0	56.39		ug/Kg	113	75 - 128	66 - 137	
1,1-Dichloroethene	50.0	57.40		ug/Kg	115	70 - 131	60 - 141	
1,1-Dichloropropene	50.0	55.94		ug/Kg	112	80 - 124	73 - 131	
1,2,3-Trichlorobenzene	50.0	53.09		ug/Kg	106	80 - 124	73 - 131	
1,2,3-Trichloropropane	50.0	52.46		ug/Kg	105	80 - 125	73 - 133	
1,2,4-Trichlorobenzene	50.0	54.34		ug/Kg	109	80 - 131	72 - 140	
1,2,4-Trimethylbenzene	50.0	54.58		ug/Kg	109	80 - 126	72 - 134	
1,2-Dibromo-3-Chloropropane	50.0	49.98		ug/Kg	100	65 - 127	55 - 137	
1,2-Dibromoethane	50.0	53.20		ug/Kg	106	80 - 120	73 - 127	
1,2-Dichlorobenzene	50.0	54.17		ug/Kg	108	80 - 120	73 - 127	
1,2-Dichloroethane	50.0	51.78		ug/Kg	104	80 - 120	73 - 127	
1,2-Dichloropropane	50.0	53.55		ug/Kg	107	80 - 120	73 - 127	
1,3,5-Trimethylbenzene	50.0	53.26		ug/Kg	107	80 - 123	73 - 130	
1,3-Dichlorobenzene	50.0	53.03		ug/Kg	106	80 - 120	73 - 127	
1,3-Dichloropropane	50.0	53.06		ug/Kg	106	80 - 120	73 - 127	
1,4-Dichlorobenzene	50.0	52.93		ug/Kg	106	80 - 120	73 - 127	
2,2-Dichloropropane	50.0	57.60		ug/Kg	115	65 - 150	51 - 164	
2-Butanone	50.0	56.65		ug/Kg	113	73 - 129	64 - 138	
2-Chlorotoluene	50.0	52.07		ug/Kg	104	80 - 120	73 - 127	
2-Hexanone	50.0	52.17		ug/Kg	104	80 - 121	73 - 128	
4-Chlorotoluene	50.0	53.73		ug/Kg	107	80 - 120	73 - 127	
4-Methyl-2-pentanone	50.0	50.86		ug/Kg	102	80 - 120	73 - 127	
Acetone	50.0	57.84		ug/Kg	116	55 - 142	41 - 157	
Benzene	50.0	54.26		ug/Kg	109	80 - 120	73 - 127	
Bromobenzene	50.0	52.60		ug/Kg	105	80 - 126	72 - 134	
Bromochloromethane	50.0	49.93		ug/Kg	100	80 - 120	73 - 127	

Marginal Exceedance (ME) Summary

Client: Anchor QEA LLC   Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 570-244174/4   **Client Sample ID: Lab Control Sample**
Matrix: Solid   **Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	%Rec	%Rec. Limits	ME %Rec. Limits	Marginal Exceedance Status
Bromodichloromethane	50.0	57.55		ug/Kg	115	80 - 120	73 - 127	
Bromoform	50.0	58.60		ug/Kg	117	80 - 131	72 - 140	
Bromomethane	50.0	64.74		ug/Kg	129	68 - 131	58 - 142	
Carbon disulfide	50.0	59.34		ug/Kg	119	70 - 130	60 - 140	
Carbon tetrachloride	50.0	59.89		ug/Kg	120	80 - 131	72 - 140	
Chlorobenzene	50.0	51.45		ug/Kg	103	80 - 120	73 - 127	
Chloroethane	50.0	62.50	*+ me	ug/Kg	125	80 - 124	73 - 131	ME
Chloroform	50.0	55.85		ug/Kg	112	80 - 120	73 - 127	
Chloromethane	50.0	65.88		ug/Kg	132	68 - 135	57 - 146	
cis-1,2-Dichloroethene	50.0	56.79		ug/Kg	114	80 - 122	73 - 129	
cis-1,3-Dichloropropene	50.0	53.32		ug/Kg	107	80 - 125	73 - 133	
Dibromochloromethane	50.0	56.81		ug/Kg	114	80 - 124	73 - 131	
Dibromomethane	50.0	53.55		ug/Kg	107	80 - 120	73 - 127	
Dichlorodifluoromethane	50.0	58.73		ug/Kg	117	60 - 166	42 - 184	
Di-isopropyl ether (DIPE)	50.0	55.61		ug/Kg	111	77 - 130	68 - 139	
Ethanol	500	392.2		ug/Kg	78	66 - 129	56 - 140	
Ethylbenzene	50.0	54.31		ug/Kg	109	80 - 120	73 - 127	
Ethyl-t-butyl ether (ETBE)	50.0	54.84		ug/Kg	110	80 - 135	71 - 144	
Isopropylbenzene	50.0	53.69		ug/Kg	107	80 - 120	73 - 127	
m,p-Xylene	100	110.8		ug/Kg	111	80 - 120	73 - 127	
Methylene Chloride	50.0	52.07		ug/Kg	104	80 - 120	73 - 127	
Methyl-t-Butyl Ether (MTBE)	50.0	54.58		ug/Kg	109	80 - 122	73 - 129	
Naphthalene	50.0	50.95		ug/Kg	102	77 - 120	70 - 127	
n-Butylbenzene	50.0	53.03		ug/Kg	106	80 - 127	72 - 135	
N-Propylbenzene	50.0	54.20		ug/Kg	108	80 - 120	73 - 127	
o-Xylene	50.0	53.54		ug/Kg	107	80 - 120	73 - 127	
p-Isopropyltoluene	50.0	55.00		ug/Kg	110	80 - 122	73 - 129	
sec-Butylbenzene	50.0	54.34		ug/Kg	109	80 - 124	73 - 131	
Styrene	50.0	51.03		ug/Kg	102	80 - 120	73 - 127	
Tert-amyl-methyl ether (TAME)	50.0	52.38		ug/Kg	105	80 - 122	73 - 129	
tert-Butyl alcohol (TBA)	250	258.8		ug/Kg	104	80 - 120	73 - 127	
tert-Butylbenzene	50.0	52.75		ug/Kg	105	80 - 120	73 - 127	
Tetrachloroethene	50.0	53.81		ug/Kg	108	80 - 121	73 - 128	
Toluene	50.0	53.80		ug/Kg	108	80 - 120	73 - 127	
trans-1,2-Dichloroethene	50.0	56.38		ug/Kg	113	80 - 121	73 - 128	
trans-1,3-Dichloropropene	50.0	51.32		ug/Kg	103	80 - 130	72 - 138	
Trichloroethene	50.0	54.36		ug/Kg	109	80 - 120	73 - 127	
Trichlorofluoromethane	50.0	70.92	*+	ug/Kg	142	75 - 131	66 - 140	X
Vinyl acetate	50.0	56.69		ug/Kg	113	80 - 133	71 - 142	
Vinyl chloride	50.0	64.26		ug/Kg	129	80 - 129	72 - 137	

Summary

Number of Analytes Reported	Number of Marginal Exceedances Allowed	Number of Marginal Exceedances Found
71	4	1

ME = Marginal Exceedance
X = % Recovery is greater than widest possible limit

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 570-244174/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	%Rec	%Rec. Limits	ME %Rec. Limits	Marginal Exceedance Status
1,1,1,2-Tetrachloroethane	50.0	55.55		ug/Kg	111	80 - 127	72 - 135	
1,1,1-Trichloroethane	50.0	56.09		ug/Kg	112	80 - 127	72 - 135	
1,1,2,2-Tetrachloroethane	50.0	55.88		ug/Kg	112	80 - 126	72 - 134	
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	58.26		ug/Kg	117	78 - 121	71 - 128	
1,1,2-Trichloroethane	50.0	55.23		ug/Kg	110	80 - 120	73 - 127	
1,1-Dichloroethane	50.0	57.05		ug/Kg	114	75 - 128	66 - 137	
1,1-Dichloroethene	50.0	58.22		ug/Kg	116	70 - 131	60 - 141	
1,1-Dichloropropene	50.0	56.62		ug/Kg	113	80 - 124	73 - 131	
1,2,3-Trichlorobenzene	50.0	54.32		ug/Kg	109	80 - 124	73 - 131	
1,2,3-Trichloropropane	50.0	54.64		ug/Kg	109	80 - 125	73 - 133	
1,2,4-Trichlorobenzene	50.0	54.94		ug/Kg	110	80 - 131	72 - 140	
1,2,4-Trimethylbenzene	50.0	55.15		ug/Kg	110	80 - 126	72 - 134	
1,2-Dibromo-3-Chloropropane	50.0	51.92		ug/Kg	104	65 - 127	55 - 137	
1,2-Dibromoethane	50.0	55.42		ug/Kg	111	80 - 120	73 - 127	
1,2-Dichlorobenzene	50.0	55.49		ug/Kg	111	80 - 120	73 - 127	
1,2-Dichloroethane	50.0	53.51		ug/Kg	107	80 - 120	73 - 127	
1,2-Dichloropropane	50.0	55.11		ug/Kg	110	80 - 120	73 - 127	
1,3,5-Trimethylbenzene	50.0	54.45		ug/Kg	109	80 - 123	73 - 130	
1,3-Dichlorobenzene	50.0	54.24		ug/Kg	108	80 - 120	73 - 127	
1,3-Dichloropropane	50.0	54.91		ug/Kg	110	80 - 120	73 - 127	
1,4-Dichlorobenzene	50.0	54.34		ug/Kg	109	80 - 120	73 - 127	
2,2-Dichloropropane	50.0	57.96		ug/Kg	116	65 - 150	51 - 164	
2-Butanone	50.0	58.95		ug/Kg	118	73 - 129	64 - 138	
2-Chlorotoluene	50.0	53.32		ug/Kg	107	80 - 120	73 - 127	
2-Hexanone	50.0	55.30		ug/Kg	111	80 - 121	73 - 128	
4-Chlorotoluene	50.0	54.50		ug/Kg	109	80 - 120	73 - 127	
4-Methyl-2-pentanone	50.0	53.70		ug/Kg	107	80 - 120	73 - 127	
Acetone	50.0	59.46		ug/Kg	119	55 - 142	41 - 157	
Benzene	50.0	55.46		ug/Kg	111	80 - 120	73 - 127	
Bromobenzene	50.0	54.32		ug/Kg	109	80 - 126	72 - 134	
Bromochloromethane	50.0	51.21		ug/Kg	102	80 - 120	73 - 127	
Bromodichloromethane	50.0	59.03		ug/Kg	118	80 - 120	73 - 127	
Bromoform	50.0	59.11		ug/Kg	118	80 - 131	72 - 140	
Bromomethane	50.0	70.19	*+ me	ug/Kg	140	68 - 131	58 - 142	ME
Carbon disulfide	50.0	60.28		ug/Kg	121	70 - 130	60 - 140	
Carbon tetrachloride	50.0	59.98		ug/Kg	120	80 - 131	72 - 140	
Chlorobenzene	50.0	53.10		ug/Kg	106	80 - 120	73 - 127	
Chloroethane	50.0	63.80	*+ me	ug/Kg	128	80 - 124	73 - 131	ME
Chloroform	50.0	56.96		ug/Kg	114	80 - 120	73 - 127	
Chloromethane	50.0	70.34	*+ me	ug/Kg	141	68 - 135	57 - 146	ME
cis-1,2-Dichloroethene	50.0	57.62		ug/Kg	115	80 - 122	73 - 129	
cis-1,3-Dichloropropene	50.0	54.25		ug/Kg	108	80 - 125	73 - 133	
Dibromochloromethane	50.0	57.85		ug/Kg	116	80 - 124	73 - 131	
Dibromomethane	50.0	55.90		ug/Kg	112	80 - 120	73 - 127	
Dichlorodifluoromethane	50.0	58.51		ug/Kg	117	60 - 166	42 - 184	
Di-isopropyl ether (DIPE)	50.0	56.90		ug/Kg	114	77 - 130	68 - 139	
Ethanol	500	454.4		ug/Kg	91	66 - 129	56 - 140	
Ethylbenzene	50.0	55.33		ug/Kg	111	80 - 120	73 - 127	
Ethyl-t-butyl ether (ETBE)	50.0	56.19		ug/Kg	112	80 - 135	71 - 144	

Marginal Exceedance (ME) Summary

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 570-244174/5
Client Sample ID: Lab Control Sample Dup
Matrix: Solid
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	%Rec	%Rec. Limits	ME %Rec. Limits	Marginal Exceedance Status
Isopropylbenzene	50.0	54.87		ug/Kg	110	80 - 120	73 - 127	
m,p-Xylene	100	113.2		ug/Kg	113	80 - 120	73 - 127	
Methylene Chloride	50.0	52.78		ug/Kg	106	80 - 120	73 - 127	
Methyl-t-Butyl Ether (MTBE)	50.0	56.03		ug/Kg	112	80 - 122	73 - 129	
Naphthalene	50.0	52.52		ug/Kg	105	77 - 120	70 - 127	
n-Butylbenzene	50.0	52.95		ug/Kg	106	80 - 127	72 - 135	
N-Propylbenzene	50.0	55.29		ug/Kg	111	80 - 120	73 - 127	
o-Xylene	50.0	54.70		ug/Kg	109	80 - 120	73 - 127	
p-Isopropyltoluene	50.0	54.66		ug/Kg	109	80 - 122	73 - 129	
sec-Butylbenzene	50.0	54.43		ug/Kg	109	80 - 124	73 - 131	
Styrene	50.0	52.32		ug/Kg	105	80 - 120	73 - 127	
Tert-amyl-methyl ether (TAME)	50.0	53.96		ug/Kg	108	80 - 122	73 - 129	
tert-Butyl alcohol (TBA)	250	262.3		ug/Kg	105	80 - 120	73 - 127	
tert-Butylbenzene	50.0	53.18		ug/Kg	106	80 - 120	73 - 127	
Tetrachloroethene	50.0	54.55		ug/Kg	109	80 - 121	73 - 128	
Toluene	50.0	54.68		ug/Kg	109	80 - 120	73 - 127	
trans-1,2-Dichloroethene	50.0	56.32		ug/Kg	113	80 - 121	73 - 128	
trans-1,3-Dichloropropene	50.0	53.58		ug/Kg	107	80 - 130	72 - 138	
Trichloroethene	50.0	55.11		ug/Kg	110	80 - 120	73 - 127	
Trichlorofluoromethane	50.0	71.04	*+	ug/Kg	142	75 - 131	66 - 140	X
Vinyl acetate	50.0	58.90		ug/Kg	118	80 - 133	71 - 142	
Vinyl chloride	50.0	66.22	*+ me	ug/Kg	132	80 - 129	72 - 137	ME

Summary

Number of Analytes Reported	Number of Marginal Exceedances Allowed	Number of Marginal Exceedances Found
71	4	4

ME = Marginal Exceedance
X = % Recovery is greater than widest possible limit

GC/MS VOA

Prep Batch: 242628

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-12	LCW-12-061622	Total/NA	Soil	5035	

Prep Batch: 242635

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-3	LCW-05-061722	Total/NA	Soil	5035	
570-100189-8	LCW-02-061522	Total/NA	Soil	5035	
570-100189-9	LCW-04-061522	Total/NA	Soil	5035	
570-100189-10	LCW-09-061722	Total/NA	Soil	5035	
570-100189-11	LCW-11-061622	Total/NA	Soil	5035	

Analysis Batch: 243789

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-3	LCW-05-061722	Total/NA	Soil	8260B	242635
570-100189-8	LCW-02-061522	Total/NA	Soil	8260B	242635
570-100189-9	LCW-04-061522	Total/NA	Soil	8260B	242635
570-100189-10	LCW-09-061722	Total/NA	Soil	8260B	242635
570-100189-11	LCW-11-061622	Total/NA	Soil	8260B	242635
MB 570-243789/9	Method Blank	Total/NA	Solid	8260B	
LCS 570-243789/4	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 570-243789/5	Lab Control Sample Dup	Total/NA	Solid	8260B	

Analysis Batch: 244174

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-12	LCW-12-061622	Total/NA	Soil	8260B	242628
MB 570-244174/8	Method Blank	Total/NA	Solid	8260B	
LCS 570-244174/4	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 570-244174/5	Lab Control Sample Dup	Total/NA	Solid	8260B	

GC/MS Semi VOA

Prep Batch: 244076

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	3541	
570-100189-2	LCW-03/04-061522	Total/NA	Soil	3541	
570-100189-3 - DL	LCW-05-061722	Total/NA	Soil	3541	
570-100189-4	LCW-07-061722	Total/NA	Soil	3541	
570-100189-5	LCW-08/09-061722	Total/NA	Soil	3541	
570-100189-6	LCW-10/11-061722	Total/NA	Soil	3541	
570-100189-7	LCW-12/13-061722	Total/NA	Soil	3541	
MB 570-244076/1-A	Method Blank	Total/NA	Solid	3541	
LCS 570-244076/2-A	Lab Control Sample	Total/NA	Solid	3541	
LCSD 570-244076/3-A	Lab Control Sample Dup	Total/NA	Solid	3541	
570-100189-3 MS - DL	LCW-05-061722	Total/NA	Soil	3541	
570-100189-3 MSD - DL	LCW-05-061722	Total/NA	Soil	3541	

Analysis Batch: 246665

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	8270C SIM	244076
570-100189-2	LCW-03/04-061522	Total/NA	Soil	8270C SIM	244076
570-100189-3 - DL	LCW-05-061722	Total/NA	Soil	8270C SIM	244076
570-100189-4	LCW-07-061722	Total/NA	Soil	8270C SIM	244076

GC/MS Semi VOA (Continued)

Analysis Batch: 246665 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-5	LCW-08/09-061722	Total/NA	Soil	8270C SIM	244076
570-100189-6	LCW-10/11-061722	Total/NA	Soil	8270C SIM	244076
MB 570-244076/1-A	Method Blank	Total/NA	Solid	8270C SIM	244076
LCS 570-244076/2-A	Lab Control Sample	Total/NA	Solid	8270C SIM	244076
LCSD 570-244076/3-A	Lab Control Sample Dup	Total/NA	Solid	8270C SIM	244076
570-100189-3 MS - DL	LCW-05-061722	Total/NA	Soil	8270C SIM	244076
570-100189-3 MSD - DL	LCW-05-061722	Total/NA	Soil	8270C SIM	244076

Analysis Batch: 247138

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-7	LCW-12/13-061722	Total/NA	Soil	8270C SIM	244076

GC Semi VOA

Prep Batch: 243003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	3550C	
570-100189-2	LCW-03/04-061522	Total/NA	Soil	3550C	
570-100189-3	LCW-05-061722	Total/NA	Soil	3550C	
570-100189-4	LCW-07-061722	Total/NA	Soil	3550C	
570-100189-5	LCW-08/09-061722	Total/NA	Soil	3550C	
570-100189-6	LCW-10/11-061722	Total/NA	Soil	3550C	
570-100189-7	LCW-12/13-061722	Total/NA	Soil	3550C	
MB 570-243003/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 570-243003/2-A	Lab Control Sample	Total/NA	Solid	3550C	
LCSD 570-243003/3-A	Lab Control Sample Dup	Total/NA	Solid	3550C	
570-100039-D-1-A MS	Matrix Spike	Total/NA	Solid	3550C	
570-100039-D-1-B MSD	Matrix Spike Duplicate	Total/NA	Solid	3550C	

Analysis Batch: 243500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	8015B	243003
570-100189-2	LCW-03/04-061522	Total/NA	Soil	8015B	243003
570-100189-3	LCW-05-061722	Total/NA	Soil	8015B	243003
570-100189-4	LCW-07-061722	Total/NA	Soil	8015B	243003
570-100189-5	LCW-08/09-061722	Total/NA	Soil	8015B	243003
570-100189-6	LCW-10/11-061722	Total/NA	Soil	8015B	243003
570-100189-7	LCW-12/13-061722	Total/NA	Soil	8015B	243003
MB 570-243003/1-A	Method Blank	Total/NA	Solid	8015B	243003
LCS 570-243003/2-A	Lab Control Sample	Total/NA	Solid	8015B	243003
LCSD 570-243003/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B	243003
570-100039-D-1-A MS	Matrix Spike	Total/NA	Solid	8015B	243003
570-100039-D-1-B MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B	243003

Prep Batch: 244075

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	3541	
570-100189-2	LCW-03/04-061522	Total/NA	Soil	3541	
570-100189-3	LCW-05-061722	Total/NA	Soil	3541	
570-100189-4	LCW-07-061722	Total/NA	Soil	3541	
570-100189-5	LCW-08/09-061722	Total/NA	Soil	3541	

GC Semi VOA (Continued)

Prep Batch: 244075 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-6	LCW-10/11-061722	Total/NA	Soil	3541	
570-100189-7	LCW-12/13-061722	Total/NA	Soil	3541	
MB 570-244075/1-A	Method Blank	Total/NA	Solid	3541	
LCS 570-244075/2-A	Lab Control Sample	Total/NA	Solid	3541	
LCS 570-244075/4-A	Lab Control Sample	Total/NA	Solid	3541	
LCS 570-244075/6-A	Lab Control Sample	Total/NA	Solid	3541	
LCSD 570-244075/3-A	Lab Control Sample Dup	Total/NA	Solid	3541	
LCSD 570-244075/5-A	Lab Control Sample Dup	Total/NA	Solid	3541	
LCSD 570-244075/7-A	Lab Control Sample Dup	Total/NA	Solid	3541	
570-100189-2 MS	LCW-03/04-061522	Total/NA	Soil	3541	
570-100189-2 MSD	LCW-03/04-061522	Total/NA	Soil	3541	
570-100189-5 MS	LCW-08/09-061722	Total/NA	Soil	3541	
570-100189-5 MSD	LCW-08/09-061722	Total/NA	Soil	3541	
570-100189-6 MS	LCW-10/11-061722	Total/NA	Soil	3541	
570-100189-6 MSD	LCW-10/11-061722	Total/NA	Soil	3541	

Analysis Batch: 244614

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	8082	244075
570-100189-2	LCW-03/04-061522	Total/NA	Soil	8082	244075
570-100189-3	LCW-05-061722	Total/NA	Soil	8082	244075
570-100189-4	LCW-07-061722	Total/NA	Soil	8082	244075
570-100189-5	LCW-08/09-061722	Total/NA	Soil	8082	244075
570-100189-6	LCW-10/11-061722	Total/NA	Soil	8082	244075
570-100189-7	LCW-12/13-061722	Total/NA	Soil	8082	244075
MB 570-244075/1-A	Method Blank	Total/NA	Solid	8082	244075
LCS 570-244075/6-A	Lab Control Sample	Total/NA	Solid	8082	244075
LCSD 570-244075/7-A	Lab Control Sample Dup	Total/NA	Solid	8082	244075
570-100189-6 MS	LCW-10/11-061722	Total/NA	Soil	8082	244075
570-100189-6 MSD	LCW-10/11-061722	Total/NA	Soil	8082	244075

Analysis Batch: 245037

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	8081A	244075
570-100189-2	LCW-03/04-061522	Total/NA	Soil	8081A	244075
570-100189-3	LCW-05-061722	Total/NA	Soil	8081A	244075
570-100189-4	LCW-07-061722	Total/NA	Soil	8081A	244075
570-100189-5	LCW-08/09-061722	Total/NA	Soil	8081A	244075
570-100189-6	LCW-10/11-061722	Total/NA	Soil	8081A	244075
570-100189-7	LCW-12/13-061722	Total/NA	Soil	8081A	244075
MB 570-244075/1-A	Method Blank	Total/NA	Solid	8081A	244075

Analysis Batch: 245099

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 570-244075/2-A	Lab Control Sample	Total/NA	Solid	8081A	244075
LCS 570-244075/4-A	Lab Control Sample	Total/NA	Solid	8081A	244075
LCSD 570-244075/3-A	Lab Control Sample Dup	Total/NA	Solid	8081A	244075
LCSD 570-244075/5-A	Lab Control Sample Dup	Total/NA	Solid	8081A	244075
570-100189-2 MS	LCW-03/04-061522	Total/NA	Soil	8081A	244075
570-100189-2 MSD	LCW-03/04-061522	Total/NA	Soil	8081A	244075
570-100189-5 MS	LCW-08/09-061722	Total/NA	Soil	8081A	244075

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

GC Semi VOA (Continued)

Analysis Batch: 245099 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-5 MSD	LCW-08/09-061722	Total/NA	Soil	8081A	244075

Metals

Prep Batch: 243397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	7471A	
570-100189-2	LCW-03/04-061522	Total/NA	Soil	7471A	
570-100189-3	LCW-05-061722	Total/NA	Soil	7471A	
570-100189-4	LCW-07-061722	Total/NA	Soil	7471A	
570-100189-5	LCW-08/09-061722	Total/NA	Soil	7471A	
570-100189-6	LCW-10/11-061722	Total/NA	Soil	7471A	
570-100189-7	LCW-12/13-061722	Total/NA	Soil	7471A	
MB 570-243397/1-A	Method Blank	Total/NA	Solid	7471A	
LCS 570-243397/2-A	Lab Control Sample	Total/NA	Solid	7471A	
LCSD 570-243397/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	
570-100135-A-2-C MS	Matrix Spike	Total/NA	Solid	7471A	
570-100135-A-2-D MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	

Analysis Batch: 243719

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	7471A	243397
570-100189-2	LCW-03/04-061522	Total/NA	Soil	7471A	243397
570-100189-3	LCW-05-061722	Total/NA	Soil	7471A	243397
570-100189-4	LCW-07-061722	Total/NA	Soil	7471A	243397
570-100189-5	LCW-08/09-061722	Total/NA	Soil	7471A	243397
570-100189-6	LCW-10/11-061722	Total/NA	Soil	7471A	243397
570-100189-7	LCW-12/13-061722	Total/NA	Soil	7471A	243397
MB 570-243397/1-A	Method Blank	Total/NA	Solid	7471A	243397
LCS 570-243397/2-A	Lab Control Sample	Total/NA	Solid	7471A	243397
LCSD 570-243397/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	243397
570-100135-A-2-C MS	Matrix Spike	Total/NA	Solid	7471A	243397
570-100135-A-2-D MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	243397

Analysis Batch: 244962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 570-245183/1-A	Method Blank	Total/NA	Solid	6020	245183
LCS 570-245183/2-A ^20	Lab Control Sample	Total/NA	Solid	6020	245183
LCSD 570-245183/3-A ^20	Lab Control Sample Dup	Total/NA	Solid	6020	245183
570-101116-A-1-D MS ^20	Matrix Spike	Total/NA	Solid	6020	245183
570-101116-A-1-E MSD ^20	Matrix Spike Duplicate	Total/NA	Solid	6020	245183

Prep Batch: 245183

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	3050B	
570-100189-1 - DL	LCW-01/02-061522	Total/NA	Soil	3050B	
570-100189-2 - DL	LCW-03/04-061522	Total/NA	Soil	3050B	
570-100189-2	LCW-03/04-061522	Total/NA	Soil	3050B	
570-100189-3	LCW-05-061722	Total/NA	Soil	3050B	
570-100189-3 - DL	LCW-05-061722	Total/NA	Soil	3050B	
570-100189-4 - DL	LCW-07-061722	Total/NA	Soil	3050B	

Metals (Continued)

Prep Batch: 245183 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-4	LCW-07-061722	Total/NA	Soil	3050B	
570-100189-5 - DL	LCW-08/09-061722	Total/NA	Soil	3050B	
570-100189-5	LCW-08/09-061722	Total/NA	Soil	3050B	
570-100189-6 - DL	LCW-10/11-061722	Total/NA	Soil	3050B	
570-100189-6	LCW-10/11-061722	Total/NA	Soil	3050B	
570-100189-7	LCW-12/13-061722	Total/NA	Soil	3050B	
MB 570-245183/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 570-245183/2-A ^20	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 570-245183/3-A ^20	Lab Control Sample Dup	Total/NA	Solid	3050B	
570-101116-A-1-D MS ^20	Matrix Spike	Total/NA	Solid	3050B	
570-101116-A-1-E MSD ^20	Matrix Spike Duplicate	Total/NA	Solid	3050B	

Analysis Batch: 245537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	6020	245183
570-100189-1 - DL	LCW-01/02-061522	Total/NA	Soil	6020	245183
570-100189-2	LCW-03/04-061522	Total/NA	Soil	6020	245183
570-100189-2 - DL	LCW-03/04-061522	Total/NA	Soil	6020	245183
570-100189-3	LCW-05-061722	Total/NA	Soil	6020	245183
570-100189-3 - DL	LCW-05-061722	Total/NA	Soil	6020	245183
570-100189-4	LCW-07-061722	Total/NA	Soil	6020	245183
570-100189-4 - DL	LCW-07-061722	Total/NA	Soil	6020	245183
570-100189-5	LCW-08/09-061722	Total/NA	Soil	6020	245183
570-100189-5 - DL	LCW-08/09-061722	Total/NA	Soil	6020	245183
570-100189-6	LCW-10/11-061722	Total/NA	Soil	6020	245183
570-100189-6 - DL	LCW-10/11-061722	Total/NA	Soil	6020	245183
570-100189-7	LCW-12/13-061722	Total/NA	Soil	6020	245183

General Chemistry

Analysis Batch: 243634

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	Moisture - 2540	
570-100189-2	LCW-03/04-061522	Total/NA	Soil	Moisture - 2540	
570-100189-3	LCW-05-061722	Total/NA	Soil	Moisture - 2540	
570-100189-4	LCW-07-061722	Total/NA	Soil	Moisture - 2540	
570-100189-5	LCW-08/09-061722	Total/NA	Soil	Moisture - 2540	
570-100189-6	LCW-10/11-061722	Total/NA	Soil	Moisture - 2540	
570-100189-7	LCW-12/13-061722	Total/NA	Soil	Moisture - 2540	
570-100189-8	LCW-02-061522	Total/NA	Soil	Moisture - 2540	
570-100189-9	LCW-04-061522	Total/NA	Soil	Moisture - 2540	
570-100189-10	LCW-09-061722	Total/NA	Soil	Moisture - 2540	
570-100189-11	LCW-11-061622	Total/NA	Soil	Moisture - 2540	
570-100189-12	LCW-12-061622	Total/NA	Soil	Moisture - 2540	
570-100189-1 DU	LCW-01/02-061522	Total/NA	Soil	Moisture - 2540	
570-100189-11 DU	LCW-11-061622	Total/NA	Soil	Moisture - 2540	

Analysis Batch: 395749

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	9060A	
570-100189-2	LCW-03/04-061522	Total/NA	Soil	9060A	

General Chemistry (Continued)

Analysis Batch: 395749 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-3	LCW-05-061722	Total/NA	Soil	9060A	
570-100189-4	LCW-07-061722	Total/NA	Soil	9060A	
570-100189-5	LCW-08/09-061722	Total/NA	Soil	9060A	
570-100189-6	LCW-10/11-061722	Total/NA	Soil	9060A	
570-100189-7	LCW-12/13-061722	Total/NA	Soil	9060A	
MB 580-395749/5	Method Blank	Total/NA	Solid	9060A	
LCS 580-395749/6	Lab Control Sample	Total/NA	Solid	9060A	
LCSD 580-395749/7	Lab Control Sample Dup	Total/NA	Solid	9060A	
570-100189-1 MS	LCW-01/02-061522	Total/NA	Soil	9060A	
570-100189-1 MSD	LCW-01/02-061522	Total/NA	Soil	9060A	
570-100189-1 DU	LCW-01/02-061522	Total/NA	Soil	9060A	

Lab Chronicle

Client: Anchor QEA LLC

Job ID: 570-100189-1

Project/Site: Los Cerritos Wetlands Restoration Project

Client Sample ID: LCW-01/02-061522

Lab Sample ID: 570-100189-1

Date Collected: 06/15/22 13:00

Matrix: Soil

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.16 g	1 mL	244076	06/23/22 21:28	UM1W	ECL 4
Total/NA	Analysis	8270C SIM		1			246665	07/05/22 13:32	ULLI	ECL 4
	Instrument ID: GCMSEEE									
Total/NA	Prep	3550C			10.06 g	10 mL	243003	06/20/22 18:36	USUL	ECL 4
Total/NA	Analysis	8015B		1			243500	06/23/22 01:58	N5Y3	ECL 4
	Instrument ID: GC48									
Total/NA	Prep	3541			20.04 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8081A		1			245037	06/28/22 13:30	N5Y3	ECL 4
	Instrument ID: GC52A									
Total/NA	Prep	3541			20.04 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8082		1	1 mL	1.0 mL	244614	06/27/22 09:22	AJ2Q	ECL 4
	Instrument ID: GC81A									
Total/NA	Prep	3050B			2.02 g	100 mL	245183	06/28/22 14:30	UFLE	ECL 4
Total/NA	Analysis	6020		20			245537	06/29/22 19:26	UFLE	ECL 4
	Instrument ID: ICPMS05									
Total/NA	Prep	3050B	DL		2.02 g	100 mL	245183	06/28/22 14:30	UFLE	ECL 4
Total/NA	Analysis	6020	DL	100			245537	06/29/22 20:17	UFLE	ECL 4
	Instrument ID: ICPMS05									
Total/NA	Prep	7471A			0.48 g	50 mL	243397	06/21/22 21:10	SR3N	ECL 4
Total/NA	Analysis	7471A		1			243719	06/22/22 20:40	W1BQ	ECL 4
	Instrument ID: HG7									
Total/NA	Analysis	9060A		1			395749	06/30/22 17:53	FCG	FGS SEA
	Instrument ID: TAC105									
Total/NA	Analysis	Moisture - 2540		1			243634	06/22/22 15:57	B4QL	ECL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-03/04-061522

Lab Sample ID: 570-100189-2

Date Collected: 06/15/22 13:00

Matrix: Soil

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.05 g	1 mL	244076	06/23/22 21:28	UM1W	ECL 4
Total/NA	Analysis	8270C SIM		1			246665	07/05/22 13:53	ULLI	ECL 4
	Instrument ID: GCMSEEE									
Total/NA	Prep	3550C			10.06 g	10 mL	243003	06/20/22 18:36	USUL	ECL 4
Total/NA	Analysis	8015B		1			243500	06/23/22 02:19	N5Y3	ECL 4
	Instrument ID: GC48									
Total/NA	Prep	3541			20.01 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8081A		1			245037	06/28/22 13:45	N5Y3	ECL 4
	Instrument ID: GC52A									
Total/NA	Prep	3541			20.01 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8082		1	1 mL	1.0 mL	244614	06/27/22 09:41	AJ2Q	ECL 4
	Instrument ID: GC81A									

Client Sample ID: LCW-03/04-061522 Lab Sample ID: 570-100189-2

Date Collected: 06/15/22 13:00 **Matrix: Soil**
Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			2.01 g	100 mL	245183	06/28/22 14:30	UFLE	ECL 4
Total/NA	Analysis	6020		20			245537	06/29/22 19:30	UFLE	ECL 4
	Instrument ID: ICPMS05									
Total/NA	Prep	3050B	DL		2.01 g	100 mL	245183	06/28/22 14:30	UFLE	ECL 4
Total/NA	Analysis	6020	DL	100			245537	06/29/22 20:20	UFLE	ECL 4
	Instrument ID: ICPMS05									
Total/NA	Prep	7471A			0.50 g	50 mL	243397	06/21/22 21:10	SR3N	ECL 4
Total/NA	Analysis	7471A		1			243719	06/22/22 20:42	W1BQ	ECL 4
	Instrument ID: HG7									
Total/NA	Analysis	9060A		1			395749	06/30/22 17:58	FCG	FGS SEA
	Instrument ID: TAC105									
Total/NA	Analysis	Moisture - 2540		1			243634	06/22/22 15:57	B4QL	ECL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-05-061722 Lab Sample ID: 570-100189-3

Date Collected: 06/17/22 17:10 **Matrix: Soil**
Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.895 g	5 mL	242635	06/18/22 10:45	UQTR	ECL 4
Total/NA	Analysis	8260B		1	5 mL	5 mL	243789	06/23/22 14:39	U4JL	ECL 4
	Instrument ID: GCMSGGG									
Total/NA	Prep	3541	DL		20.12 g	1 mL	244076	06/23/22 21:28	UM1W	ECL 4
Total/NA	Analysis	8270C SIM	DL	5			246665	07/05/22 14:15	ULLI	ECL 4
	Instrument ID: GCMSEEE									
Total/NA	Prep	3550C			10.02 g	10 mL	243003	06/20/22 18:36	USUL	ECL 4
Total/NA	Analysis	8015B		1			243500	06/23/22 02:40	N5Y3	ECL 4
	Instrument ID: GC48									
Total/NA	Prep	3541			20.08 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8081A		1			245037	06/28/22 13:59	N5Y3	ECL 4
	Instrument ID: GC52A									
Total/NA	Prep	3541			20.08 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8082		1	1 mL	1.0 mL	244614	06/27/22 10:00	AJ2Q	ECL 4
	Instrument ID: GC81A									
Total/NA	Prep	3050B			1.97 g	100 mL	245183	06/28/22 14:30	UFLE	ECL 4
Total/NA	Analysis	6020		20			245537	06/29/22 19:33	UFLE	ECL 4
	Instrument ID: ICPMS05									
Total/NA	Prep	3050B	DL		1.97 g	100 mL	245183	06/28/22 14:30	UFLE	ECL 4
Total/NA	Analysis	6020	DL	100			245537	06/29/22 20:23	UFLE	ECL 4
	Instrument ID: ICPMS05									
Total/NA	Prep	7471A			0.48 g	50 mL	243397	06/21/22 21:10	SR3N	ECL 4
Total/NA	Analysis	7471A		1			243719	06/22/22 20:44	W1BQ	ECL 4
	Instrument ID: HG7									
Total/NA	Analysis	9060A		1			395749	06/30/22 18:02	FCG	FGS SEA
	Instrument ID: TAC105									

Client Sample ID: LCW-05-061722 Lab Sample ID: 570-100189-3

Date Collected: 06/17/22 17:10 **Matrix: Soil**

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1			243634	06/22/22 15:57	B4QL	ECL 4

Client Sample ID: LCW-07-061722 Lab Sample ID: 570-100189-4

Date Collected: 06/17/22 11:00 **Matrix: Soil**

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.01 g	1 mL	244076	06/23/22 21:28	UM1W	ECL 4
Total/NA	Analysis	8270C SIM		1			246665	07/05/22 14:36	ULLI	ECL 4
	Instrument ID: GCMSEEE									
Total/NA	Prep	3550C			10.04 g	10 mL	243003	06/20/22 18:36	USUL	ECL 4
Total/NA	Analysis	8015B		1			243500	06/23/22 03:01	N5Y3	ECL 4
	Instrument ID: GC48									
Total/NA	Prep	3541			20.10 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8081A		1			245037	06/28/22 14:14	N5Y3	ECL 4
	Instrument ID: GC52A									
Total/NA	Prep	3541			20.10 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8082		1	1 mL	1.0 mL	244614	06/27/22 10:19	AJ2Q	ECL 4
	Instrument ID: GC81A									
Total/NA	Prep	3050B			2.00 g	100 mL	245183	06/28/22 14:30	UFLE	ECL 4
Total/NA	Analysis	6020		20			245537	06/29/22 19:36	UFLE	ECL 4
	Instrument ID: ICPMS05									
Total/NA	Prep	3050B	DL		2.00 g	100 mL	245183	06/28/22 14:30	UFLE	ECL 4
Total/NA	Analysis	6020	DL	100			245537	06/29/22 20:27	UFLE	ECL 4
	Instrument ID: ICPMS05									
Total/NA	Prep	7471A			0.50 g	50 mL	243397	06/21/22 21:10	SR3N	ECL 4
Total/NA	Analysis	7471A		1			243719	06/22/22 20:50	W1BQ	ECL 4
	Instrument ID: HG7									
Total/NA	Analysis	9060A		1			395749	06/30/22 18:07	FCG	FGS SEA
	Instrument ID: TAC105									
Total/NA	Analysis	Moisture - 2540		1			243634	06/22/22 15:57	B4QL	ECL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-08/09-061722 Lab Sample ID: 570-100189-5

Date Collected: 06/17/22 17:15 **Matrix: Soil**

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.03 g	1 mL	244076	06/23/22 21:28	UM1W	ECL 4
Total/NA	Analysis	8270C SIM		1			246665	07/05/22 14:58	ULLI	ECL 4
	Instrument ID: GCMSEEE									
Total/NA	Prep	3550C			10.07 g	10 mL	243003	06/20/22 18:36	USUL	ECL 4
Total/NA	Analysis	8015B		1			243500	06/23/22 03:22	N5Y3	ECL 4
	Instrument ID: GC48									

Lab Chronicle

Client: Anchor QEA LLC

Job ID: 570-100189-1

Project/Site: Los Cerritos Wetlands Restoration Project

Client Sample ID: LCW-08/09-061722

Lab Sample ID: 570-100189-5

Date Collected: 06/17/22 17:15

Matrix: Soil

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.04 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8081A		1			245037	06/28/22 14:29	N5Y3	ECL 4
	Instrument ID: GC52A									
Total/NA	Prep	3541			20.04 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8082		1	1 mL	1.0 mL	244614	06/27/22 10:38	AJ2Q	ECL 4
	Instrument ID: GC81A									
Total/NA	Prep	3050B			2.02 g	100 mL	245183	06/28/22 14:30	UFLE	ECL 4
Total/NA	Analysis	6020		20			245537	06/29/22 19:39	UFLE	ECL 4
	Instrument ID: ICPMS05									
Total/NA	Prep	3050B	DL		2.02 g	100 mL	245183	06/28/22 14:30	UFLE	ECL 4
Total/NA	Analysis	6020	DL	100			245537	06/29/22 20:30	UFLE	ECL 4
	Instrument ID: ICPMS05									
Total/NA	Prep	7471A			0.50 g	50 mL	243397	06/21/22 21:10	SR3N	ECL 4
Total/NA	Analysis	7471A		1			243719	06/22/22 20:52	W1BQ	ECL 4
	Instrument ID: HG7									
Total/NA	Analysis	9060A		1			395749	06/30/22 18:11	FCG	FGS SEA
	Instrument ID: TAC105									
Total/NA	Analysis	Moisture - 2540		1			243634	06/22/22 15:57	B4QL	ECL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-10/11-061722

Lab Sample ID: 570-100189-6

Date Collected: 06/17/22 10:00

Matrix: Soil

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.06 g	1 mL	244076	06/23/22 21:28	UM1W	ECL 4
Total/NA	Analysis	8270C SIM		1			246665	07/05/22 15:19	ULLI	ECL 4
	Instrument ID: GCMSEEE									
Total/NA	Prep	3550C			10.08 g	10 mL	243003	06/20/22 18:36	USUL	ECL 4
Total/NA	Analysis	8015B		1			243500	06/23/22 04:25	N5Y3	ECL 4
	Instrument ID: GC48									
Total/NA	Prep	3541			20.05 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8081A		1			245037	06/28/22 14:44	N5Y3	ECL 4
	Instrument ID: GC52A									
Total/NA	Prep	3541			20.05 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8082		1	1 mL	1.0 mL	244614	06/27/22 10:57	AJ2Q	ECL 4
	Instrument ID: GC81A									
Total/NA	Prep	3050B			2.00 g	100 mL	245183	06/28/22 14:30	UFLE	ECL 4
Total/NA	Analysis	6020		20			245537	06/29/22 19:42	UFLE	ECL 4
	Instrument ID: ICPMS05									
Total/NA	Prep	3050B	DL		2.00 g	100 mL	245183	06/28/22 14:30	UFLE	ECL 4
Total/NA	Analysis	6020	DL	100			245537	06/29/22 20:52	UFLE	ECL 4
	Instrument ID: ICPMS05									

Client Sample ID: LCW-10/11-061722

Lab Sample ID: 570-100189-6

Date Collected: 06/17/22 10:00

Matrix: Soil

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			0.49 g	50 mL	243397	06/21/22 21:10	SR3N	ECL 4
Total/NA	Analysis	7471A		1			243719	06/22/22 20:53	W1BQ	ECL 4
	Instrument ID: HG7									
Total/NA	Analysis	9060A		1			395749	06/30/22 18:16	FCG	FGS SEA
	Instrument ID: TAC105									
Total/NA	Analysis	Moisture - 2540		1			243634	06/22/22 15:57	B4QL	ECL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-12/13-061722

Lab Sample ID: 570-100189-7

Date Collected: 06/17/22 17:15

Matrix: Soil

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.01 g	1 mL	244076	06/23/22 21:28	UM1W	ECL 4
Total/NA	Analysis	8270C SIM		5			247138	07/06/22 16:37	ULLI	ECL 4
	Instrument ID: GCMSEEE									
Total/NA	Prep	3550C			10.06 g	10 mL	243003	06/20/22 18:36	USUL	ECL 4
Total/NA	Analysis	8015B		1			243500	06/23/22 04:46	N5Y3	ECL 4
	Instrument ID: GC48									
Total/NA	Prep	3541			20.06 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8081A		1			245037	06/28/22 14:59	N5Y3	ECL 4
	Instrument ID: GC52A									
Total/NA	Prep	3541			20.06 g	2 mL	244075	06/23/22 21:11	UM1W	ECL 4
Total/NA	Analysis	8082		1	1 mL	1.0 mL	244614	06/27/22 11:16	AJ2Q	ECL 4
	Instrument ID: GC81A									
Total/NA	Prep	3050B			1.99 g	100 mL	245183	06/28/22 14:30	UFLE	ECL 4
Total/NA	Analysis	6020		20			245537	06/29/22 19:45	UFLE	ECL 4
	Instrument ID: ICPMS05									
Total/NA	Prep	7471A			0.50 g	50 mL	243397	06/21/22 21:10	SR3N	ECL 4
Total/NA	Analysis	7471A		1			243719	06/22/22 20:55	W1BQ	ECL 4
	Instrument ID: HG7									
Total/NA	Analysis	9060A		1			395749	06/30/22 18:20	FCG	FGS SEA
	Instrument ID: TAC105									
Total/NA	Analysis	Moisture - 2540		1			243634	06/22/22 15:57	B4QL	ECL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-02-061522

Lab Sample ID: 570-100189-8

Date Collected: 06/15/22 13:00

Matrix: Soil

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.159 g	5 mL	242635	06/18/22 10:45	UQTR	ECL 4
Total/NA	Analysis	8260B		1	5 mL	5 mL	243789	06/23/22 15:03	U4JL	ECL 4
	Instrument ID: GCMSGGG									

Client Sample ID: LCW-02-061522 — Lab Sample ID: 570-100189-8

Date Collected: 06/15/22 13:00 — **Matrix: Soil**

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1			243634	06/22/22 15:57	B4QL	ECL 4

Client Sample ID: LCW-04-061522 — Lab Sample ID: 570-100189-9

Date Collected: 06/15/22 13:00 — **Matrix: Soil**

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.249 g	5 mL	242635	06/18/22 10:45	UQTR	ECL 4
Total/NA	Analysis	8260B		1	5 mL	5 mL	243789	06/23/22 15:27	U4JL	ECL 4
	Instrument ID: GCMSGGG									
Total/NA	Analysis	Moisture - 2540		1			243634	06/22/22 15:57	B4QL	ECL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-09-061722 — Lab Sample ID: 570-100189-10

Date Collected: 06/17/22 15:20 — **Matrix: Soil**

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.505 g	5 mL	242635	06/18/22 10:45	UQTR	ECL 4
Total/NA	Analysis	8260B		1	5 mL	5 mL	243789	06/23/22 15:51	U4JL	ECL 4
	Instrument ID: GCMSGGG									
Total/NA	Analysis	Moisture - 2540		1			243634	06/22/22 15:57	B4QL	ECL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-11-061622 — Lab Sample ID: 570-100189-11

Date Collected: 06/16/22 12:45 — **Matrix: Soil**

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.145 g	5 mL	242635	06/18/22 10:45	UQTR	ECL 4
Total/NA	Analysis	8260B		1	5 mL	5 mL	243789	06/23/22 16:15	U4JL	ECL 4
	Instrument ID: GCMSGGG									
Total/NA	Analysis	Moisture - 2540		1			243634	06/22/22 15:57	B4QL	ECL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-12-061622 — Lab Sample ID: 570-100189-12

Date Collected: 06/16/22 11:45 — **Matrix: Soil**

Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.14 g	5 mL	242628	06/18/22 10:42	UQTR	ECL 4
Total/NA	Analysis	8260B		50	5 mL	5 mL	244174	06/24/22 11:51	AH8S	ECL 4
	Instrument ID: GCMSGGG									
Total/NA	Analysis	Moisture - 2540		1			243634	06/22/22 15:57	B4QL	ECL 4
	Instrument ID: BAL62									

Laboratory References:

ECL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

FGS SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Anchor QEA LLC
Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Laboratory: Eurofins Calscience

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State	2944	09-30-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture - 2540		Soil	Percent Solids

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4175	01-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8270C SIM	3541	Soil	1-Methylphenanthrene
8270C SIM	3541	Soil	2,6-Dimethylnaphthalene

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State	2954	07-07-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9060A		Soil	Total Organic Carbon - Quad

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4167	07-07-22

Method Summary

Client: Anchor QEA LLC | Job ID: 570-100189-1
Project/Site: Los Cerritos Wetlands Restoration Project

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	ECL 4
8270C SIM	Semivolatile Organic Compound (GC/MS SIM LL)	SW846	ECL 4
8015B	Diesel Range Organics (DRO) (GC)	SW846	ECL 4
8081A	Organochlorine Pesticides (GC)	SW846	ECL 4
8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	ECL 4
6020	Metals (ICP/MS)	SW846	ECL 4
7471A	Mercury (CVAA)	SW846	ECL 4
9060A	Organic Carbon, Total (TOC)	SW846	FGS SEA
Moisture - 2540	Percent Moisture	SM	ECL 4
3050B	Preparation, Metals	SW846	ECL 4
3541	Automated Soxhlet Extraction	SW846	ECL 4
3550C	Ultrasonic Extraction	SW846	ECL 4
5035	Closed System Purge and Trap	SW846	ECL 4
7471A	Preparation, Mercury	SW846	ECL 4

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ECL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

FGS SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Sample Summary

Client: Anchor QEA LLC | Job ID: 570-100189-1

Project/Site: Los Cerritos Wetlands Restoration Project

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-100189-1	LCW-01/02-061522	Soil	06/15/22 13:00	06/17/22 19:20
570-100189-2	LCW-03/04-061522	Soil	06/15/22 13:00	06/17/22 19:20
570-100189-3	LCW-05-061722	Soil	06/17/22 17:10	06/17/22 19:20
570-100189-4	LCW-07-061722	Soil	06/17/22 11:00	06/17/22 19:20
570-100189-5	LCW-08/09-061722	Soil	06/17/22 17:15	06/17/22 19:20
570-100189-6	LCW-10/11-061722	Soil	06/17/22 10:00	06/17/22 19:20
570-100189-7	LCW-12/13-061722	Soil	06/17/22 17:15	06/17/22 19:20
570-100189-8	LCW-02-061522	Soil	06/15/22 13:00	06/17/22 19:20
570-100189-9	LCW-04-061522	Soil	06/15/22 13:00	06/17/22 19:20
570-100189-10	LCW-09-061722	Soil	06/17/22 15:20	06/17/22 19:20
570-100189-11	LCW-11-061622	Soil	06/16/22 12:45	06/17/22 19:20
570-100189-12	LCW-12-061622	Soil	06/16/22 11:45	06/17/22 19:20

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CHAIN OF CUSTODY RECORD

100189

WO # / LAB USE ONLY

DATE: 6/17/22
PAGE: 1 OF 2

LABORATORY CLIENT: Anchor QEA
ADDRESS: 9700 Research Drive
CITY: Irvine STATE: CA ZIP: 92618
TEL: 949.347.2780 E-MAIL: cosuch@anchorqea.com

CLIENT PROJECT NAME / NUMBER: Los Cerritos Wetlands Restoration Project
P.O. NO.: 210090-01.01
PROJECT CONTACT: Chris Osuch
QUOTE #:
SAMPLER(S): (PRINT) M. Brown

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS x STANDARD

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS:
Report down to the MDL

REQUESTED ANALYSES

Please check box or fill in blank as needed.

570-100189 Chain of Custody

LAB USE ONLY	SAMPLE ID	DATE	TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	Total Solids (SM 2540 B)	Salinity (SM 2520 B)	TOC (USEPA 9060A)	TPH C6-C44 (USEPA 8015B)	Title 22 Metals (USEPA 6020)	Mercury (USEPA 7471)	PAHs (USEPA 8270C SIM)	PCB Aroclors (USEPA 8082)	Pesticides (USEPA 8081A)	VOCs (USEPA 8620B)							
	LCW-01/02-0615 22	6/15/22	1300	Soil	1				X	X	X	X	X	X	X	X	X	~~X~~	MB						
	LCW-03/04-0615 22	6/15/22	1300	Soil	1				X	X	X	X	X	X	X	X	X	~~X~~	MB						
	LCW-05-0617 22	6/17/22	17:10	Soil	6				X	X	X	X	X	X	X	X	X	X							
	LCW-06/07-0617 22	6/17/22	1100	Soil	1				X	X	X	X	X	X	X	X	X	~~X~~	MB						
	LCW-08/09-0617 22	6/17/22	17:15	Soil	1				X	X	X	X	X	X	X	X	X	~~X~~	MB						
	LCW-10/11-0617 22	6/17/22	10:00	Soil	1				X	X	X	X	X	X	X	X	X	~~X~~	MB						
	LCW-12/13-0617 22	6/17/22	17:15	Soil	1				X	X	X	X	X	X	X	X	X	~~X~~	MB						
	~~LCW-12/13~~																								
	~~LCW-08/09-061522~~	~~6/15/22~~	~~1200~~	~~Soil~~	~~1~~													X							

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Chris Osuch	EC	6-17-2022	19:20
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

4.0/5.7 IR 96

06/02/14 Revision

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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CHAIN OF CUSTODY RECORD

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WO # / LAB USE ONLY

DATE: 6/17/22

PAGE: 2 OF 2

LABORATORY CLIENT: Anchor QEA	CLIENT PROJECT NAME / NUMBER: Los Cerritos Wetlands Restoration Project
ADDRESS: 9700 Research Drive	P.O. NO.: 210090-01.01
CITY: Irvine STATE: CA ZIP: 92618	PROJECT CONTACT: Chris Osuch
TEL: 949.347.2780	QUOTE #:
E-MAIL: cosuch@anchorqea.com	SAMPLER(S): (PRINT) M. Brown

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"): ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS x STANDARD

☐ COELT EDF | GLOBAL ID: | LOG CODE:

SPECIAL INSTRUCTIONS:

Report down to the MDL

REQUESTED ANALYSES

Please check box or fill in blank as needed.

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	Total Solids (SM 2540 B)	Salinity (SM 2520 B)	TOC (USEPA 9060A)	TPH C6-C44 (USEPA 8015B)	Title 22 Metals (USEPA 6020)	Mercury (USEPA 7471)	PAHs (USEPA 8270C SIM)	PCB Aroclors (USEPA 8082)	Pesticides (USEPA 8081A)	VOCs (USEPA 8620B)								
	LCW-~~01~~/02-06_15_22	6/15/22	1300	Soil	~~8~~ 4				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X								
	LCW-~~03~~/04-06_15_22	6/15/22	1300	Soil	4				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X								
	~~LCW-05-06___22~~	~~6/___/22~~		~~Soil~~					~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~		MB						
	~~LCW-~~06~~/07-06___22~~	~~6/___/22~~		~~Soil~~					~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~								
	LCW-~~08~~/09-06_17_22	6/17/22	1520	Soil	~~X~~ ~~8~~ 6				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X								
	LCW-~~10~~/11-06_16_22	6/16/22	1245	Soil	~~8~~ 4				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X								
	LCW-12/~~13~~-06_16_22	6/16/22	1145	Soil	4				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X								

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Chris Osuch	EC	6-17-2022	19:20
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

06/02/14 Revision

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Phone: 714-895-5494

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Thompson, Lori	Carrier Tracking No(s):	COC No: 570-174910.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Lori.Thompson@et.eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: Eurofins Environment Testing Northwest,		Accreditations Required (See note): NELAP - Oregon; State - California		Job #: 570-100189-1
Address: 5755 8th Street East, ,	Due Date Requested: 6/30/2022			
City: Tacoma	TAT Requested (days):			
State, Zip: WA, 98424				
Phone: 253-922-2310(Tel)	PO #:			
Email:	WO #:			
Project Name: Los Cerritos Wetlands Restoration Project	Project #: 57011148			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9060A_DW/ Soil Quadruplicate Analysis TOC	Total Number of containers	Special Instructions/Note:
				Preservation Code:					
LCW-01/02-061522 (570-100189-1)	6/15/22	13:00 Pacific		Solid			X	1	
LCW-03/04-061522 (570-100189-2)	6/15/22	13:00 Pacific		Solid			X	1	
LCW-05-061722 (570-100189-3)	6/17/22	17:10 Pacific		Solid			X	1	
LCW-07-061722 (570-100189-4)	6/17/22	11:00 Pacific		Solid			X	1	
LCW-08/09-061722 (570-100189-5)	6/17/22	17:15 Pacific		Solid			X	1	
LCW-10/11-061722 (570-100189-6)	6/17/22	10:00 Pacific		Solid			X	1	
LCW-12/13-061722 (570-100189-7)	6/17/22	17:15 Pacific		Solid			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Calscience.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ______ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Olga Ornelas	6/22/22 1700	EC	Khoa Ly	6/23/22 0930	Letsen

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: A3 2.7/2.6

Fed PO SmB Bubl.ret

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Anchor QEA LLC

Job Number: 570-100189-1

Login Number: 100189
List Number: 1
Creator: Lagunas, Jorge L

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Anchor QEA LLC

Job Number: 570-100189-1

Login Number: 100189
List Number: 2
Creator: Vallelunga, Diana L

List Source: Eurofins Seattle
List Creation: 06/23/22 04:55 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Tel: (714)895-5494

Laboratory Job ID: 570-100189-2
Client Project/Site: Los Cerritos Wetlands Restoration Project

For:
Anchor QEA LLC
9700 Research Drive
Irvine, California 92618

Attn: Chris Osuch

Authorized for release by:
7/1/2022 1:34:03 PM

Lori Thompson, Project Manager I
(657)212-3035
Lori.Thompson@et.eurofinsus.com

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Job ID: 570-100189-2

Laboratory: Eurofins Calscience

Narrative

Job Narrative
570-100189-2

Comments
No additional comments.

Receipt
The samples were received on 6/17/2022 7:20 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 5.7º C.

Lab Admin
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work
Method Salinity: This method was subcontracted to McCampbell Analytical, Inc.. The subcontract laboratory certification is different from that of the facility issuing the final report.

Detection Summary

Client: Anchor QEA LLC

Job ID: 570-100189-2

Project/Site: Los Cerritos Wetlands Restoration Project

Client Sample ID: LCW-01/02-061522 — Lab Sample ID: 570-100189-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Salinity	3.21		1.00		g/kg	1		Salinity in Sediment SM2510BM	Total/NA
Temperature	22		1.00		degrees C	1		Salinity in Sediment SM2510BM	Total/NA

Client Sample ID: LCW-03/04-061522 — Lab Sample ID: 570-100189-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Salinity	2.78		1.00		g/kg	1		Salinity in Sediment SM2510BM	Total/NA
Temperature	20.8		1.00		degrees C	1		Salinity in Sediment SM2510BM	Total/NA

Client Sample ID: LCW-05-061722 — Lab Sample ID: 570-100189-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Temperature	20.6		1.00		degrees C	1		Salinity in Sediment SM2510BM	Total/NA

Client Sample ID: LCW-07-061722 — Lab Sample ID: 570-100189-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Temperature	21.9		1.00		degrees C	1		Salinity in Sediment SM2510BM	Total/NA

Client Sample ID: LCW-08/09-061722 — Lab Sample ID: 570-100189-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Salinity	5.75		1.00		g/kg	1		Salinity in Sediment SM2510BM	Total/NA
Temperature	20.8		1.00		degrees C	1		Salinity in Sediment SM2510BM	Total/NA

Client Sample ID: LCW-10/11-061722 — Lab Sample ID: 570-100189-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Salinity	2.02		1.00		g/kg	1		Salinity in Sediment SM2510BM	Total/NA
Temperature	21.8		1.00		degrees C	1		Salinity in Sediment SM2510BM	Total/NA

Client Sample ID: LCW-12/13-061722 — Lab Sample ID: 570-100189-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Salinity	3.39		1.00		g/kg	1		Salinity in Sediment SM2510BM	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Anchor QEA LLC | Job ID: 570-100189-2

Project/Site: Los Cerritos Wetlands Restoration Project

Client Sample ID: LCW-12/13-061722 (Continued) | Lab Sample ID: 570-100189-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Temperature	22.7		1.00		degrees C	1		Salinity in Sediment SM2510BM	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Anchor QEA LLC | Job ID: 570-100189-2
Project/Site: Los Cerritos Wetlands Restoration Project

Method: Salinity in Sediment SM2510BM - General Subcontract Method

Client Sample ID: LCW-01/02-061522 | **Lab Sample ID: 570-100189-1**
Date Collected: 06/15/22 13:00 | **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Salinity	**3.21**		1.00		g/kg		06/29/22 13:30	06/29/22 13:30	1
Temperature	**22**		1.00		degrees C		06/29/22 13:30	06/29/22 13:30	1

Client Sample ID: LCW-03/04-061522 | **Lab Sample ID: 570-100189-2**
Date Collected: 06/15/22 13:00 | **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Salinity	**2.78**		1.00		g/kg		06/29/22 13:35	06/29/22 13:35	1
Temperature	**20.8**		1.00		degrees C		06/29/22 13:35	06/29/22 13:35	1

Client Sample ID: LCW-05-061722 | **Lab Sample ID: 570-100189-3**
Date Collected: 06/17/22 17:10 | **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Salinity	ND		1.00		g/kg		06/29/22 13:45	06/29/22 13:45	1
Temperature	**20.6**		1.00		degrees C		06/29/22 13:45	06/29/22 13:45	1

Client Sample ID: LCW-07-061722 | **Lab Sample ID: 570-100189-4**
Date Collected: 06/17/22 11:00 | **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Salinity	ND		1.00		g/kg		06/29/22 13:50	06/29/22 13:50	1
Temperature	**21.9**		1.00		degrees C		06/29/22 13:50	06/29/22 13:50	1

Client Sample ID: LCW-08/09-061722 | **Lab Sample ID: 570-100189-5**
Date Collected: 06/17/22 17:15 | **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Salinity	**5.75**		1.00		g/kg		06/29/22 13:40	06/29/22 13:40	1
Temperature	**20.8**		1.00		degrees C		06/29/22 13:40	06/29/22 13:40	1

Client Sample ID: LCW-10/11-061722 | **Lab Sample ID: 570-100189-6**
Date Collected: 06/17/22 10:00 | **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Salinity	**2.02**		1.00		g/kg		06/29/22 13:55	06/29/22 13:55	1
Temperature	**21.8**		1.00		degrees C		06/29/22 13:55	06/29/22 13:55	1

Client Sample ID: LCW-12/13-061722 | **Lab Sample ID: 570-100189-7**
Date Collected: 06/17/22 17:15 | **Matrix: Soil**
Date Received: 06/17/22 19:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Salinity	**3.39**		1.00		g/kg		06/29/22 14:00	06/29/22 14:00	1
Temperature	**22.7**		1.00		degrees C		06/29/22 14:00	06/29/22 14:00	1

Client: Anchor QEA LLC
Project/Site: Los Cerritos Wetlands Restoration Project

Job ID: 570-100189-2

Method: Salinity in Sediment SM2510BM - General Subcontract Method

Lab Sample ID: 2206H14-001ADUP
Matrix: Soil
Analysis Batch: 248598

Client Sample ID: LCW-01/02-061522 (570-100189-1) DU
Prep Type: Total/NA
Prep Batch: 248598_P

Analyte	Sample Result	Sample Qualifier	DUP Result	DUP Qualifier	Unit	D	RPD	RPD Limit
Salinity	3.21		3.22		g/kg		0.03	5
Temperature	22		22.1		degrees C		NA	NA

1 2 3 4 5 6 7 8 9 10 11 12 13

Subcontract

Analysis Batch: 248598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	Salinity in Sediment SM2510BM	248598_P
570-100189-2	LCW-03/04-061522	Total/NA	Soil	Salinity in Sediment SM2510BM	248598_P
570-100189-3	LCW-05-061722	Total/NA	Soil	Salinity in Sediment SM2510BM	248598_P
570-100189-4	LCW-07-061722	Total/NA	Soil	Salinity in Sediment SM2510BM	248598_P
570-100189-5	LCW-08/09-061722	Total/NA	Soil	Salinity in Sediment SM2510BM	248598_P
570-100189-6	LCW-10/11-061722	Total/NA	Soil	Salinity in Sediment SM2510BM	248598_P
570-100189-7	LCW-12/13-061722	Total/NA	Soil	Salinity in Sediment SM2510BM	248598_P
2206H14-001ADUP	LCW-01/02-061522 (570-100189-1) DU	Total/NA	Soil	Salinity in Sediment SM2510BM	248598_P

Prep Batch: 248598_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-100189-1	LCW-01/02-061522	Total/NA	Soil	SM2510B	
570-100189-2	LCW-03/04-061522	Total/NA	Soil	SM2510B	
570-100189-3	LCW-05-061722	Total/NA	Soil	SM2510B	
570-100189-4	LCW-07-061722	Total/NA	Soil	SM2510B	
570-100189-5	LCW-08/09-061722	Total/NA	Soil	SM2510B	
570-100189-6	LCW-10/11-061722	Total/NA	Soil	SM2510B	
570-100189-7	LCW-12/13-061722	Total/NA	Soil	SM2510B	
2206H14-001ADUP	LCW-01/02-061522 (570-100189-1) DU	Total/NA	Soil	SM2510B	

Lab Chronicle

Client: Anchor QEA LLC
Job ID: 570-100189-2
Project/Site: Los Cerritos Wetlands Restoration Project

Client Sample ID: LCW-01/02-061522
Lab Sample ID: 570-100189-1
Date Collected: 06/15/22 13:00
Matrix: Soil
Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SM2510B		1			248598_P	06/29/22 13:30		McCampbel
Total/NA	Analysis	Salinity in Sediment SM2510BM		1			248598	06/29/22 13:30	LUMA	McCampb
	Instrument ID:									

Client Sample ID: LCW-03/04-061522
Lab Sample ID: 570-100189-2
Date Collected: 06/15/22 13:00
Matrix: Soil
Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SM2510B		1			248598_P	06/29/22 13:35		McCampbel
Total/NA	Analysis	Salinity in Sediment SM2510BM		1			248598	06/29/22 13:35	LUMA	McCampb
	Instrument ID:									

Client Sample ID: LCW-05-061722
Lab Sample ID: 570-100189-3
Date Collected: 06/17/22 17:10
Matrix: Soil
Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SM2510B		1			248598_P	06/29/22 13:45		McCampbel
Total/NA	Analysis	Salinity in Sediment SM2510BM		1			248598	06/29/22 13:45	LUMA	McCampb
	Instrument ID:									

Client Sample ID: LCW-07-061722
Lab Sample ID: 570-100189-4
Date Collected: 06/17/22 11:00
Matrix: Soil
Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SM2510B		1			248598_P	06/29/22 13:50		McCampbel
Total/NA	Analysis	Salinity in Sediment SM2510BM		1			248598	06/29/22 13:50	LUMA	McCampb
	Instrument ID:									

Client Sample ID: LCW-08/09-061722
Lab Sample ID: 570-100189-5
Date Collected: 06/17/22 17:15
Matrix: Soil
Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SM2510B		1			248598_P	06/29/22 13:40		McCampbel
Total/NA	Analysis	Salinity in Sediment SM2510BM		1			248598	06/29/22 13:40	LUMA	McCampb
	Instrument ID:									

Lab Chronicle

Client: Anchor QEA LLC Job ID: 570-100189-2
Project/Site: Los Cerritos Wetlands Restoration Project

Client Sample ID: LCW-10/11-061722 Lab Sample ID: 570-100189-6

Date Collected: 06/17/22 10:00 **Matrix: Soil**
Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SM2510B		1			248598_P	06/29/22 13:55		McCampbel
Total/NA	Analysis	Salinity in Sediment SM2510BM		1			248598	06/29/22 13:55	LUMA	McCampb
	Instrument ID:									

Client Sample ID: LCW-12/13-061722 Lab Sample ID: 570-100189-7

Date Collected: 06/17/22 17:15 **Matrix: Soil**
Date Received: 06/17/22 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SM2510B		1			248598_P	06/29/22 14:00		McCampbel
Total/NA	Analysis	Salinity in Sediment SM2510BM		1			248598	06/29/22 14:00	LUMA	McCampb
	Instrument ID:									

Laboratory References:

McCampbell = McCampbell Analytical, Inc., 1534 Willow Pass Road, Pittsburg, CA 94565, TEL (925)252-9262

Method Summary

Client: Anchor QEA LLC
Job ID: 570-100189-2
Project/Site: Los Cerritos Wetlands Restoration Project

Method	Method Description	Protocol	Laboratory
Subcontract	Salinity	None	McCampbell

Protocol References:

None = None

Laboratory References:

McCampbell = McCampbell Analytical, Inc., 1534 Willow Pass Road, Pittsburg, CA 94565, TEL (925)252-9262

Sample Summary

Client: Anchor QEA LLC
Job ID: 570-100189-2
Project/Site: Los Cerritos Wetlands Restoration Project

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-100189-1	LCW-01/02-061522	Soil	06/15/22 13:00	06/17/22 19:20
570-100189-2	LCW-03/04-061522	Soil	06/15/22 13:00	06/17/22 19:20
570-100189-3	LCW-05-061722	Soil	06/17/22 17:10	06/17/22 19:20
570-100189-4	LCW-07-061722	Soil	06/17/22 11:00	06/17/22 19:20
570-100189-5	LCW-08/09-061722	Soil	06/17/22 17:15	06/17/22 19:20
570-100189-6	LCW-10/11-061722	Soil	06/17/22 10:00	06/17/22 19:20
570-100189-7	LCW-12/13-061722	Soil	06/17/22 17:15	06/17/22 19:20

eurofins Calscience

CHAIN OF CUSTODY RECORD

100189

7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494
For courier service / sample drop off information, contact us26_sales@eurofinsus.com or call us.

WO # / LAB USE ONLY

DATE: 6/17/22

PAGE: 1 OF 2

LABORATORY CLIENT: Anchor QEA	CLIENT PROJECT NAME / NUMBER: Los Cerritos Wetlands Restoration Project
ADDRESS: 9700 Research Drive	P.O. NO.: 210090-01.01
CITY: Irvine STATE: CA ZIP: 92618	PROJECT CONTACT: Chris Osuch
TEL: 949.347.2780	QUOTE #:
E-MAIL: cosuch@anchorqea.com	SAMPLER(S): (PRINT) M. Brown

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS x STANDARD

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS:
Report down to the MDL

REQUESTED ANALYSES

Please check box or fill in blank as needed.

570-100189 Chain of Custody

LAB USE ONLY	SAMPLE ID	DATE	TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	Total Solids (SM 2540 B)	Salinity (SM 2520 B)	TOC (USEPA 9060A)	TPH C6-C44 (USEPA 8015B)	Title 22 Metals (USEPA 6020)	Mercury (USEPA 7471)	PAHs (USEPA 8270C SIM)	PCB Aroclors (USEPA 8082)	Pesticides (USEPA 8081A)	VOCs (USEPA 8620B)	
	LCW-01/02-0615 22	6/15/22	1300	Soil	1				X	X	X	X	X	X	X	X	X	~~X~~	MB
	LCW-03/04-0615 22	6/15/22	1300	Soil	1				X	X	X	X	X	X	X	X	X	~~X~~	MB
	LCW-05-0617 22	6/17/22	17:10	Soil	6				X	X	X	X	X	X	X	X	X	X	
	LCW-[illegible]/07-0617 22	6/17/22	1100	Soil	1				X	X	X	X	X	X	X	X	X	~~X~~	MB
	LCW-08/09-0617 22	6/17/22	17:15	Soil	1				X	X	X	X	X	X	X	X	X	~~X~~	MB
	LCW-10/11-0617 22	6/17/22	10:00	Soil	1				X	X	X	X	X	X	X	X	X	~~X~~	MB
	LCW-12/13-0617 22	6/17/22	17:15	Soil	1				X	X	X	X	X	X	X	X	X	~~X~~	MB
	~~LCW-12/13~~																		
	~~LCW-08/09-061522~~	~~6/15/22~~	~~1200~~	~~Soil~~	~~1~~													X	

Relinquished by: (Signature) Chris Osuch	Received by: (Signature/Affiliation) [signature] EC	Date: 6-17-2022	Time: 19:20
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

4.0/5.7 IR 96

06/02/14 Revision

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CHAIN OF CUSTODY RECORD

7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494
For courier service / sample drop off information, contact us26_sales@eurofinsus.com or call us.

WO # / LAB USE ONLY:

DATE: 6/17/22
PAGE: 2 OF 2

LABORATORY CLIENT: Anchor QEA
ADDRESS: 9700 Research Drive
CITY: Irvine STATE: CA ZIP: 92618
TEL: 949.347.2780 E-MAIL: cosuch@anchorqea.com

CLIENT PROJECT NAME / NUMBER: Los Cerritos Wetlands Restoration Project
P.O. NO.: 210090-01.01
PROJECT CONTACT: Chris Osuch
QUOTE #:
SAMPLER(S): (PRINT) M. Brown

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"): ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS x STANDARD

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS:
Report down to the MDL

REQUESTED ANALYSES

Please check box or fill in blank as needed.

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	Total Solids (SM 2540 B)	Salinity (SM 2520 B)	TOC (USEPA 9060A)	TPH C6-C44 (USEPA 8015B)	Title 22 Metals (USEPA 6020)	Mercury (USEPA 7471)	PAHs (USEPA 8270C SIM)	PCB Aroclors (USEPA 8082)	Pesticides (USEPA 8081A)	VOCs (USEPA 8620B)						
	LCW-01/02-06 15 22	6/15/22	1300	Soil	~~3~~ 4				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X						
	LCW-03/04-06 15 22	6/15/22	1300	Soil	4				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X						
	~~LCW-05-06 __ 22~~	~~6/__/22~~		~~Soil~~					~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	MB					
	~~LCW-06/07-06 __ 22~~	~~6/__/22~~		~~Soil~~					~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~						
	LCW-08/09-06 17 22	6/17/22	1520	Soil	~~4~~ ~~3~~ 6				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X						
	LCW-10/11-06 16 22	6/16/22	1245	Soil	~~3~~ 4				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X						
	LCW-12/13-06 16 22	6/16/22	1145	Soil	4				~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X						

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Chris Osuch	EC	6-17-2022	19:20

06/02/14 Revision

Login Sample Receipt Checklist

Client: Anchor QEA LLC

Job Number: 570-100189-2

Login Number: 100189
List Number: 1
Creator: Lagunas, Jorge L

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Environment Testing America

ANALYTICAL REPORT

Eurofins Calscience
2841 Dow Avenue, Suite 100
Tustin, CA 92780
Tel: (714)895-5494

Laboratory Job ID: 570-107575-1
Client Project/Site: Los Cerritos Wetlands Restoration
Revision: 1

For:
Anchor QEA LLC
9700 Research Drive
Irvine, California 92618

Attn: Chris Osuch

Kathleen M. Burney

Authorized for release by:
9/28/2022 12:54:25 PM
Kathleen Burney, Project Mgmt. Assistant
Kathleen.Burney@et.eurofinsus.com

Designee for

Lori Thompson, Project Manager I
(657)212-3035
Lori.Thompson@et.eurofinsus.com

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Table of Contents

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
H	Sample was prepped or analyzed beyond the specified holding time
H3	Sample was received and analyzed past holding time.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F1	MS and/or MSD recovery exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time
H3	Sample was received and analyzed past holding time.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
H3	Sample was received and analyzed past holding time.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Anchor QEA LLC
Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Job ID: 570-107575-1

Laboratory: Eurofins Calscience

Narrative

Job Narrative
570-107575-1

Comments
No additional comments.

Revision
The report being provided is a revision of the original report sent on 9/8/2022. The report (revision 1) is being revised to include metals/Hg results for sample LCW-07-Z-061722 (570-107575-10), inadvertently omitted from original analysis.

Receipt
The samples were received on 8/24/2022 4:39 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.4º C.

Receipt Exceptions
The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): LCW-04-4_6-061522 (570-107575-7). The container labels list LCW-04-061522 @ 10:15, while the COC lists LCW-04-4-061522 @ 10:15. Client was contacted and the correct sample jar for LCW-04-4_6-061522 was provided; logged in as 570-107575-16.

Container for the following sample was received broken: LCW-07-Z-061722 (570-107575-10). Sample mass was transferred to a new jar.

GC Semi VOA
Method 8082: The sample size used in the preparation of the matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 570-259488 and analytical batch 570-259701 was outside the 10% difference. As the relative percent difference (RPD) calculation is based upon the MS/MSD concentration as opposed to the MS/MSD percent recovery, elevated %RPD values were obtained.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
Method 6020: The method blank for preparation batch 570-259742 and analytical batch 570-260126 contained Barium above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method 6020: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-259742 and analytical batch 570-260126 were outside control limits for Barium. The associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 7471A: The following samples were received outside of holding time: LCW-02-Z-061522 (570-107575-1), LCW-03-Z-061522 (570-107575-4), LCW-04-Z-061522 (570-107575-8), LCW-05-Z-061722 (570-107575-9), LCW-08-Z-061522 (570-107575-11), LCW-09-Z-061722 (570-107575-12), LCW-10-Z-061722 (570-107575-13), LCW-12-Z-061522 (570-107575-14), LCW-13-Z-061722 (570-107575-15), (570-107575-A-9-B MS) and (570-107575-A-9-C MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
Method Moisture - 2540: The following samples were received outside of holding time: LCW-02-Z-061522 (570-107575-1), LCW-03-0_2-061522 (570-107575-2), LCW-03-2_4-061522 (570-107575-3), LCW-03-Z-061522 (570-107575-4), LCW-04-0_2-061522 (570-107575-5), LCW-04-2_4-061522 (570-107575-6), LCW-04-Z-061522 (570-107575-8), LCW-05-Z-061722 (570-107575-9), LCW-07-Z-061722 (570-107575-10), LCW-08-Z-061522 (570-107575-11), LCW-09-Z-061722 (570-107575-12), LCW-10-Z-061722 (570-107575-13), LCW-12-Z-061522 (570-107575-14), LCW-13-Z-061722 (570-107575-15), LCW-04-4_6-061522 (570-107575-16) and (570-107575-A-1 DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Job ID: 570-107575-1 (Continued)

Laboratory: Eurofins Calscience (Continued)

Organic Prep
Method 3541: The following samples were received outside of holding time: LCW-03-0_2-061522 (570-107575-2), LCW-03-2_4-061522 (570-107575-3), LCW-03-Z-061522 (570-107575-4), LCW-04-0_2-061522 (570-107575-5), LCW-04-2_4-061522 (570-107575-6), LCW-04-Z-061522 (570-107575-8), and LCW-04-4_6-061522 (570-107575-16).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Job ID: 570-107575-2

Laboratory: Eurofins Calscience

Narrative

Job Narrative
570-107575-2

Comments
No additional comments.

Metals
Method 6020: The method blank for preparation batch 570-267446 and analytical batch 570-267706 contained Molybdenum above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method 7471A: The following sample was received outside of holding time: LCW-07-Z-061722 (570-107575-10).

Method 7471A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-267473 and analytical batch 570-267805 were outside control limits for Barium. The associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Anchor QEA LLC Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Client Sample ID: LCW-02-Z-061522 Lab Sample ID: 570-107575-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.341	J	1.34	0.171	mg/Kg	20	☼	6020	Total/NA
Arsenic	10.3		0.671	0.123	mg/Kg	20	☼	6020	Total/NA
Barium	179	B F1	0.671	0.128	mg/Kg	20	☼	6020	Total/NA
Beryllium	0.796		0.403	0.187	mg/Kg	20	☼	6020	Total/NA
Cadmium	0.177	J	0.671	0.115	mg/Kg	20	☼	6020	Total/NA
Chromium	34.7		1.34	0.139	mg/Kg	20	☼	6020	Total/NA
Cobalt	14.9		0.671	0.139	mg/Kg	20	☼	6020	Total/NA
Copper	41.3		1.34	0.152	mg/Kg	20	☼	6020	Total/NA
Lead	11.8		0.671	0.0878	mg/Kg	20	☼	6020	Total/NA
Molybdenum	1.77		1.34	0.145	mg/Kg	20	☼	6020	Total/NA
Nickel	26.5		1.34	0.128	mg/Kg	20	☼	6020	Total/NA
Selenium	2.47		1.34	0.506	mg/Kg	20	☼	6020	Total/NA
Thallium	0.337	J	0.671	0.0806	mg/Kg	20	☼	6020	Total/NA
Vanadium	67.4		1.34	0.162	mg/Kg	20	☼	6020	Total/NA
Zinc	95.0		13.4	0.744	mg/Kg	20	☼	6020	Total/NA
Mercury	0.0604	J H H3	0.118	0.0192	mg/Kg	1	☼	7471A	Total/NA

Client Sample ID: LCW-03-0_2-061522 Lab Sample ID: 570-107575-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1248	23	H H3	10	5.8	ug/Kg	1	☼	8082	Total/NA
Aroclor-1260	22	H H3	10	5.2	ug/Kg	1	☼	8082	Total/NA

Client Sample ID: LCW-03-2_4-061522 Lab Sample ID: 570-107575-3

No Detections.

Client Sample ID: LCW-03-Z-061522 Lab Sample ID: 570-107575-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.196	J	1.16	0.148	mg/Kg	20	☼	6020	Total/NA
Arsenic	7.36		0.581	0.106	mg/Kg	20	☼	6020	Total/NA
Barium	135	B	0.581	0.111	mg/Kg	20	☼	6020	Total/NA
Beryllium	0.766		0.348	0.162	mg/Kg	20	☼	6020	Total/NA
Cadmium	0.195	J	0.581	0.0992	mg/Kg	20	☼	6020	Total/NA
Chromium	29.5		1.16	0.121	mg/Kg	20	☼	6020	Total/NA
Cobalt	12.2		0.581	0.120	mg/Kg	20	☼	6020	Total/NA
Copper	27.5		1.16	0.132	mg/Kg	20	☼	6020	Total/NA
Lead	8.94		0.581	0.0760	mg/Kg	20	☼	6020	Total/NA
Molybdenum	1.71		1.16	0.126	mg/Kg	20	☼	6020	Total/NA
Nickel	21.0		1.16	0.110	mg/Kg	20	☼	6020	Total/NA
Selenium	1.88		1.16	0.438	mg/Kg	20	☼	6020	Total/NA
Thallium	0.261	J	0.581	0.0697	mg/Kg	20	☼	6020	Total/NA
Vanadium	57.6		1.16	0.140	mg/Kg	20	☼	6020	Total/NA
Zinc	76.7		11.6	0.644	mg/Kg	20	☼	6020	Total/NA
Mercury	0.0278	J H H3	0.0959	0.0155	mg/Kg	1	☼	7471A	Total/NA

Client Sample ID: LCW-04-0_2-061522 Lab Sample ID: 570-107575-5

No Detections.

Client Sample ID: LCW-04-2_4-061522 Lab Sample ID: 570-107575-6

No Detections.

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Anchor QEA LLC Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Client Sample ID: LCW-04-Z-061522 Lab Sample ID: 570-107575-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.507	J	1.36	0.173	mg/Kg	20	☼	6020	Total/NA
Arsenic	13.1		0.680	0.124	mg/Kg	20	☼	6020	Total/NA
Barium	344	B	0.680	0.130	mg/Kg	20	☼	6020	Total/NA
Beryllium	0.974		0.408	0.189	mg/Kg	20	☼	6020	Total/NA
Cadmium	1.08		0.680	0.116	mg/Kg	20	☼	6020	Total/NA
Chromium	45.2		1.36	0.141	mg/Kg	20	☼	6020	Total/NA
Cobalt	17.5		0.680	0.141	mg/Kg	20	☼	6020	Total/NA
Copper	53.0		1.36	0.154	mg/Kg	20	☼	6020	Total/NA
Lead	56.8		0.680	0.0890	mg/Kg	20	☼	6020	Total/NA
Molybdenum	2.97		1.36	0.147	mg/Kg	20	☼	6020	Total/NA
Nickel	38.7		1.36	0.129	mg/Kg	20	☼	6020	Total/NA
Selenium	3.44		1.36	0.513	mg/Kg	20	☼	6020	Total/NA
Thallium	0.424	J	0.680	0.0817	mg/Kg	20	☼	6020	Total/NA
Vanadium	84.3		1.36	0.164	mg/Kg	20	☼	6020	Total/NA
Zinc	133		13.6	0.754	mg/Kg	20	☼	6020	Total/NA
Mercury	0.0949	J H H3	0.114	0.0185	mg/Kg	1	☼	7471A	Total/NA

Client Sample ID: LCW-05-Z-061722 Lab Sample ID: 570-107575-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.194	J	1.14	0.145	mg/Kg	20	☼	6020	Total/NA
Arsenic	2.46		0.569	0.104	mg/Kg	20	☼	6020	Total/NA
Barium	98.5	B	0.569	0.109	mg/Kg	20	☼	6020	Total/NA
Chromium	12.3		1.14	0.118	mg/Kg	20	☼	6020	Total/NA
Cobalt	5.48		0.569	0.118	mg/Kg	20	☼	6020	Total/NA
Copper	11.0		1.14	0.129	mg/Kg	20	☼	6020	Total/NA
Lead	8.64		0.569	0.0744	mg/Kg	20	☼	6020	Total/NA
Molybdenum	0.442	J	1.14	0.123	mg/Kg	20	☼	6020	Total/NA
Nickel	9.39		1.14	0.108	mg/Kg	20	☼	6020	Total/NA
Selenium	0.627	J	1.14	0.429	mg/Kg	20	☼	6020	Total/NA
Thallium	0.0831	J	0.569	0.0683	mg/Kg	20	☼	6020	Total/NA
Vanadium	22.5		1.14	0.137	mg/Kg	20	☼	6020	Total/NA
Zinc	34.0		11.4	0.631	mg/Kg	20	☼	6020	Total/NA
Mercury	0.0558	J H H3	0.0967	0.0157	mg/Kg	1	☼	7471A	Total/NA

Client Sample ID: LCW-07-Z-061722 Lab Sample ID: 570-107575-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.469	J	1.24	0.158	mg/Kg	20	☼	6020	Total/NA
Arsenic	2.03		0.621	0.113	mg/Kg	20	☼	6020	Total/NA
Barium	65.6		0.621	0.119	mg/Kg	20	☼	6020	Total/NA
Beryllium	0.378		0.372	0.173	mg/Kg	20	☼	6020	Total/NA
Chromium	17.9		1.24	0.129	mg/Kg	20	☼	6020	Total/NA
Cobalt	7.52		0.621	0.128	mg/Kg	20	☼	6020	Total/NA
Copper	15.9		1.24	0.141	mg/Kg	20	☼	6020	Total/NA
Lead	4.67		0.621	0.0812	mg/Kg	20	☼	6020	Total/NA
Molybdenum	0.293	J B	1.24	0.134	mg/Kg	20	☼	6020	Total/NA
Nickel	14.6		1.24	0.118	mg/Kg	20	☼	6020	Total/NA
Selenium	0.559	J	1.24	0.468	mg/Kg	20	☼	6020	Total/NA
Thallium	0.147	J	0.621	0.0745	mg/Kg	20	☼	6020	Total/NA
Vanadium	33.7		1.24	0.150	mg/Kg	20	☼	6020	Total/NA
Zinc	42.3		12.4	0.688	mg/Kg	20	☼	6020	Total/NA

This Detection Summary does not include radiochemical test results.

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Client Sample ID: LCW-07-Z-061722 (Continued) Lab Sample ID: 570-107575-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Mercury	0.0202	J H H3	0.0975	0.0158	mg/Kg	1	☼	7471A	Total/NA

Client Sample ID: LCW-08-Z-061522 Lab Sample ID: 570-107575-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	4.25		0.624	0.114	mg/Kg	20	☼	6020	Total/NA
Barium	68.7	B	0.624	0.119	mg/Kg	20	☼	6020	Total/NA
Beryllium	0.386		0.374	0.174	mg/Kg	20	☼	6020	Total/NA
Cadmium	0.147	J	0.624	0.107	mg/Kg	20	☼	6020	Total/NA
Chromium	16.6		1.25	0.130	mg/Kg	20	☼	6020	Total/NA
Cobalt	6.47		0.624	0.129	mg/Kg	20	☼	6020	Total/NA
Copper	13.9		1.25	0.142	mg/Kg	20	☼	6020	Total/NA
Lead	6.20		0.624	0.0817	mg/Kg	20	☼	6020	Total/NA
Molybdenum	0.607	J	1.25	0.135	mg/Kg	20	☼	6020	Total/NA
Nickel	11.4		1.25	0.119	mg/Kg	20	☼	6020	Total/NA
Selenium	1.05	J	1.25	0.471	mg/Kg	20	☼	6020	Total/NA
Thallium	0.178	J	0.624	0.0749	mg/Kg	20	☼	6020	Total/NA
Vanadium	34.6		1.25	0.151	mg/Kg	20	☼	6020	Total/NA
Zinc	49.5		12.5	0.692	mg/Kg	20	☼	6020	Total/NA
Mercury	0.0259	J H H3	0.104	0.0168	mg/Kg	1	☼	7471A	Total/NA

Client Sample ID: LCW-09-Z-061722 Lab Sample ID: 570-107575-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.496	J	1.37	0.175	mg/Kg	20	☼	6020	Total/NA
Arsenic	19.4		0.687	0.126	mg/Kg	20	☼	6020	Total/NA
Barium	166	B	0.687	0.131	mg/Kg	20	☼	6020	Total/NA
Beryllium	1.45		0.412	0.191	mg/Kg	20	☼	6020	Total/NA
Cadmium	0.226	J	0.687	0.117	mg/Kg	20	☼	6020	Total/NA
Chromium	44.3		1.37	0.143	mg/Kg	20	☼	6020	Total/NA
Cobalt	26.3		0.687	0.142	mg/Kg	20	☼	6020	Total/NA
Copper	53.8		1.37	0.156	mg/Kg	20	☼	6020	Total/NA
Lead	15.3		0.687	0.0899	mg/Kg	20	☼	6020	Total/NA
Molybdenum	3.22		1.37	0.148	mg/Kg	20	☼	6020	Total/NA
Nickel	43.6		1.37	0.131	mg/Kg	20	☼	6020	Total/NA
Selenium	3.33		1.37	0.518	mg/Kg	20	☼	6020	Total/NA
Thallium	0.296	J	0.687	0.0825	mg/Kg	20	☼	6020	Total/NA
Vanadium	81.9		1.37	0.166	mg/Kg	20	☼	6020	Total/NA
Zinc	111		13.7	0.762	mg/Kg	20	☼	6020	Total/NA
Mercury	0.125	H H3	0.124	0.0201	mg/Kg	1	☼	7471A	Total/NA

Client Sample ID: LCW-10-Z-061722 Lab Sample ID: 570-107575-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.379	J	1.35	0.172	mg/Kg	20	☼	6020	Total/NA
Arsenic	13.2		0.674	0.123	mg/Kg	20	☼	6020	Total/NA
Barium	146	B	0.674	0.129	mg/Kg	20	☼	6020	Total/NA
Beryllium	1.24		0.404	0.188	mg/Kg	20	☼	6020	Total/NA
Cadmium	0.260	J	0.674	0.115	mg/Kg	20	☼	6020	Total/NA
Chromium	42.9		1.35	0.140	mg/Kg	20	☼	6020	Total/NA
Cobalt	18.3		0.674	0.139	mg/Kg	20	☼	6020	Total/NA
Copper	44.8		1.35	0.153	mg/Kg	20	☼	6020	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: LCW-10-Z-061722 (Continued) — Lab Sample ID: 570-107575-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	15.2		0.674	0.0882	mg/Kg	20	☼	6020	Total/NA
Molybdenum	2.43		1.35	0.146	mg/Kg	20	☼	6020	Total/NA
Nickel	33.1		1.35	0.128	mg/Kg	20	☼	6020	Total/NA
Selenium	2.90		1.35	0.508	mg/Kg	20	☼	6020	Total/NA
Thallium	0.416	J	0.674	0.0809	mg/Kg	20	☼	6020	Total/NA
Vanadium	81.3		1.35	0.162	mg/Kg	20	☼	6020	Total/NA
Zinc	116		13.5	0.747	mg/Kg	20	☼	6020	Total/NA
Mercury	0.0479	J H H3	0.106	0.0172	mg/Kg	1	☼	7471A	Total/NA

Client Sample ID: LCW-12-Z-061522 — Lab Sample ID: 570-107575-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.211	J	1.26	0.160	mg/Kg	20	☼	6020	Total/NA
Arsenic	7.58		0.628	0.115	mg/Kg	20	☼	6020	Total/NA
Barium	187	B	0.628	0.120	mg/Kg	20	☼	6020	Total/NA
Beryllium	0.717		0.377	0.175	mg/Kg	20	☼	6020	Total/NA
Cadmium	0.464	J	0.628	0.107	mg/Kg	20	☼	6020	Total/NA
Chromium	31.8		1.26	0.130	mg/Kg	20	☼	6020	Total/NA
Cobalt	12.1		0.628	0.130	mg/Kg	20	☼	6020	Total/NA
Copper	32.8		1.26	0.142	mg/Kg	20	☼	6020	Total/NA
Lead	14.5		0.628	0.0821	mg/Kg	20	☼	6020	Total/NA
Molybdenum	1.20	J	1.26	0.136	mg/Kg	20	☼	6020	Total/NA
Nickel	24.5		1.26	0.119	mg/Kg	20	☼	6020	Total/NA
Selenium	1.80		1.26	0.474	mg/Kg	20	☼	6020	Total/NA
Thallium	0.264	J	0.628	0.0754	mg/Kg	20	☼	6020	Total/NA
Vanadium	57.2		1.26	0.151	mg/Kg	20	☼	6020	Total/NA
Zinc	84.6		12.6	0.696	mg/Kg	20	☼	6020	Total/NA
Mercury	0.0806	J H H3	0.101	0.0164	mg/Kg	1	☼	7471A	Total/NA

Client Sample ID: LCW-13-Z-061722 — Lab Sample ID: 570-107575-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	11.3		0.668	0.122	mg/Kg	20	☼	6020	Total/NA
Barium	97.9	B	0.668	0.128	mg/Kg	20	☼	6020	Total/NA
Beryllium	0.644		0.401	0.186	mg/Kg	20	☼	6020	Total/NA
Chromium	33.7		1.34	0.139	mg/Kg	20	☼	6020	Total/NA
Cobalt	9.79		0.668	0.138	mg/Kg	20	☼	6020	Total/NA
Copper	26.5		1.34	0.151	mg/Kg	20	☼	6020	Total/NA
Lead	8.16		0.668	0.0874	mg/Kg	20	☼	6020	Total/NA
Molybdenum	2.64		1.34	0.144	mg/Kg	20	☼	6020	Total/NA
Nickel	18.2		1.34	0.127	mg/Kg	20	☼	6020	Total/NA
Selenium	1.76		1.34	0.504	mg/Kg	20	☼	6020	Total/NA
Thallium	0.399	J	0.668	0.0802	mg/Kg	20	☼	6020	Total/NA
Vanadium	57.6		1.34	0.161	mg/Kg	20	☼	6020	Total/NA
Zinc	77.8		13.4	0.741	mg/Kg	20	☼	6020	Total/NA
Mercury	0.0632	J H H3	0.114	0.0185	mg/Kg	1	☼	7471A	Total/NA

Client Sample ID: LCW-04-4_6-061522 — Lab Sample ID: 570-107575-16

No Detections.

This Detection Summary does not include radiochemical test results.

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: LCW-03-0_2-061522
Lab Sample ID: 570-107575-2
Date Collected: 06/15/22 09:15
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND	H H3	10	5.8	ug/Kg	☼	08/25/22 15:10	08/26/22 19:50	1
Aroclor-1221	ND	H H3	10	5.8	ug/Kg	☼	08/25/22 15:10	08/26/22 19:50	1
Aroclor-1232	ND	H H3	10	5.8	ug/Kg	☼	08/25/22 15:10	08/26/22 19:50	1
Aroclor-1242	ND	H H3	10	5.8	ug/Kg	☼	08/25/22 15:10	08/26/22 19:50	1
Aroclor-1248	**23**	**H H3**	10	5.8	ug/Kg	☼	08/25/22 15:10	08/26/22 19:50	1
Aroclor-1254	ND	H H3	10	5.2	ug/Kg	☼	08/25/22 15:10	08/26/22 19:50	1
Aroclor-1260	**22**	**H H3**	10	5.2	ug/Kg	☼	08/25/22 15:10	08/26/22 19:50	1
Aroclor-1262	ND	H H3	10	5.2	ug/Kg	☼	08/25/22 15:10	08/26/22 19:50	1
Aroclor-1268	ND	H H3	10	5.2	ug/Kg	☼	08/25/22 15:10	08/26/22 19:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*98*	*H H3*	*20 - 143*	*08/25/22 15:10*	*08/26/22 19:50*	*1*
DCB Decachlorobiphenyl (Surr)	*87*	*H H3*	*20 - 180*	*08/25/22 15:10*	*08/26/22 19:50*	*1*

Client Sample ID: LCW-03-2_4-061522
Lab Sample ID: 570-107575-3
Date Collected: 06/15/22 09:15
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND	H H3	11	6.3	ug/Kg	☼	08/25/22 15:10	08/26/22 20:54	1
Aroclor-1221	ND	H H3	11	6.3	ug/Kg	☼	08/25/22 15:10	08/26/22 20:54	1
Aroclor-1232	ND	H H3	11	6.3	ug/Kg	☼	08/25/22 15:10	08/26/22 20:54	1
Aroclor-1242	ND	H H3	11	6.3	ug/Kg	☼	08/25/22 15:10	08/26/22 20:54	1
Aroclor-1248	ND	H H3	11	6.3	ug/Kg	☼	08/25/22 15:10	08/26/22 20:54	1
Aroclor-1254	ND	H H3	11	5.7	ug/Kg	☼	08/25/22 15:10	08/26/22 20:54	1
Aroclor-1260	ND	H H3	11	5.7	ug/Kg	☼	08/25/22 15:10	08/26/22 20:54	1
Aroclor-1262	ND	H H3	11	5.7	ug/Kg	☼	08/25/22 15:10	08/26/22 20:54	1
Aroclor-1268	ND	H H3	11	5.7	ug/Kg	☼	08/25/22 15:10	08/26/22 20:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*90*	*H H3*	*20 - 143*	*08/25/22 15:10*	*08/26/22 20:54*	*1*
DCB Decachlorobiphenyl (Surr)	*70*	*H H3*	*20 - 180*	*08/25/22 15:10*	*08/26/22 20:54*	*1*

Client Sample ID: LCW-03-Z-061522
Lab Sample ID: 570-107575-4
Date Collected: 06/15/22 09:15
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND	H F2 H3	12	6.6	ug/Kg	☼	08/25/22 15:10	08/26/22 21:15	1
Aroclor-1221	ND	H H3	12	6.6	ug/Kg	☼	08/25/22 15:10	08/26/22 21:15	1
Aroclor-1232	ND	H H3	12	6.6	ug/Kg	☼	08/25/22 15:10	08/26/22 21:15	1
Aroclor-1242	ND	H H3	12	6.6	ug/Kg	☼	08/25/22 15:10	08/26/22 21:15	1
Aroclor-1248	ND	H H3	12	6.6	ug/Kg	☼	08/25/22 15:10	08/26/22 21:15	1
Aroclor-1254	ND	H H3	12	5.9	ug/Kg	☼	08/25/22 15:10	08/26/22 21:15	1
Aroclor-1260	ND	H F2 H3	12	5.9	ug/Kg	☼	08/25/22 15:10	08/26/22 21:15	1
Aroclor-1262	ND	H H3	12	5.9	ug/Kg	☼	08/25/22 15:10	08/26/22 21:15	1
Aroclor-1268	ND	H H3	12	5.9	ug/Kg	☼	08/25/22 15:10	08/26/22 21:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*94*	*H H3*	*20 - 143*	*08/25/22 15:10*	*08/26/22 21:15*	*1*
DCB Decachlorobiphenyl (Surr)	*76*	*H H3*	*20 - 180*	*08/25/22 15:10*	*08/26/22 21:15*	*1*

Client Sample Results

Client: Anchor QEA LLC
Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: LCW-04-0_2-061522
Lab Sample ID: 570-107575-5
Date Collected: 06/15/22 10:15
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND	H H3	11	6.2	ug/Kg	☼	08/25/22 15:10	08/26/22 21:37	1
Aroclor-1221	ND	H H3	11	6.2	ug/Kg	☼	08/25/22 15:10	08/26/22 21:37	1
Aroclor-1232	ND	H H3	11	6.2	ug/Kg	☼	08/25/22 15:10	08/26/22 21:37	1
Aroclor-1242	ND	H H3	11	6.2	ug/Kg	☼	08/25/22 15:10	08/26/22 21:37	1
Aroclor-1248	ND	H H3	11	6.2	ug/Kg	☼	08/25/22 15:10	08/26/22 21:37	1
Aroclor-1254	ND	H H3	11	5.6	ug/Kg	☼	08/25/22 15:10	08/26/22 21:37	1
Aroclor-1260	ND	H H3	11	5.6	ug/Kg	☼	08/25/22 15:10	08/26/22 21:37	1
Aroclor-1262	ND	H H3	11	5.6	ug/Kg	☼	08/25/22 15:10	08/26/22 21:37	1
Aroclor-1268	ND	H H3	11	5.6	ug/Kg	☼	08/25/22 15:10	08/26/22 21:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*89*	*H H3*	*20 - 143*	*08/25/22 15:10*	*08/26/22 21:37*	*1*
DCB Decachlorobiphenyl (Surr)	*73*	*H H3*	*20 - 180*	*08/25/22 15:10*	*08/26/22 21:37*	*1*

Client Sample ID: LCW-04-2_4-061522
Lab Sample ID: 570-107575-6
Date Collected: 06/15/22 10:15
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND	H H3	12	6.4	ug/Kg	☼	08/25/22 15:10	08/26/22 21:58	1
Aroclor-1221	ND	H H3	12	6.4	ug/Kg	☼	08/25/22 15:10	08/26/22 21:58	1
Aroclor-1232	ND	H H3	12	6.4	ug/Kg	☼	08/25/22 15:10	08/26/22 21:58	1
Aroclor-1242	ND	H H3	12	6.4	ug/Kg	☼	08/25/22 15:10	08/26/22 21:58	1
Aroclor-1248	ND	H H3	12	6.4	ug/Kg	☼	08/25/22 15:10	08/26/22 21:58	1
Aroclor-1254	ND	H H3	12	5.8	ug/Kg	☼	08/25/22 15:10	08/26/22 21:58	1
Aroclor-1260	ND	H H3	12	5.8	ug/Kg	☼	08/25/22 15:10	08/26/22 21:58	1
Aroclor-1262	ND	H H3	12	5.8	ug/Kg	☼	08/25/22 15:10	08/26/22 21:58	1
Aroclor-1268	ND	H H3	12	5.8	ug/Kg	☼	08/25/22 15:10	08/26/22 21:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*98*	*H H3*	*20 - 143*	*08/25/22 15:10*	*08/26/22 21:58*	*1*
DCB Decachlorobiphenyl (Surr)	*80*	*H H3*	*20 - 180*	*08/25/22 15:10*	*08/26/22 21:58*	*1*

Client Sample ID: LCW-04-Z-061522
Lab Sample ID: 570-107575-8
Date Collected: 06/15/22 10:15
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND	H H3	13	7.4	ug/Kg	☼	08/25/22 15:10	08/26/22 22:41	1
Aroclor-1221	ND	H H3	13	7.4	ug/Kg	☼	08/25/22 15:10	08/26/22 22:41	1
Aroclor-1232	ND	H H3	13	7.4	ug/Kg	☼	08/25/22 15:10	08/26/22 22:41	1
Aroclor-1242	ND	H H3	13	7.4	ug/Kg	☼	08/25/22 15:10	08/26/22 22:41	1
Aroclor-1248	ND	H H3	13	7.4	ug/Kg	☼	08/25/22 15:10	08/26/22 22:41	1
Aroclor-1254	ND	H H3	13	6.6	ug/Kg	☼	08/25/22 15:10	08/26/22 22:41	1
Aroclor-1260	ND	H H3	13	6.6	ug/Kg	☼	08/25/22 15:10	08/26/22 22:41	1
Aroclor-1262	ND	H H3	13	6.6	ug/Kg	☼	08/25/22 15:10	08/26/22 22:41	1
Aroclor-1268	ND	H H3	13	6.6	ug/Kg	☼	08/25/22 15:10	08/26/22 22:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*80*	*H H3*	*20 - 143*	*08/25/22 15:10*	*08/26/22 22:41*	*1*
DCB Decachlorobiphenyl (Surr)	*71*	*H H3*	*20 - 180*	*08/25/22 15:10*	*08/26/22 22:41*	*1*

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: LCW-04-4_6-061522
Date Collected: 06/15/22 10:15
Date Received: 08/24/22 16:39
Lab Sample ID: 570-107575-16
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND	H H3	12	6.9	ug/Kg	☼	08/27/22 09:35	08/31/22 12:24	1
Aroclor-1221	ND	H H3	12	6.9	ug/Kg	☼	08/27/22 09:35	08/31/22 12:24	1
Aroclor-1232	ND	H H3	12	6.9	ug/Kg	☼	08/27/22 09:35	08/31/22 12:24	1
Aroclor-1242	ND	H H3	12	6.9	ug/Kg	☼	08/27/22 09:35	08/31/22 12:24	1
Aroclor-1248	ND	H H3	12	6.9	ug/Kg	☼	08/27/22 09:35	08/31/22 12:24	1
Aroclor-1254	ND	H H3	12	6.2	ug/Kg	☼	08/27/22 09:35	08/31/22 12:24	1
Aroclor-1260	ND	H H3	12	6.2	ug/Kg	☼	08/27/22 09:35	08/31/22 12:24	1
Aroclor-1262	ND	H H3	12	6.2	ug/Kg	☼	08/27/22 09:35	08/31/22 12:24	1
Aroclor-1268	ND	H H3	12	6.2	ug/Kg	☼	08/27/22 09:35	08/31/22 12:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*99*	*H3 H*	*20 - 143*	*08/27/22 09:35*	*08/31/22 12:24*	*1*
DCB Decachlorobiphenyl (Surr)	*92*	*H3 H*	*20 - 180*	*08/27/22 09:35*	*08/31/22 12:24*	*1*

Client: Anchor QEA LLC Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Method: 6020 - Metals (ICP/MS)

Client Sample ID: LCW-02-Z-061522 **Lab Sample ID: 570-107575-1**
Date Collected: 06/15/22 11:00 **Matrix: Soil**
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.341	J	1.34	0.171	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Arsenic	10.3		0.671	0.123	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Barium	179	B F1	0.671	0.128	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Beryllium	0.796		0.403	0.187	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Cadmium	0.177	J	0.671	0.115	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Chromium	34.7		1.34	0.139	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Cobalt	14.9		0.671	0.139	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Copper	41.3		1.34	0.152	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Lead	11.8		0.671	0.0878	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Molybdenum	1.77		1.34	0.145	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Nickel	26.5		1.34	0.128	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Selenium	2.47		1.34	0.506	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Silver	ND		0.671	0.426	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Thallium	0.337	J	0.671	0.0806	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Vanadium	67.4		1.34	0.162	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20
Zinc	95.0		13.4	0.744	mg/Kg	☼	08/26/22 11:51	08/29/22 09:40	20

Client Sample ID: LCW-03-Z-061522 **Lab Sample ID: 570-107575-4**
Date Collected: 06/15/22 09:15 **Matrix: Soil**
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.196	J	1.16	0.148	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Arsenic	7.36		0.581	0.106	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Barium	135	B	0.581	0.111	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Beryllium	0.766		0.348	0.162	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Cadmium	0.195	J	0.581	0.0992	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Chromium	29.5		1.16	0.121	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Cobalt	12.2		0.581	0.120	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Copper	27.5		1.16	0.132	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Lead	8.94		0.581	0.0760	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Molybdenum	1.71		1.16	0.126	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Nickel	21.0		1.16	0.110	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Selenium	1.88		1.16	0.438	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Silver	ND		0.581	0.369	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Thallium	0.261	J	0.581	0.0697	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Vanadium	57.6		1.16	0.140	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20
Zinc	76.7		11.6	0.644	mg/Kg	☼	08/26/22 11:51	08/29/22 09:56	20

Client Sample ID: LCW-04-Z-061522 **Lab Sample ID: 570-107575-8**
Date Collected: 06/15/22 10:15 **Matrix: Soil**
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.507	J	1.36	0.173	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Arsenic	13.1		0.680	0.124	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Barium	344	B	0.680	0.130	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Beryllium	0.974		0.408	0.189	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Cadmium	1.08		0.680	0.116	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Chromium	45.2		1.36	0.141	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Cobalt	17.5		0.680	0.141	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Copper	53.0		1.36	0.154	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20

Method: 6020 - Metals (ICP/MS) (Continued)

Client Sample ID: LCW-04-Z-061522
Date Collected: 06/15/22 10:15
Date Received: 08/24/22 16:39
Lab Sample ID: 570-107575-8
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	56.8		0.680	0.0890	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Molybdenum	2.97		1.36	0.147	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Nickel	38.7		1.36	0.129	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Selenium	3.44		1.36	0.513	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Silver	ND		0.680	0.432	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Thallium	0.424	J	0.680	0.0817	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Vanadium	84.3		1.36	0.164	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20
Zinc	133		13.6	0.754	mg/Kg	☼	08/26/22 11:51	08/29/22 09:58	20

Client Sample ID: LCW-05-Z-061722
Date Collected: 06/17/22 17:10
Date Received: 08/24/22 16:39
Lab Sample ID: 570-107575-9
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.194	J	1.14	0.145	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Arsenic	2.46		0.569	0.104	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Barium	98.5	B	0.569	0.109	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Beryllium	ND		0.341	0.158	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Cadmium	ND		0.569	0.0972	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Chromium	12.3		1.14	0.118	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Cobalt	5.48		0.569	0.118	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Copper	11.0		1.14	0.129	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Lead	8.64		0.569	0.0744	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Molybdenum	0.442	J	1.14	0.123	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Nickel	9.39		1.14	0.108	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Selenium	0.627	J	1.14	0.429	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Silver	ND		0.569	0.361	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Thallium	0.0831	J	0.569	0.0683	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Vanadium	22.5		1.14	0.137	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20
Zinc	34.0		11.4	0.631	mg/Kg	☼	08/26/22 11:51	08/29/22 10:00	20

Client Sample ID: LCW-07-Z-061722
Date Collected: 06/17/22 11:00
Date Received: 08/24/22 16:39
Lab Sample ID: 570-107575-10
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.469	J	1.24	0.158	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Arsenic	2.03		0.621	0.113	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Barium	65.6		0.621	0.119	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Beryllium	0.378		0.372	0.173	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Cadmium	ND		0.621	0.106	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Chromium	17.9		1.24	0.129	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Cobalt	7.52		0.621	0.128	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Copper	15.9		1.24	0.141	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Lead	4.67		0.621	0.0812	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Molybdenum	0.293	J B	1.24	0.134	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Nickel	14.6		1.24	0.118	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Selenium	0.559	J	1.24	0.468	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Silver	ND		0.621	0.394	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Thallium	0.147	J	0.621	0.0745	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Vanadium	33.7		1.24	0.150	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20
Zinc	42.3		12.4	0.688	mg/Kg	☼	09/26/22 15:32	09/27/22 10:16	20

Method: 6020 - Metals (ICP/MS)

Client Sample ID: LCW-08-Z-061522
Lab Sample ID: 570-107575-11
Date Collected: 06/15/22 12:00
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.25	0.159	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Arsenic	**4.25**		0.624	0.114	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Barium	**68.7**	**B**	0.624	0.119	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Beryllium	**0.386**		0.374	0.174	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Cadmium	**0.147**	**J**	0.624	0.107	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Chromium	**16.6**		1.25	0.130	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Cobalt	**6.47**		0.624	0.129	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Copper	**13.9**		1.25	0.142	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Lead	**6.20**		0.624	0.0817	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Molybdenum	**0.607**	**J**	1.25	0.135	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Nickel	**11.4**		1.25	0.119	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Selenium	**1.05**	**J**	1.25	0.471	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Silver	ND		0.624	0.396	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Thallium	**0.178**	**J**	0.624	0.0749	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Vanadium	**34.6**		1.25	0.151	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20
Zinc	**49.5**		12.5	0.692	mg/Kg	☼	08/26/22 11:51	08/29/22 10:03	20

Client Sample ID: LCW-09-Z-061722
Lab Sample ID: 570-107575-12
Date Collected: 06/17/22 15:20
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.496**	**J**	1.37	0.175	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Arsenic	**19.4**		0.687	0.126	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Barium	**166**	**B**	0.687	0.131	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Beryllium	**1.45**		0.412	0.191	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Cadmium	**0.226**	**J**	0.687	0.117	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Chromium	**44.3**		1.37	0.143	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Cobalt	**26.3**		0.687	0.142	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Copper	**53.8**		1.37	0.156	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Lead	**15.3**		0.687	0.0899	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Molybdenum	**3.22**		1.37	0.148	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Nickel	**43.6**		1.37	0.131	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Selenium	**3.33**		1.37	0.518	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Silver	ND		0.687	0.436	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Thallium	**0.296**	**J**	0.687	0.0825	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Vanadium	**81.9**		1.37	0.166	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20
Zinc	**111**		13.7	0.762	mg/Kg	☼	08/26/22 11:51	08/29/22 10:05	20

Client Sample ID: LCW-10-Z-061722
Lab Sample ID: 570-107575-13
Date Collected: 06/17/22 08:30
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.379**	**J**	1.35	0.172	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Arsenic	**13.2**		0.674	0.123	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Barium	**146**	**B**	0.674	0.129	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Beryllium	**1.24**		0.404	0.188	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Cadmium	**0.260**	**J**	0.674	0.115	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Chromium	**42.9**		1.35	0.140	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Cobalt	**18.3**		0.674	0.139	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Copper	**44.8**		1.35	0.153	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20

Method: 6020 - Metals (ICP/MS) (Continued)

Client Sample ID: LCW-10-Z-061722
Date Collected: 06/17/22 08:30
Date Received: 08/24/22 16:39
Lab Sample ID: 570-107575-13
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	15.2		0.674	0.0882	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Molybdenum	2.43		1.35	0.146	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Nickel	33.1		1.35	0.128	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Selenium	2.90		1.35	0.508	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Silver	ND		0.674	0.428	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Thallium	0.416	J	0.674	0.0809	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Vanadium	81.3		1.35	0.162	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20
Zinc	116		13.5	0.747	mg/Kg	☼	08/26/22 11:51	08/29/22 10:07	20

Client Sample ID: LCW-12-Z-061522
Date Collected: 06/15/22 11:45
Date Received: 08/24/22 16:39
Lab Sample ID: 570-107575-14
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.211	J	1.26	0.160	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Arsenic	7.58		0.628	0.115	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Barium	187	B	0.628	0.120	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Beryllium	0.717		0.377	0.175	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Cadmium	0.464	J	0.628	0.107	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Chromium	31.8		1.26	0.130	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Cobalt	12.1		0.628	0.130	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Copper	32.8		1.26	0.142	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Lead	14.5		0.628	0.0821	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Molybdenum	1.20	J	1.26	0.136	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Nickel	24.5		1.26	0.119	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Selenium	1.80		1.26	0.474	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Silver	ND		0.628	0.398	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Thallium	0.264	J	0.628	0.0754	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Vanadium	57.2		1.26	0.151	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20
Zinc	84.6		12.6	0.696	mg/Kg	☼	08/26/22 11:51	08/29/22 10:10	20

Client Sample ID: LCW-13-Z-061722
Date Collected: 06/17/22 13:00
Date Received: 08/24/22 16:39
Lab Sample ID: 570-107575-15
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.34	0.170	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Arsenic	11.3		0.668	0.122	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Barium	97.9	B	0.668	0.128	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Beryllium	0.644		0.401	0.186	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Cadmium	ND		0.668	0.114	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Chromium	33.7		1.34	0.139	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Cobalt	9.79		0.668	0.138	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Copper	26.5		1.34	0.151	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Lead	8.16		0.668	0.0874	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Molybdenum	2.64		1.34	0.144	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Nickel	18.2		1.34	0.127	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Selenium	1.76		1.34	0.504	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Silver	ND		0.668	0.424	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Thallium	0.399	J	0.668	0.0802	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Vanadium	57.6		1.34	0.161	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20
Zinc	77.8		13.4	0.741	mg/Kg	☼	08/26/22 11:51	08/29/22 10:12	20

Client Sample Results

Client: Anchor QEA LLC
Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Method: 7471A - Mercury (CVAA)

Client Sample ID: LCW-02-Z-061522
Lab Sample ID: 570-107575-1
Date Collected: 06/15/22 11:00
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0604	J H H3	0.118	0.0192	mg/Kg	☼	08/25/22 17:03	08/29/22 12:37	1

Client Sample ID: LCW-03-Z-061522
Lab Sample ID: 570-107575-4
Date Collected: 06/15/22 09:15
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0278	J H H3	0.0959	0.0155	mg/Kg	☼	08/26/22 16:19	08/29/22 13:40	1

Client Sample ID: LCW-04-Z-061522
Lab Sample ID: 570-107575-8
Date Collected: 06/15/22 10:15
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0949	J H H3	0.114	0.0185	mg/Kg	☼	08/26/22 16:19	08/29/22 13:42	1

Client Sample ID: LCW-05-Z-061722
Lab Sample ID: 570-107575-9
Date Collected: 06/17/22 17:10
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0558	J H H3	0.0967	0.0157	mg/Kg	☼	08/25/22 17:44	08/29/22 14:55	1

Client Sample ID: LCW-07-Z-061722
Lab Sample ID: 570-107575-10
Date Collected: 06/17/22 11:00
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0202	J H H3	0.0975	0.0158	mg/Kg	☼	09/26/22 17:40	09/27/22 14:32	1

Client Sample ID: LCW-08-Z-061522
Lab Sample ID: 570-107575-11
Date Collected: 06/15/22 12:00
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0259	J H H3	0.104	0.0168	mg/Kg	☼	08/25/22 17:44	08/29/22 15:05	1

Client Sample ID: LCW-09-Z-061722
Lab Sample ID: 570-107575-12
Date Collected: 06/17/22 15:20
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.125	H H3	0.124	0.0201	mg/Kg	☼	08/25/22 17:44	08/29/22 15:07	1

Client Sample ID: LCW-10-Z-061722
Lab Sample ID: 570-107575-13
Date Collected: 06/17/22 08:30
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0479	J H H3	0.106	0.0172	mg/Kg	☼	08/25/22 17:44	08/29/22 15:08	1

Client Sample ID: LCW-12-Z-061522
Lab Sample ID: 570-107575-14
Date Collected: 06/15/22 11:45
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0806	J H H3	0.101	0.0164	mg/Kg	☼	08/25/22 17:44	08/29/22 15:10	1

Method: 7471A - Mercury (CVAA)

Client Sample ID: LCW-13-Z-061722 | **Lab Sample ID: 570-107575-15**
Date Collected: 06/17/22 13:00 | **Matrix: Soil**
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.0632**	**J H H3**	0.114	0.0185	mg/Kg	☼	08/25/22 17:44	08/29/22 15:12	1

Client: Anchor QEA LLC
Project/Site: Los Cerritos Wetlands Restoration

Job ID: 570-107575-1

General Chemistry

Client Sample ID: LCW-02-Z-061522
Date Collected: 06/15/22 11:00
Date Received: 08/24/22 16:39

Lab Sample ID: 570-107575-1
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	73.4	H H3	0.100	0.100	%			08/25/22 13:30	1

Client Sample ID: LCW-03-0_2-061522
Date Collected: 06/15/22 09:15
Date Received: 08/24/22 16:39

Lab Sample ID: 570-107575-2
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	95.1	H H3	0.100	0.100	%			08/25/22 13:30	1

Client Sample ID: LCW-03-2_4-061522
Date Collected: 06/15/22 09:15
Date Received: 08/24/22 16:39

Lab Sample ID: 570-107575-3
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	87.2	H H3	0.100	0.100	%			08/25/22 13:30	1

Client Sample ID: LCW-03-Z-061522
Date Collected: 06/15/22 09:15
Date Received: 08/24/22 16:39

Lab Sample ID: 570-107575-4
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	83.6	H H3	0.100	0.100	%			08/25/22 13:30	1

Client Sample ID: LCW-04-0_2-061522
Date Collected: 06/15/22 10:15
Date Received: 08/24/22 16:39

Lab Sample ID: 570-107575-5
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	88.7	H H3	0.100	0.100	%			08/25/22 13:30	1

Client Sample ID: LCW-04-2_4-061522
Date Collected: 06/15/22 10:15
Date Received: 08/24/22 16:39

Lab Sample ID: 570-107575-6
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	85.7	H H3	0.100	0.100	%			08/25/22 13:30	1

Client Sample ID: LCW-04-Z-061522
Date Collected: 06/15/22 10:15
Date Received: 08/24/22 16:39

Lab Sample ID: 570-107575-8
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	74.6	H H3	0.100	0.100	%			08/25/22 13:30	1

Client Sample ID: LCW-05-Z-061722
Date Collected: 06/17/22 17:10
Date Received: 08/24/22 16:39

Lab Sample ID: 570-107575-9
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	86.2	H H3	0.100	0.100	%			08/25/22 13:30	1

Client Sample ID: LCW-07-Z-061722
Date Collected: 06/17/22 11:00
Date Received: 08/24/22 16:39

Lab Sample ID: 570-107575-10
Matrix: Soil

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	82.2	H H3	0.100	0.100	%			08/25/22 13:30	1

General Chemistry

Client Sample ID: LCW-08-Z-061522
Lab Sample ID: 570-107575-11
Date Collected: 06/15/22 12:00
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	80.5	H H3	0.100	0.100	%			08/25/22 13:30	1

Client Sample ID: LCW-09-Z-061722
Lab Sample ID: 570-107575-12
Date Collected: 06/17/22 15:20
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	70.0	H H3	0.100	0.100	%			08/25/22 13:30	1

Client Sample ID: LCW-10-Z-061722
Lab Sample ID: 570-107575-13
Date Collected: 06/17/22 08:30
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	75.4	H H3	0.100	0.100	%			08/25/22 13:30	1

Client Sample ID: LCW-12-Z-061522
Lab Sample ID: 570-107575-14
Date Collected: 06/15/22 11:45
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	79.3	H H3	0.100	0.100	%			08/25/22 13:30	1

Client Sample ID: LCW-13-Z-061722
Lab Sample ID: 570-107575-15
Date Collected: 06/17/22 13:00
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	74.5	H H3	0.100	0.100	%			08/25/22 13:30	1

Client Sample ID: LCW-04-4_6-061522
Lab Sample ID: 570-107575-16
Date Collected: 06/15/22 10:15
Matrix: Soil
Date Received: 08/24/22 16:39

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	79.9	H H3	0.100	0.100	%			08/25/22 17:59	1

Surrogate Summary

Client: Anchor QEA LLC | Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Soil | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		TCX1	DCB1
Lab Sample ID	Client Sample ID	(20-143)	(20-180)
570-107575-2	LCW-03-0_2-061522	98 H H3	87 H H3
570-107575-3	LCW-03-2_4-061522	90 H H3	70 H H3
570-107575-4	LCW-03-Z-061522	94 H H3	76 H H3
570-107575-4 MS	LCW-03-Z-061522	87 H H3	82 H H3
570-107575-4 MSD	LCW-03-Z-061522	101 H H3	70 H H3
570-107575-5	LCW-04-0_2-061522	89 H H3	73 H H3
570-107575-6	LCW-04-2_4-061522	98 H H3	80 H H3
570-107575-8	LCW-04-Z-061522	80 H H3	71 H H3
570-107575-16	LCW-04-4_6-061522	99 H3 H	92 H3 H
570-107575-16 MS	LCW-04-4_6-061522	97	94
570-107575-16 MSD	LCW-04-4_6-061522	96	91

Surrogate Legend

TCX = Tetrachloro-m-xylene (Surr)
DCB = DCB Decachlorobiphenyl (Surr)

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		TCX1	DCB1
Lab Sample ID	Client Sample ID	(20-143)	(20-180)
LCS 570-259488/2-A	Lab Control Sample	95	103
LCS 570-259939/4-A	Lab Control Sample	100	107
LCSD 570-259488/3-A	Lab Control Sample Dup	100	107
LCSD 570-259939/5-A	Lab Control Sample Dup	94	105
MB 570-259488/1-A	Method Blank	91	105
MB 570-259939/1-A	Method Blank	101	112

Surrogate Legend

TCX = Tetrachloro-m-xylene (Surr)
DCB = DCB Decachlorobiphenyl (Surr)

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 570-259488/1-A
Matrix: Solid
Analysis Batch: 259701

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 259488

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		10	5.5	ug/Kg		08/25/22 15:10	08/26/22 18:46	1
Aroclor-1221	ND		10	5.5	ug/Kg		08/25/22 15:10	08/26/22 18:46	1
Aroclor-1232	ND		10	5.5	ug/Kg		08/25/22 15:10	08/26/22 18:46	1
Aroclor-1242	ND		10	5.5	ug/Kg		08/25/22 15:10	08/26/22 18:46	1
Aroclor-1248	ND		10	5.5	ug/Kg		08/25/22 15:10	08/26/22 18:46	1
Aroclor-1254	ND		10	5.0	ug/Kg		08/25/22 15:10	08/26/22 18:46	1
Aroclor-1260	ND		10	5.0	ug/Kg		08/25/22 15:10	08/26/22 18:46	1
Aroclor-1262	ND		10	5.0	ug/Kg		08/25/22 15:10	08/26/22 18:46	1
Aroclor-1268	ND		10	5.0	ug/Kg		08/25/22 15:10	08/26/22 18:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene (Surr)	*91*		*20 - 143*	*08/25/22 15:10*	*08/26/22 18:46*	*1*
DCB Decachlorobiphenyl (Surr)	*105*		*20 - 180*	*08/25/22 15:10*	*08/26/22 18:46*	*1*

Lab Sample ID: LCS 570-259488/2-A
Matrix: Solid
Analysis Batch: 259701

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 259488

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aroclor-1016	20.0	24.06		ug/Kg		120	47 - 163
Aroclor-1260	20.0	23.49		ug/Kg		117	57 - 167

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene (Surr)	*95*		*20 - 143*
DCB Decachlorobiphenyl (Surr)	*103*		*20 - 180*

Lab Sample ID: LCSD 570-259488/3-A
Matrix: Solid
Analysis Batch: 259701

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 259488

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aroclor-1016	20.0	23.01		ug/Kg		115	47 - 163	4	30
Aroclor-1260	20.0	25.05		ug/Kg		125	57 - 167	6	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene (Surr)	*100*		*20 - 143*
DCB Decachlorobiphenyl (Surr)	*107*		*20 - 180*

Lab Sample ID: 570-107575-4 MS
Matrix: Soil
Analysis Batch: 259701

Client Sample ID: LCW-03-Z-061522
Prep Type: Total/NA
Prep Batch: 259488

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Aroclor-1016	ND	H F2 H3	23.8	24.03	H H3	ug/Kg	☼	101	20 - 180
Aroclor-1260	ND	H F2 H3	23.8	23.76	H H3	ug/Kg	☼	100	20 - 180

Client: Anchor QEA LLC Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: 570-107575-4 MS
Matrix: Soil
Analysis Batch: 259701
Client Sample ID: LCW-03-Z-061522
Prep Type: Total/NA
Prep Batch: 259488

Surrogate	MS %Recovery	MS Qualifier	Limits
Tetrachloro-m-xylene (Surr)	*87*	*H H3*	*20 - 143*
DCB Decachlorobiphenyl (Surr)	*82*	*H H3*	*20 - 180*

Lab Sample ID: 570-107575-4 MSD
Matrix: Soil
Analysis Batch: 259701
Client Sample ID: LCW-03-Z-061522
Prep Type: Total/NA
Prep Batch: 259488

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aroclor-1016	ND	H F2 H3	23.8	7.881	J H F2 H3	ug/Kg	☼	33	20 - 180	101	40
Aroclor-1260	ND	H F2 H3	23.8	6.086	J H F2 H3	ug/Kg	☼	26	20 - 180	118	40

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Tetrachloro-m-xylene (Surr)	*101*	*H H3*	*20 - 143*
DCB Decachlorobiphenyl (Surr)	*70*	*H H3*	*20 - 180*

Lab Sample ID: MB 570-259939/1-A
Matrix: Solid
Analysis Batch: 260465
Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 259939

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		10	5.5	ug/Kg		08/27/22 09:34	08/31/22 11:20	1
Aroclor-1221	ND		10	5.5	ug/Kg		08/27/22 09:34	08/31/22 11:20	1
Aroclor-1232	ND		10	5.5	ug/Kg		08/27/22 09:34	08/31/22 11:20	1
Aroclor-1242	ND		10	5.5	ug/Kg		08/27/22 09:34	08/31/22 11:20	1
Aroclor-1248	ND		10	5.5	ug/Kg		08/27/22 09:34	08/31/22 11:20	1
Aroclor-1254	ND		10	5.0	ug/Kg		08/27/22 09:34	08/31/22 11:20	1
Aroclor-1260	ND		10	5.0	ug/Kg		08/27/22 09:34	08/31/22 11:20	1
Aroclor-1262	ND		10	5.0	ug/Kg		08/27/22 09:34	08/31/22 11:20	1
Aroclor-1268	ND		10	5.0	ug/Kg		08/27/22 09:34	08/31/22 11:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene (Surr)	*101*		*20 - 143*	*08/27/22 09:34*	*08/31/22 11:20*	*1*
DCB Decachlorobiphenyl (Surr)	*112*		*20 - 180*	*08/27/22 09:34*	*08/31/22 11:20*	*1*

Lab Sample ID: LCS 570-259939/4-A
Matrix: Solid
Analysis Batch: 260465
Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 259939

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aroclor-1016	20.0	24.35		ug/Kg		122	47 - 163
Aroclor-1260	20.0	26.34		ug/Kg		132	57 - 167

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene (Surr)	*100*		*20 - 143*
DCB Decachlorobiphenyl (Surr)	*107*		*20 - 180*

Client: Anchor QEA LLC
Project/Site: Los Cerritos Wetlands Restoration

Job ID: 570-107575-1

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: LCSD 570-259939/5-A
Matrix: Solid
Analysis Batch: 260465

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 259939

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aroclor-1016			20.0	21.63		ug/Kg		108	47 - 163	12	30
Aroclor-1260			20.0	24.11		ug/Kg		121	57 - 167	9	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene (Surr)	*94*		*20 - 143*
DCB Decachlorobiphenyl (Surr)	*105*		*20 - 180*

Lab Sample ID: 570-107575-16 MS
Matrix: Soil
Analysis Batch: 260465

Client Sample ID: LCW-04-4_6-061522
Prep Type: Total/NA
Prep Batch: 259939

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Aroclor-1016	ND	H H3	25.0	29.03		ug/Kg	☼	116	20 - 180
Aroclor-1260	ND	H H3	25.0	29.14		ug/Kg	☼	117	20 - 180

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene (Surr)	*97*		*20 - 143*
DCB Decachlorobiphenyl (Surr)	*94*		*20 - 180*

Lab Sample ID: 570-107575-16 MSD
Matrix: Soil
Analysis Batch: 260465

Client Sample ID: LCW-04-4_6-061522
Prep Type: Total/NA
Prep Batch: 259939

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aroclor-1016	ND	H H3	24.9	28.06		ug/Kg	☼	113	20 - 180	3	40
Aroclor-1260	ND	H H3	24.9	27.43		ug/Kg	☼	110	20 - 180	6	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene (Surr)	*96*		*20 - 143*
DCB Decachlorobiphenyl (Surr)	*91*		*20 - 180*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 570-259742/1-A ^20
Matrix: Solid
Analysis Batch: 260126

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 259742

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.00	0.128	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Arsenic	ND		0.500	0.0914	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Barium	0.1070	J	0.500	0.0957	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Beryllium	ND		0.300	0.139	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Cadmium	ND		0.500	0.0854	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Chromium	ND		1.00	0.104	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Cobalt	ND		0.500	0.103	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Copper	ND		1.00	0.113	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Lead	ND		0.500	0.0654	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Molybdenum	ND		1.00	0.108	mg/Kg		08/26/22 11:51	08/29/22 09:33	20

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 570-259742/1-A ^20 **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 260126 **Prep Batch: 259742**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		1.00	0.0950	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Selenium	ND		1.00	0.377	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Silver	ND		0.500	0.317	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Thallium	ND		0.500	0.0600	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Vanadium	ND		1.00	0.121	mg/Kg		08/26/22 11:51	08/29/22 09:33	20
Zinc	ND		10.0	0.554	mg/Kg		08/26/22 11:51	08/29/22 09:33	20

Lab Sample ID: LCS 570-259742/2-A ^20 **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 260126 **Prep Batch: 259742**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	49.8	55.40		mg/Kg		111	80 - 120
Arsenic	49.8	49.65		mg/Kg		100	80 - 120
Barium	49.8	51.21		mg/Kg		103	80 - 120
Beryllium	49.8	50.45		mg/Kg		101	80 - 120
Cadmium	49.8	51.25		mg/Kg		103	80 - 120
Chromium	49.8	51.75		mg/Kg		104	80 - 120
Cobalt	49.8	52.26		mg/Kg		105	80 - 120
Copper	49.8	52.85		mg/Kg		106	80 - 120
Lead	49.8	51.19		mg/Kg		103	80 - 120
Molybdenum	49.8	50.37		mg/Kg		101	80 - 120
Nickel	49.8	52.37		mg/Kg		105	80 - 120
Selenium	49.8	49.27		mg/Kg		99	80 - 120
Silver	24.9	25.71		mg/Kg		103	80 - 120
Thallium	49.8	50.36		mg/Kg		101	80 - 120
Vanadium	49.8	50.83		mg/Kg		102	80 - 120
Zinc	49.8	49.63		mg/Kg		100	80 - 120

Lab Sample ID: LCSD 570-259742/3-A ^20 **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 260126 **Prep Batch: 259742**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	49.8	55.27		mg/Kg		111	80 - 120	0	20
Arsenic	49.8	49.69		mg/Kg		100	80 - 120	0	20
Barium	49.8	51.09		mg/Kg		103	80 - 120	0	20
Beryllium	49.8	50.36		mg/Kg		101	80 - 120	0	20
Cadmium	49.8	51.01		mg/Kg		103	80 - 120	0	20
Chromium	49.8	51.32		mg/Kg		103	80 - 120	1	20
Cobalt	49.8	52.08		mg/Kg		105	80 - 120	0	20
Copper	49.8	52.51		mg/Kg		106	80 - 120	1	20
Lead	49.8	51.28		mg/Kg		103	80 - 120	0	20
Molybdenum	49.8	50.54		mg/Kg		102	80 - 120	0	20
Nickel	49.8	52.50		mg/Kg		106	80 - 120	0	20
Selenium	49.8	47.80		mg/Kg		96	80 - 120	3	20
Silver	24.9	25.76		mg/Kg		104	80 - 120	0	20
Thallium	49.8	50.48		mg/Kg		101	80 - 120	0	20
Vanadium	49.8	50.41		mg/Kg		101	80 - 120	1	20

QC Sample Results

Client: Anchor QEA LLC — Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 570-259742/3-A ^20 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 260126 — **Prep Batch: 259742**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Zinc			49.8	49.63		mg/Kg		100	80 - 120	0	20

Lab Sample ID: 570-107575-1 MS — **Client Sample ID: LCW-02-Z-061522**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 260126 — **Prep Batch: 259742**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.341	J	68.5	12.12		mg/Kg	☼	17	1 - 97
Arsenic	10.3		68.5	74.99		mg/Kg	☼	94	72 - 132
Barium	179	B F1	68.5	288.1	F1	mg/Kg	☼	160	50 - 152
Beryllium	0.796		68.5	62.31		mg/Kg	☼	90	61 - 121
Cadmium	0.177	J	68.5	67.43		mg/Kg	☼	98	85 - 121
Chromium	34.7		68.5	100.9		mg/Kg	☼	97	20 - 182
Cobalt	14.9		68.5	78.66		mg/Kg	☼	93	40 - 166
Copper	41.3		68.5	104.4		mg/Kg	☼	92	25 - 157
Lead	11.8		68.5	79.70		mg/Kg	☼	99	62 - 134
Molybdenum	1.77		68.5	66.44		mg/Kg	☼	94	69 - 123
Nickel	26.5		68.5	90.48		mg/Kg	☼	94	46 - 154
Selenium	2.47		68.5	65.28		mg/Kg	☼	92	54 - 132
Silver	ND		34.2	34.14		mg/Kg	☼	100	78 - 126
Thallium	0.337	J	68.5	65.61		mg/Kg	☼	95	79 - 115
Vanadium	67.4		68.5	137.4		mg/Kg	☼	102	28 - 178
Zinc	95.0		68.5	162.1		mg/Kg	☼	98	23 - 173

Lab Sample ID: 570-107575-1 MSD — **Client Sample ID: LCW-02-Z-061522**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 260126 — **Prep Batch: 259742**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	0.341	J	66.4	11.59		mg/Kg	☼	17	1 - 97	4	39
Arsenic	10.3		66.4	73.20		mg/Kg	☼	95	72 - 132	2	13
Barium	179	B F1	66.4	277.0		mg/Kg	☼	148	50 - 152	4	41
Beryllium	0.796		66.4	59.82		mg/Kg	☼	89	61 - 121	4	13
Cadmium	0.177	J	66.4	64.83		mg/Kg	☼	97	85 - 121	4	12
Chromium	34.7		66.4	97.08		mg/Kg	☼	94	20 - 182	4	15
Cobalt	14.9		66.4	75.68		mg/Kg	☼	92	40 - 166	4	14
Copper	41.3		66.4	100.8		mg/Kg	☼	90	25 - 157	4	22
Lead	11.8		66.4	76.33		mg/Kg	☼	97	62 - 134	4	23
Molybdenum	1.77		66.4	63.91		mg/Kg	☼	94	69 - 123	4	13
Nickel	26.5		66.4	87.50		mg/Kg	☼	92	46 - 154	3	15
Selenium	2.47		66.4	63.07		mg/Kg	☼	91	54 - 132	3	14
Silver	ND		33.2	32.71		mg/Kg	☼	98	78 - 126	4	15
Thallium	0.337	J	66.4	62.69		mg/Kg	☼	94	79 - 115	5	11
Vanadium	67.4		66.4	132.7		mg/Kg	☼	98	28 - 178	3	28
Zinc	95.0		66.4	157.9		mg/Kg	☼	95	23 - 173	3	18

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 570-267446/1-A ^20
Matrix: Solid
Analysis Batch: 267706

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 267446

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.01	0.129	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Arsenic	ND		0.505	0.0923	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Barium	ND		0.505	0.0966	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Beryllium	ND		0.303	0.141	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Cadmium	ND		0.505	0.0863	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Chromium	ND		1.01	0.105	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Cobalt	ND		0.505	0.104	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Copper	ND		1.01	0.115	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Lead	ND		0.505	0.0661	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Molybdenum	0.1348	J	1.01	0.109	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Nickel	ND		1.01	0.0960	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Selenium	ND		1.01	0.381	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Silver	ND		0.505	0.321	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Thallium	ND		0.505	0.0606	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Vanadium	ND		1.01	0.122	mg/Kg		09/26/22 15:32	09/27/22 09:59	20
Zinc	ND		10.1	0.560	mg/Kg		09/26/22 15:32	09/27/22 09:59	20

Lab Sample ID: LCS 570-267446/2-A ^20
Matrix: Solid
Analysis Batch: 267706

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 267446

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	51.0	54.62		mg/Kg		107	80 - 120
Arsenic	51.0	48.80		mg/Kg		96	80 - 120
Barium	51.0	49.79		mg/Kg		98	80 - 120
Beryllium	51.0	47.40		mg/Kg		93	80 - 120
Cadmium	51.0	50.26		mg/Kg		99	80 - 120
Chromium	51.0	50.15		mg/Kg		98	80 - 120
Cobalt	51.0	49.89		mg/Kg		98	80 - 120
Copper	51.0	50.50		mg/Kg		99	80 - 120
Lead	51.0	49.64		mg/Kg		97	80 - 120
Molybdenum	51.0	49.91		mg/Kg		98	80 - 120
Nickel	51.0	50.41		mg/Kg		99	80 - 120
Selenium	51.0	47.45		mg/Kg		93	80 - 120
Silver	25.5	24.88		mg/Kg		98	80 - 120
Thallium	51.0	49.15		mg/Kg		96	80 - 120
Vanadium	51.0	49.24		mg/Kg		97	80 - 120
Zinc	51.0	48.97		mg/Kg		96	80 - 120

Lab Sample ID: LCSD 570-267446/3-A ^20
Matrix: Solid
Analysis Batch: 267706

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 267446

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	50.5	54.82		mg/Kg		109	80 - 120	0	20
Arsenic	50.5	48.96		mg/Kg		97	80 - 120	0	20
Barium	50.5	49.52		mg/Kg		98	80 - 120	1	20
Beryllium	50.5	48.01		mg/Kg		95	80 - 120	1	20
Cadmium	50.5	49.87		mg/Kg		99	80 - 120	1	20

Client: Anchor QEA LLC
Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 570-267446/3-A ^20
Client Sample ID: Lab Control Sample Dup
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 267706
Prep Batch: 267446

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chromium	50.5	49.88		mg/Kg		99	80 - 120	1	20
Cobalt	50.5	50.15		mg/Kg		99	80 - 120	1	20
Copper	50.5	50.81		mg/Kg		101	80 - 120	1	20
Lead	50.5	50.17		mg/Kg		99	80 - 120	1	20
Molybdenum	50.5	49.99		mg/Kg		99	80 - 120	0	20
Nickel	50.5	50.66		mg/Kg		100	80 - 120	0	20
Selenium	50.5	48.47		mg/Kg		96	80 - 120	2	20
Silver	25.3	24.85		mg/Kg		98	80 - 120	0	20
Thallium	50.5	49.45		mg/Kg		98	80 - 120	1	20
Vanadium	50.5	49.35		mg/Kg		98	80 - 120	0	20
Zinc	50.5	48.74		mg/Kg		96	80 - 120	0	20

Lab Sample ID: 570-110712-B-1-B MS ^20
Client Sample ID: Matrix Spike
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 267706
Prep Batch: 267446

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.330	J	49.8	21.79		mg/Kg		43	1 - 97
Arsenic	4.67		49.8	49.31		mg/Kg		90	72 - 132
Barium	58.6		49.8	132.9		mg/Kg		149	50 - 152
Beryllium	0.197	J	49.8	39.26		mg/Kg		79	61 - 121
Cadmium	0.148	J	49.8	43.42		mg/Kg		87	85 - 121
Chromium	20.3		49.8	73.35		mg/Kg		107	20 - 182
Cobalt	5.99		49.8	49.57		mg/Kg		88	40 - 166
Copper	23.8		49.8	77.56		mg/Kg		108	25 - 157
Lead	63.1		49.8	123.9		mg/Kg		122	62 - 134
Molybdenum	0.465	J B	49.8	41.49		mg/Kg		82	69 - 123
Nickel	21.4		49.8	73.71		mg/Kg		105	46 - 154
Selenium	0.830	J	49.8	42.07		mg/Kg		83	54 - 132
Silver	ND		24.9	21.69		mg/Kg		87	78 - 126
Thallium	0.0990	J	49.8	42.40		mg/Kg		85	79 - 115
Vanadium	26.1		49.8	85.72		mg/Kg		120	28 - 178
Zinc	63.1		49.8	132.4		mg/Kg		139	23 - 173

Lab Sample ID: 570-110712-B-1-C MSD ^20
Client Sample ID: Matrix Spike Duplicate
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 267706
Prep Batch: 267446

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	0.330	J	51.0	21.46		mg/Kg		41	1 - 97	1	39
Arsenic	4.67		51.0	50.11		mg/Kg		89	72 - 132	2	13
Barium	58.6		51.0	128.7		mg/Kg		137	50 - 152	3	41
Beryllium	0.197	J	51.0	40.90		mg/Kg		80	61 - 121	4	13
Cadmium	0.148	J	51.0	44.46		mg/Kg		87	85 - 121	2	12
Chromium	20.3		51.0	76.23		mg/Kg		110	20 - 182	4	15
Cobalt	5.99		51.0	49.82		mg/Kg		86	40 - 166	1	14
Copper	23.8		51.0	75.06		mg/Kg		100	25 - 157	3	22
Lead	63.1		51.0	130.6		mg/Kg		132	62 - 134	5	23
Molybdenum	0.465	J B	51.0	42.13		mg/Kg		82	69 - 123	2	13

Client: Anchor QEA LLC — Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 570-110712-B-1-C MSD ^20 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 267706 — **Prep Batch: 267446**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Nickel	21.4		51.0	76.71		mg/Kg		108	46 - 154	4	15
Selenium	0.830	J	51.0	42.98		mg/Kg		83	54 - 132	2	14
Silver	ND		25.5	22.36		mg/Kg		88	78 - 126	3	15
Thallium	0.0990	J	51.0	43.03		mg/Kg		84	79 - 115	1	11
Vanadium	26.1		51.0	84.32		mg/Kg		114	28 - 178	2	28
Zinc	63.1		51.0	138.2		mg/Kg		147	23 - 173	4	18

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 570-259500/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 260186 — **Prep Batch: 259500**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0817	0.0132	mg/Kg		08/25/22 17:03	08/29/22 12:19	1

Lab Sample ID: LCS 570-259500/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 260186 — **Prep Batch: 259500**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.408	0.4171		mg/Kg		102	80 - 120

Lab Sample ID: LCSD 570-259500/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 260186 — **Prep Batch: 259500**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.408	0.4092		mg/Kg		100	80 - 120	2	10

Lab Sample ID: 570-107444-A-1-D MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 260186 — **Prep Batch: 259500**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.0315	J	0.392	0.4037		mg/Kg		95	80 - 120

Lab Sample ID: 570-107444-A-1-E MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 260186 — **Prep Batch: 259500**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.0315	J	0.385	0.3958		mg/Kg		95	80 - 120	2	20

Lab Sample ID: MB 570-259519/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 260186 — **Prep Batch: 259519**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0868	0.0141	mg/Kg		08/25/22 17:44	08/29/22 14:49	1

Client: Anchor QEA LLC
Project/Site: Los Cerritos Wetlands Restoration

Job ID: 570-107575-1

Method: 7471A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 570-259519/2-A
Matrix: Solid
Analysis Batch: 260186

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 259519

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			0.400	0.4130		mg/Kg		103	80 - 120		

Lab Sample ID: LCSD 570-259519/3-A
Matrix: Solid
Analysis Batch: 260186

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 259519

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury			0.385	0.4095		mg/Kg		106	80 - 120	1	10

Lab Sample ID: 570-107575-9 MS
Matrix: Soil
Analysis Batch: 260186

Client Sample ID: LCW-05-Z-061722
Prep Type: Total/NA
Prep Batch: 259519

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury	0.0558	J H H3	0.446	0.4829		mg/Kg	☼	96	80 - 120		

Lab Sample ID: 570-107575-9 MSD
Matrix: Soil
Analysis Batch: 260186

Client Sample ID: LCW-05-Z-061722
Prep Type: Total/NA
Prep Batch: 259519

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.0558	J H H3	0.446	0.4901		mg/Kg	☼	97	80 - 120	1	20

Lab Sample ID: MB 570-259835/1-A
Matrix: Solid
Analysis Batch: 260186

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 259835

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0833	0.0135	mg/Kg		08/26/22 16:19	08/29/22 13:17	1

Lab Sample ID: LCS 570-259835/2-A
Matrix: Solid
Analysis Batch: 260186

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 259835

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			0.392	0.3850		mg/Kg		98	80 - 120		

Lab Sample ID: LCSD 570-259835/3-A
Matrix: Solid
Analysis Batch: 260186

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 259835

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury			0.400	0.4075		mg/Kg		102	80 - 120	6	10

Lab Sample ID: 570-107634-A-1-B MS
Matrix: Solid
Analysis Batch: 260186

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 259835

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury	ND		0.400	0.4193		mg/Kg		105	80 - 120		

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Client: Anchor QEA LLC Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Method: 7471A - Mercury (CVAA)

Lab Sample ID: 570-107634-A-1-C MSD **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 260186 **Prep Batch: 259835**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	ND		0.408	0.4007		mg/Kg		98	80 - 120	5	20

Lab Sample ID: MB 570-267473/1-A **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 267805 **Prep Batch: 267473**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0868	0.0141	mg/Kg		09/26/22 17:40	09/27/22 14:23	1

Lab Sample ID: LCS 570-267473/2-A **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 267805 **Prep Batch: 267473**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.400	0.3380		mg/Kg		85	80 - 120

Lab Sample ID: LCSD 570-267473/3-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 267805 **Prep Batch: 267473**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.408	0.3440		mg/Kg		84	80 - 120	2	10

Lab Sample ID: 570-110815-E-3-B MS **Client Sample ID: Matrix Spike**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 267805 **Prep Batch: 267473**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.0352	J F1	0.400	0.3513	F1	mg/Kg		79	80 - 120

Lab Sample ID: 570-110815-E-3-C MSD **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 267805 **Prep Batch: 267473**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.0352	J F1	0.417	0.3902		mg/Kg		85	80 - 120	11	20

Method: Moisture - 2540 - Percent Moisture

Lab Sample ID: 570-107575-1 DU **Client Sample ID: LCW-02-Z-061522**
Matrix: Soil **Prep Type: Total/NA**
Analysis Batch: 259455

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Solids	73.4	H H3	73.5		%		0.2	10

Method: Moisture - 2540 - Percent Moisture (Continued)

Lab Sample ID: 570-107575-11 DU
Matrix: Soil
Analysis Batch: 259455

Client Sample ID: LCW-08-Z-061522
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Solids	80.5	H H3	79.9		%		0.7	10

QC Association Summary

Client: Anchor QEA LLC
Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

GC Semi VOA

Prep Batch: 259488

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-2	LCW-03-0_2-061522	Total/NA	Soil	3541	
570-107575-3	LCW-03-2_4-061522	Total/NA	Soil	3541	
570-107575-4	LCW-03-Z-061522	Total/NA	Soil	3541	
570-107575-5	LCW-04-0_2-061522	Total/NA	Soil	3541	
570-107575-6	LCW-04-2_4-061522	Total/NA	Soil	3541	
570-107575-8	LCW-04-Z-061522	Total/NA	Soil	3541	
MB 570-259488/1-A	Method Blank	Total/NA	Solid	3541	
LCS 570-259488/2-A	Lab Control Sample	Total/NA	Solid	3541	
LCSD 570-259488/3-A	Lab Control Sample Dup	Total/NA	Solid	3541	
570-107575-4 MS	LCW-03-Z-061522	Total/NA	Soil	3541	
570-107575-4 MSD	LCW-03-Z-061522	Total/NA	Soil	3541	

Analysis Batch: 259701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-2	LCW-03-0_2-061522	Total/NA	Soil	8082	259488
570-107575-3	LCW-03-2_4-061522	Total/NA	Soil	8082	259488
570-107575-4	LCW-03-Z-061522	Total/NA	Soil	8082	259488
570-107575-5	LCW-04-0_2-061522	Total/NA	Soil	8082	259488
570-107575-6	LCW-04-2_4-061522	Total/NA	Soil	8082	259488
570-107575-8	LCW-04-Z-061522	Total/NA	Soil	8082	259488
MB 570-259488/1-A	Method Blank	Total/NA	Solid	8082	259488
LCS 570-259488/2-A	Lab Control Sample	Total/NA	Solid	8082	259488
LCSD 570-259488/3-A	Lab Control Sample Dup	Total/NA	Solid	8082	259488
570-107575-4 MS	LCW-03-Z-061522	Total/NA	Soil	8082	259488
570-107575-4 MSD	LCW-03-Z-061522	Total/NA	Soil	8082	259488

Prep Batch: 259939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-16	LCW-04-4_6-061522	Total/NA	Soil	3541	
MB 570-259939/1-A	Method Blank	Total/NA	Solid	3541	
LCS 570-259939/4-A	Lab Control Sample	Total/NA	Solid	3541	
LCSD 570-259939/5-A	Lab Control Sample Dup	Total/NA	Solid	3541	
570-107575-16 MS	LCW-04-4_6-061522	Total/NA	Soil	3541	
570-107575-16 MSD	LCW-04-4_6-061522	Total/NA	Soil	3541	

Analysis Batch: 260465

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-16	LCW-04-4_6-061522	Total/NA	Soil	8082	259939
MB 570-259939/1-A	Method Blank	Total/NA	Solid	8082	259939
LCS 570-259939/4-A	Lab Control Sample	Total/NA	Solid	8082	259939
LCSD 570-259939/5-A	Lab Control Sample Dup	Total/NA	Solid	8082	259939
570-107575-16 MS	LCW-04-4_6-061522	Total/NA	Soil	8082	259939
570-107575-16 MSD	LCW-04-4_6-061522	Total/NA	Soil	8082	259939

Metals

Prep Batch: 259500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-1	LCW-02-Z-061522	Total/NA	Soil	7471A	
MB 570-259500/1-A	Method Blank	Total/NA	Solid	7471A	
LCS 570-259500/2-A	Lab Control Sample	Total/NA	Solid	7471A	

Metals (Continued)

Prep Batch: 259500 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 570-259500/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	
570-107444-A-1-D MS	Matrix Spike	Total/NA	Solid	7471A	
570-107444-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	

Prep Batch: 259519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-9	LCW-05-Z-061722	Total/NA	Soil	7471A	
570-107575-11	LCW-08-Z-061522	Total/NA	Soil	7471A	
570-107575-12	LCW-09-Z-061722	Total/NA	Soil	7471A	
570-107575-13	LCW-10-Z-061722	Total/NA	Soil	7471A	
570-107575-14	LCW-12-Z-061522	Total/NA	Soil	7471A	
570-107575-15	LCW-13-Z-061722	Total/NA	Soil	7471A	
MB 570-259519/1-A	Method Blank	Total/NA	Solid	7471A	
LCS 570-259519/2-A	Lab Control Sample	Total/NA	Solid	7471A	
LCSD 570-259519/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	
570-107575-9 MS	LCW-05-Z-061722	Total/NA	Soil	7471A	
570-107575-9 MSD	LCW-05-Z-061722	Total/NA	Soil	7471A	

Prep Batch: 259742

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-1	LCW-02-Z-061522	Total/NA	Soil	3050B	
570-107575-4	LCW-03-Z-061522	Total/NA	Soil	3050B	
570-107575-8	LCW-04-Z-061522	Total/NA	Soil	3050B	
570-107575-9	LCW-05-Z-061722	Total/NA	Soil	3050B	
570-107575-11	LCW-08-Z-061522	Total/NA	Soil	3050B	
570-107575-12	LCW-09-Z-061722	Total/NA	Soil	3050B	
570-107575-13	LCW-10-Z-061722	Total/NA	Soil	3050B	
570-107575-14	LCW-12-Z-061522	Total/NA	Soil	3050B	
570-107575-15	LCW-13-Z-061722	Total/NA	Soil	3050B	
MB 570-259742/1-A ^20	Method Blank	Total/NA	Solid	3050B	
LCS 570-259742/2-A ^20	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 570-259742/3-A ^20	Lab Control Sample Dup	Total/NA	Solid	3050B	
570-107575-1 MS	LCW-02-Z-061522	Total/NA	Soil	3050B	
570-107575-1 MSD	LCW-02-Z-061522	Total/NA	Soil	3050B	

Prep Batch: 259835

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-4	LCW-03-Z-061522	Total/NA	Soil	7471A	
570-107575-8	LCW-04-Z-061522	Total/NA	Soil	7471A	
MB 570-259835/1-A	Method Blank	Total/NA	Solid	7471A	
LCS 570-259835/2-A	Lab Control Sample	Total/NA	Solid	7471A	
LCSD 570-259835/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	
570-107634-A-1-B MS	Matrix Spike	Total/NA	Solid	7471A	
570-107634-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	

Analysis Batch: 260126

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-1	LCW-02-Z-061522	Total/NA	Soil	6020	259742
570-107575-4	LCW-03-Z-061522	Total/NA	Soil	6020	259742
570-107575-8	LCW-04-Z-061522	Total/NA	Soil	6020	259742
570-107575-9	LCW-05-Z-061722	Total/NA	Soil	6020	259742

Metals (Continued)

Analysis Batch: 260126 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-11	LCW-08-Z-061522	Total/NA	Soil	6020	259742
570-107575-12	LCW-09-Z-061722	Total/NA	Soil	6020	259742
570-107575-13	LCW-10-Z-061722	Total/NA	Soil	6020	259742
570-107575-14	LCW-12-Z-061522	Total/NA	Soil	6020	259742
570-107575-15	LCW-13-Z-061722	Total/NA	Soil	6020	259742
MB 570-259742/1-A ^20	Method Blank	Total/NA	Solid	6020	259742
LCS 570-259742/2-A ^20	Lab Control Sample	Total/NA	Solid	6020	259742
LCSD 570-259742/3-A ^20	Lab Control Sample Dup	Total/NA	Solid	6020	259742
570-107575-1 MS	LCW-02-Z-061522	Total/NA	Soil	6020	259742
570-107575-1 MSD	LCW-02-Z-061522	Total/NA	Soil	6020	259742

Analysis Batch: 260186

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-1	LCW-02-Z-061522	Total/NA	Soil	7471A	259500
570-107575-4	LCW-03-Z-061522	Total/NA	Soil	7471A	259835
570-107575-8	LCW-04-Z-061522	Total/NA	Soil	7471A	259835
570-107575-9	LCW-05-Z-061722	Total/NA	Soil	7471A	259519
570-107575-11	LCW-08-Z-061522	Total/NA	Soil	7471A	259519
570-107575-12	LCW-09-Z-061722	Total/NA	Soil	7471A	259519
570-107575-13	LCW-10-Z-061722	Total/NA	Soil	7471A	259519
570-107575-14	LCW-12-Z-061522	Total/NA	Soil	7471A	259519
570-107575-15	LCW-13-Z-061722	Total/NA	Soil	7471A	259519
MB 570-259500/1-A	Method Blank	Total/NA	Solid	7471A	259500
MB 570-259519/1-A	Method Blank	Total/NA	Solid	7471A	259519
MB 570-259835/1-A	Method Blank	Total/NA	Solid	7471A	259835
LCS 570-259500/2-A	Lab Control Sample	Total/NA	Solid	7471A	259500
LCS 570-259519/2-A	Lab Control Sample	Total/NA	Solid	7471A	259519
LCS 570-259835/2-A	Lab Control Sample	Total/NA	Solid	7471A	259835
LCSD 570-259500/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	259500
LCSD 570-259519/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	259519
LCSD 570-259835/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	259835
570-107444-A-1-D MS	Matrix Spike	Total/NA	Solid	7471A	259500
570-107444-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	259500
570-107575-9 MS	LCW-05-Z-061722	Total/NA	Soil	7471A	259519
570-107575-9 MSD	LCW-05-Z-061722	Total/NA	Soil	7471A	259519
570-107634-A-1-B MS	Matrix Spike	Total/NA	Solid	7471A	259835
570-107634-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	259835

Prep Batch: 267446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-10	LCW-07-Z-061722	Total/NA	Soil	3050B	
MB 570-267446/1-A ^20	Method Blank	Total/NA	Solid	3050B	
LCS 570-267446/2-A ^20	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 570-267446/3-A ^20	Lab Control Sample Dup	Total/NA	Solid	3050B	
570-110712-B-1-B MS ^20	Matrix Spike	Total/NA	Solid	3050B	
570-110712-B-1-C MSD ^20	Matrix Spike Duplicate	Total/NA	Solid	3050B	

Prep Batch: 267473

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-10	LCW-07-Z-061722	Total/NA	Soil	7471A	
MB 570-267473/1-A	Method Blank	Total/NA	Solid	7471A	

Metals (Continued)

Prep Batch: 267473 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 570-267473/2-A	Lab Control Sample	Total/NA	Solid	7471A	
LCSD 570-267473/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	
570-110815-E-3-B MS	Matrix Spike	Total/NA	Solid	7471A	
570-110815-E-3-C MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	

Analysis Batch: 267706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-10	LCW-07-Z-061722	Total/NA	Soil	6020	267446
MB 570-267446/1-A ^20	Method Blank	Total/NA	Solid	6020	267446
LCS 570-267446/2-A ^20	Lab Control Sample	Total/NA	Solid	6020	267446
LCSD 570-267446/3-A ^20	Lab Control Sample Dup	Total/NA	Solid	6020	267446
570-110712-B-1-B MS ^20	Matrix Spike	Total/NA	Solid	6020	267446
570-110712-B-1-C MSD ^20	Matrix Spike Duplicate	Total/NA	Solid	6020	267446

Analysis Batch: 267805

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-10	LCW-07-Z-061722	Total/NA	Soil	7471A	267473
MB 570-267473/1-A	Method Blank	Total/NA	Solid	7471A	267473
LCS 570-267473/2-A	Lab Control Sample	Total/NA	Solid	7471A	267473
LCSD 570-267473/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	267473
570-110815-E-3-B MS	Matrix Spike	Total/NA	Solid	7471A	267473
570-110815-E-3-C MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	267473

General Chemistry

Analysis Batch: 259455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-107575-1	LCW-02-Z-061522	Total/NA	Soil	Moisture - 2540	
570-107575-2	LCW-03-0_2-061522	Total/NA	Soil	Moisture - 2540	
570-107575-3	LCW-03-2_4-061522	Total/NA	Soil	Moisture - 2540	
570-107575-4	LCW-03-Z-061522	Total/NA	Soil	Moisture - 2540	
570-107575-5	LCW-04-0_2-061522	Total/NA	Soil	Moisture - 2540	
570-107575-6	LCW-04-2_4-061522	Total/NA	Soil	Moisture - 2540	
570-107575-8	LCW-04-Z-061522	Total/NA	Soil	Moisture - 2540	
570-107575-9	LCW-05-Z-061722	Total/NA	Soil	Moisture - 2540	
570-107575-10	LCW-07-Z-061722	Total/NA	Soil	Moisture - 2540	
570-107575-11	LCW-08-Z-061522	Total/NA	Soil	Moisture - 2540	
570-107575-12	LCW-09-Z-061722	Total/NA	Soil	Moisture - 2540	
570-107575-13	LCW-10-Z-061722	Total/NA	Soil	Moisture - 2540	
570-107575-14	LCW-12-Z-061522	Total/NA	Soil	Moisture - 2540	
570-107575-15	LCW-13-Z-061722	Total/NA	Soil	Moisture - 2540	
570-107575-16	LCW-04-4_6-061522	Total/NA	Soil	Moisture - 2540	
570-107575-1 DU	LCW-02-Z-061522	Total/NA	Soil	Moisture - 2540	
570-107575-11 DU	LCW-08-Z-061522	Total/NA	Soil	Moisture - 2540	

Client: Anchor QEA LLC
Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Client Sample ID: LCW-02-Z-061522
Lab Sample ID: 570-107575-1
Date Collected: 06/15/22 11:00
Matrix: Soil
Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			2.03 g	50 mL	259742	08/26/22 11:51		EET CAL 4
Total/NA	Analysis	6020		20			260126	08/29/22 09:40	Y2WS	EET CAL 4
	Instrument ID: ICPMS10									
Total/NA	Prep	7471A			0.48 g	50 mL	259500	08/25/22 17:03	SR3N	EET CAL 4
Total/NA	Analysis	7471A		1			260186	08/29/22 12:37	UWCT	EET CAL 4
	Instrument ID: HG7									
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-03-0_2-061522
Lab Sample ID: 570-107575-2
Date Collected: 06/15/22 09:15
Matrix: Soil
Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.13 g	2 mL	259488	08/25/22 15:10	UM1W	EET CAL 4
Total/NA	Analysis	8082		1	1 mL	1 mL	259701	08/26/22 19:50	UJ3K	EET CAL 4
	Instrument ID: GC66									
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-03-2_4-061522
Lab Sample ID: 570-107575-3
Date Collected: 06/15/22 09:15
Matrix: Soil
Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.16 g	2 mL	259488	08/25/22 15:10	UM1W	EET CAL 4
Total/NA	Analysis	8082		1	1 mL	1 mL	259701	08/26/22 20:54	UJ3K	EET CAL 4
	Instrument ID: GC66									
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-03-Z-061522
Lab Sample ID: 570-107575-4
Date Collected: 06/15/22 09:15
Matrix: Soil
Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.10 g	2 mL	259488	08/25/22 15:10	UM1W	EET CAL 4
Total/NA	Analysis	8082		1	1 mL	1 mL	259701	08/26/22 21:15	UJ3K	EET CAL 4
	Instrument ID: GC66									
Total/NA	Prep	3050B			2.06 g	50 mL	259742	08/26/22 11:51		EET CAL 4
Total/NA	Analysis	6020		20			260126	08/29/22 09:56	Y2WS	EET CAL 4
	Instrument ID: ICPMS10									
Total/NA	Prep	7471A			0.52 g	50 mL	259835	08/26/22 16:19	SR3N	EET CAL 4
Total/NA	Analysis	7471A		1			260186	08/29/22 13:40	UWCT	EET CAL 4
	Instrument ID: HG7									

Lab Chronicle

Client: Anchor QEA LLC | Job ID: 570-107575-1

Project/Site: Los Cerritos Wetlands Restoration

Client Sample ID: LCW-03-Z-061522 | Lab Sample ID: 570-107575-4

Date Collected: 06/15/22 09:15 | **Matrix: Soil**

Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL 4

Client Sample ID: LCW-04-0_2-061522 | Lab Sample ID: 570-107575-5

Date Collected: 06/15/22 10:15 | **Matrix: Soil**

Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.06 g	2 mL	259488	08/25/22 15:10	UM1W	EET CAL 4
Total/NA	Analysis	8082		1	1 mL	1 mL	259701	08/26/22 21:37	UJ3K	EET CAL 4
	Instrument ID: GC66									
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-04-2_4-061522 | Lab Sample ID: 570-107575-6

Date Collected: 06/15/22 10:15 | **Matrix: Soil**

Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.01 g	2 mL	259488	08/25/22 15:10	UM1W	EET CAL 4
Total/NA	Analysis	8082		1	1 mL	1 mL	259701	08/26/22 21:58	UJ3K	EET CAL 4
	Instrument ID: GC66									
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-04-Z-061522 | Lab Sample ID: 570-107575-8

Date Collected: 06/15/22 10:15 | **Matrix: Soil**

Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.09 g	2 mL	259488	08/25/22 15:10	UM1W	EET CAL 4
Total/NA	Analysis	8082		1	1 mL	1 mL	259701	08/26/22 22:41	UJ3K	EET CAL 4
	Instrument ID: GC66									
Total/NA	Prep	3050B			1.97 g	50 mL	259742	08/26/22 11:51		EET CAL 4
Total/NA	Analysis	6020		20			260126	08/29/22 09:58	Y2WS	EET CAL 4
	Instrument ID: ICPMS10									
Total/NA	Prep	7471A			0.49 g	50 mL	259835	08/26/22 16:19	SR3N	EET CAL 4
Total/NA	Analysis	7471A		1			260186	08/29/22 13:42	UWCT	EET CAL 4
	Instrument ID: HG7									
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL 4
	Instrument ID: BAL62									

Lab Chronicle

Client: Anchor QEA LLC

Job ID: 570-107575-1

Project/Site: Los Cerritos Wetlands Restoration

Client Sample ID: LCW-05-Z-061722

Lab Sample ID: 570-107575-9

Date Collected: 06/17/22 17:10

Matrix: Soil

Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			2.04 g	50 mL	259742	08/26/22 11:51		EET CAL 4
Total/NA	Analysis	6020		20			260126	08/29/22 10:00	Y2WS	EET CAL 4
	Instrument ID: ICPMS10									
Total/NA	Prep	7471A			0.50 g	50 mL	259519	08/25/22 17:44	SR3N	EET CAL 4
Total/NA	Analysis	7471A		1			260186	08/29/22 14:55	UWCT	EET CAL 4
	Instrument ID: HG7									
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-07-Z-061722

Lab Sample ID: 570-107575-10

Date Collected: 06/17/22 11:00

Matrix: Soil

Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.96 g	50 mL	267446	09/26/22 15:32	CS5Z	EET CAL 4
Total/NA	Analysis	6020		20			267706	09/27/22 10:16	Y2WS	EET CAL 4
	Instrument ID: ICPMS10									
Total/NA	Prep	7471A			0.52 g	50 mL	267473	09/26/22 17:40	SR3N	EET CAL 4
Total/NA	Analysis	7471A		1			267805	09/27/22 14:32	C0YH	EET CAL 4
	Instrument ID: HG7									
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-08-Z-061522

Lab Sample ID: 570-107575-11

Date Collected: 06/15/22 12:00

Matrix: Soil

Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.99 g	50 mL	259742	08/26/22 11:51		EET CAL 4
Total/NA	Analysis	6020		20			260126	08/29/22 10:03	Y2WS	EET CAL 4
	Instrument ID: ICPMS10									
Total/NA	Prep	7471A			0.50 g	50 mL	259519	08/25/22 17:44	SR3N	EET CAL 4
Total/NA	Analysis	7471A		1			260186	08/29/22 15:05	UWCT	EET CAL 4
	Instrument ID: HG7									
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL 4
	Instrument ID: BAL62									

Client Sample ID: LCW-09-Z-061722

Lab Sample ID: 570-107575-12

Date Collected: 06/17/22 15:20

Matrix: Soil

Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			2.08 g	50 mL	259742	08/26/22 11:51		EET CAL 4
Total/NA	Analysis	6020		20			260126	08/29/22 10:05	Y2WS	EET CAL 4
	Instrument ID: ICPMS10									

Client Sample ID: LCW-09-Z-061722 | Lab Sample ID: 570-107575-12
Date Collected: 06/17/22 15:20 | **Matrix: Soil**
Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			0.48 g	50 mL	259519	08/25/22 17:44	SR3N	EET CAL 4
Total/NA	Analysis	7471A		1			260186	08/29/22 15:07	UWCT	EET CAL ‹
	Instrument ID: HG7									
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL ‹
	Instrument ID: BAL62									

Client Sample ID: LCW-10-Z-061722 | Lab Sample ID: 570-107575-13
Date Collected: 06/17/22 08:30 | **Matrix: Soil**
Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.97 g	50 mL	259742	08/26/22 11:51		EET CAL 4
Total/NA	Analysis	6020		20			260126	08/29/22 10:07	Y2WS	EET CAL ‹
	Instrument ID: ICPMS10									
Total/NA	Prep	7471A			0.52 g	50 mL	259519	08/25/22 17:44	SR3N	EET CAL ‹
Total/NA	Analysis	7471A		1			260186	08/29/22 15:08	UWCT	EET CAL ‹
	Instrument ID: HG7									
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL ‹
	Instrument ID: BAL62									

Client Sample ID: LCW-12-Z-061522 | Lab Sample ID: 570-107575-14
Date Collected: 06/15/22 11:45 | **Matrix: Soil**
Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			2.01 g	50 mL	259742	08/26/22 11:51		EET CAL 4
Total/NA	Analysis	6020		20			260126	08/29/22 10:10	Y2WS	EET CAL ‹
	Instrument ID: ICPMS10									
Total/NA	Prep	7471A			0.52 g	50 mL	259519	08/25/22 17:44	SR3N	EET CAL ‹
Total/NA	Analysis	7471A		1			260186	08/29/22 15:10	UWCT	EET CAL ‹
	Instrument ID: HG7									
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL ‹
	Instrument ID: BAL62									

Client Sample ID: LCW-13-Z-061722 | Lab Sample ID: 570-107575-15
Date Collected: 06/17/22 13:00 | **Matrix: Soil**
Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			2.01 g	50 mL	259742	08/26/22 11:51		EET CAL 4
Total/NA	Analysis	6020		20			260126	08/29/22 10:12	Y2WS	EET CAL ‹
	Instrument ID: ICPMS10									
Total/NA	Prep	7471A			0.49 g	50 mL	259519	08/25/22 17:44	SR3N	EET CAL ‹
Total/NA	Analysis	7471A		1			260186	08/29/22 15:12	UWCT	EET CAL ‹
	Instrument ID: HG7									

Client Sample ID: LCW-13-Z-061722 — Lab Sample ID: 570-107575-15

Date Collected: 06/17/22 13:00 — **Matrix: Soil**
Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 13:30	B4QL	EET CAL 4

Client Sample ID: LCW-04-4_6-061522 — Lab Sample ID: 570-107575-16

Date Collected: 06/15/22 10:15 — **Matrix: Soil**
Date Received: 08/24/22 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			20.06 g	2 mL	259939	08/27/22 09:35	UM1W	EET CAL 4
Total/NA	Analysis	8082		1	1 mL	1 mL	260465	08/31/22 12:24	UJ3K	EET CAL 4
	Instrument ID: GC66									
Total/NA	Analysis	Moisture - 2540		1			259455	08/25/22 17:59	B4QL	EET CAL 4
	Instrument ID: BAL62									

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

Accreditation/Certification Summary

Laboratory: Eurofins Calscience

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State	3082	07-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8082	3541	Soil	Aroclor-1262
8082	3541	Soil	Aroclor-1268
Moisture - 2540		Soil	Percent Solids

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4175	02-02-23

Method Summary

Method	Method Description	Protocol	Laboratory
8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	EET CAL 4
6020	Metals (ICP/MS)	SW846	EET CAL 4
7471A	Mercury (CVAA)	SW846	EET CAL 4
Moisture - 2540	Percent Moisture	SM	EET CAL 4
3050B	Preparation, Metals	SW846	EET CAL 4
3541	Automated Soxhlet Extraction	SW846	EET CAL 4
7471A	Preparation, Mercury	SW846	EET CAL 4

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

Sample Summary

Client: Anchor QEA LLC | Job ID: 570-107575-1
Project/Site: Los Cerritos Wetlands Restoration

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-107575-1	LCW-02-Z-061522	Soil	06/15/22 11:00	08/24/22 16:39
570-107575-2	LCW-03-0_2-061522	Soil	06/15/22 09:15	08/24/22 16:39
570-107575-3	LCW-03-2_4-061522	Soil	06/15/22 09:15	08/24/22 16:39
570-107575-4	LCW-03-Z-061522	Soil	06/15/22 09:15	08/24/22 16:39
570-107575-5	LCW-04-0_2-061522	Soil	06/15/22 10:15	08/24/22 16:39
570-107575-6	LCW-04-2_4-061522	Soil	06/15/22 10:15	08/24/22 16:39
570-107575-8	LCW-04-Z-061522	Soil	06/15/22 10:15	08/24/22 16:39
570-107575-9	LCW-05-Z-061722	Soil	06/17/22 17:10	08/24/22 16:39
570-107575-10	LCW-07-Z-061722	Soil	06/17/22 11:00	08/24/22 16:39
570-107575-11	LCW-08-Z-061522	Soil	06/15/22 12:00	08/24/22 16:39
570-107575-12	LCW-09-Z-061722	Soil	06/17/22 15:20	08/24/22 16:39
570-107575-13	LCW-10-Z-061722	Soil	06/17/22 08:30	08/24/22 16:39
570-107575-14	LCW-12-Z-061522	Soil	06/15/22 11:45	08/24/22 16:39
570-107575-15	LCW-13-Z-061722	Soil	06/17/22 13:00	08/24/22 16:39
570-107575-16	LCW-04-4_6-061522	Soil	06/15/22 10:15	08/24/22 16:39

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570-107575 Chain of Custody

CHAIN OF CUSTODY

LOC: 570
107575

DATE: 08/24/22
PAGE: 1 OF 2

LABORATORY CLIENT: Anchor QEA
ADDRESS: 9700 Research Drive
CITY: Irvine STATE: CA ZIP: 92618
TEL: 949.347.2780 E-MAIL: cosuch@anchorgea com

CLIENT PROJECT NAME / NUMBER: Los Cerritos Wetlands Restoration Project
P O. NO.: 210090-01 01
PROJECT CONTACT: Chris Osuch
QUOTE #:
SAMPLER(S): (PRINT) M Brown

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD")
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS x STANDARD

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS
Report down to the MDL

REQUESTED ANALYSES

Please check box or fill in blank as needed

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO OF CONT	Unpreserved	Preserved	Field Filtered	Total Solids (SM 2540 B)	Title 22 Metals (USEPA 6020)	PCB Aroclors (USEPA 8082)
1	LCW-02-Z-061522	6/15/2022	11 00	Soil	1	X			X	X	
2	LCW-03-0_2-061522	6/15/2022	09 15	Soil	1	X			X		X
3	LCW-03-2_4-061522	6/15/2022	09 15	Soil	1	X			X		X
4	LCW-03-Z-061522	6/15/2022	09 15	Soil	1	X			X	X	X
5	LCW-04-0_2-061522	6/15/2022	10 15	Soil	1	X			X		X
6	LCW-04-2_4-061522	6/15/2022	10 15	Soil	1	X			X		X
7	LCW-04-4_6-061522	6/15/2022	10 15	Soil	1	X			X		X
8	LCW-04-Z-061522	6/15/2022	10 15	Soil	1	X			X	X	X
9	LCW-05-Z-061722	6/17/2022	17 10	Soil	1	X			X	X	
10	LCW-07-Z-061722	6/17/2022	11 00	Soil	1	X			X	X	

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date	Time
Makenna Brown	EC	8/24/22	1639
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date	Time

SC12 3.4/3.4

06/02/14 Revision

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

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WO # / LAB USE ONLY

DATE: 08/24/22

PAGE: 2 OF 2

LABORATORY CLIENT: Anchor QEA

ADDRESS: 9700 Research Drive

CITY: Irvine STATE: CA ZIP: 92618

TEL. 949.347.2780 E-MAIL. cosuch@anchorqea com

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS x STANDARD

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS

Report down to the MDL

CLIENT PROJECT NAME / NUMBER: Los Cerritos Wetlands Restoration Project

P O NO: 210090-01 01

PROJECT CONTACT: Chris Osuch

QUOTE #:

SAMPLER(S): (PRINT) M Brown

REQUESTED ANALYSES

Please check box or fill in blank as needed

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO OF CONT	Unpreserved	Preserved	Field Filtered	Total Solids (SM 2540 B)	Title 22 Metals (USEPA 6020)
11	LCW-08-Z-061522	6/15/2022	12 00	Soil	1	X			X	X
12	LCW-09-Z-061722	6/17/2022	15.20	Soil	1	X			X	X
13	LCW-10-Z-061722	6/17/2022	08 30	Soil	1	X			X	X
14	LCW-12-Z-061522	6/15/2022	11 45	Soil	1	X			X	X
15	LCW-13-Z-061722	6/17/2022	13 00	Soil	1	X			X	X

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date	Time
Makenna Brown	EC	8/24/22	1639
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date	Time

SC12 3.4/3.4

06/02/14 Revision

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

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CHAIN OF CUSTODY RECORD

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WO # / LAB USE ONLY:

DATE: 08/24/22

PAGE: 1 OF 1

LABORATORY CLIENT: Anchor QEA

ADDRESS: 9700 Research Drive

CITY: Irvine STATE: CA ZIP: 92618

TEL: 949.347.2780 E-MAIL: cosuch@anchorqea.com

CLIENT PROJECT NAME / NUMBER: Los Cerritos Wetlands Restoration Project

P O NO: 210090-01 01

PROJECT CONTACT: Chris Osuch

QUOTE #:

SAMPLER(S) (PRINT): M Brown

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD")

☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS x STANDARD

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS

Report down to the MDL

REQUESTED ANALYSES

Please check box or fill in blank as needed

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	Total Solids (SM 2540 B)	Title 22 Metals (USEPA 6020)	PCB Aroclors (USEPA 8082)
	LCW-04-4_6-061522	6/15/2022	10 15	Soil	1	X			X		X

570-107575 Chain of Custody

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Makenna Brown AQEA	EC	8-25-2022	16:52
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

06/02/14 Revision

Login Sample Receipt Checklist

Client: Anchor QEA LLC | Job Number: 570-107575-1

Login Number: 107575 | **List Source: Eurofins Calscience**
List Number: 1
Creator: Skinner, Alma D

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	IDs on containers do not match the COC. Logged in per COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	False	Refer to Job Narrative for details.
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Summa Canister Dilution Worksheet

Client: Anchor QEA LLC
Project/Site: Los Cerritos Wetlands Restoration

Job No.: 570-107575-1

Lab Sample ID	Canister Volume (L)	Preadjusted Pressure ("Hg)	Preadjusted Pressure (atm)	Preadjusted Volume (L)	Adjusted Pressure (psig)	Adjusted Pressure (atm)	Adjusted Volume (L)	Initial Volume (mL)	Dilution Factor	Final Dilution Factor	Pressure Gauge ID	Date	Analyst Initals
570-107575-5	200	-4.8	0.84	167.91	-2.35754	0.84	167.91		1.00	1.00	AIR MG-4	08/28/22 0:15	UHOG
570-107575-5	200	-4.8	0.84	167.91	6.6	1.45	289.80		1.73	1.73	AIR MG-4	08/28/22 0:20	UHOG
570-107575-6	200	-6.0	0.80	159.89	-2.94692	0.80	159.89		1.00	1.00	AIR MG-4	08/28/22 0:22	UHOG
570-107575-6	200	-6.8	0.77	154.55	6.5	1.44	288.44		1.87	1.87	AIR MG-4	08/28/22 0:22	UHOG
570-107575-8	200	-7.4	0.75	150.53	-3.63454	0.75	150.53		1.00	1.00	AIR MG-4	08/28/22 0:24	UHOG
570-107575-8	200	-7.4	0.75	150.53	5.9	1.40	280.27		1.86	1.86	AIR MG-4	08/28/22 0:24	UHOG

Formulae:

Preadjusted Volume (L) = ((Preadjusted Pressure ("Hg) + 29.92 "Hg) * Vol L) / 29.92 "Hg
Adjusted Volume (L) = ((Adjusted Pressure (psig) + 14.7 psig)* Vol L) / 14.7 psig
Dilution Factor = Adjusted Volume (L) / Preadjusted Volume (L)

Where:

29.92 "Hg = Standard atmospheric pressure in inches of Mercury (“Hg)
14.7 psig = Standard atmospheric pressure in pounds per square inch gauge (psig)

Appendix E
Data Validation Reports

1201 3rd Ave Suite 2600
Seattle, Washington 98101
206.287.9130

Data Validation Report – USEPA Stage 2A

July 7, 2022

Project:	Los Cerritos Wetlands Authority Restoration Project
Project Number:	210090-01.01
Validation ID:	AQ-2022-553601

This report summarizes the review of analytical results for 12 soil samples collected on June 15 and 17, 2022. The samples were collected by Anchor QEA, LLC, and submitted to Eurofins Calscience, LLC (ECL), in Garden Grove, California. Select sample aliquots were submitted to McCampbell Analytical, Inc., in Pittsburg, California. The following analytical parameter results were reviewed in this report:

- Total solids by Standard Method (SM) 2540G
- Salinity by SM 2510B
- Total organic carbon (TOC) by U.S. Environmental Protection Agency (USEPA) Method 9060A
- Total petroleum hydrocarbons (TPH) by USEPA Method 8015B
- Metals by USEPA Method 6020
- Mercury by USEPA Method 7471A
- Polycyclic aromatic hydrocarbon (PAH) Aroclors by USEPA Method 8270C select ion monitoring
- Pesticides by USEPA Method 8081A
- Polychlorinated biphenyl (PCB) Aroclors by USEPA Method 8082
- Volatile organic compounds (VOC) by USEPA Method 8620B

ECL sample delivery group numbers 570-100189-1 and 570-100189-2 were reviewed in this report. Sample IDs are presented in Table 1.

Table 1
Sample IDs

Sample IDs	Laboratory Sample IDs	Matrix	Analyses
LCW-01/02-061522	570-100189-1	Soil	Total solids, salinity, TOC, TPH, metals, mercury, PAHs, PCB Aroclors, pesticides
LCW-03/04-061522	570-100189-2	Soil	Total solids, salinity, TOC, TPH, metals, mercury, PAHs, PCB Aroclors, pesticides
LCW-05-061722	570-100189-3	Soil	Total solids, salinity, TOC, TPH, metals, mercury, PAHs, PCB Aroclors, pesticides, VOCs
LCW-07-061722	570-100189-4	Soil	Total solids, salinity, TOC, TPH, metals, mercury, PAHs, PCB Aroclors, pesticides
LCW-08/09-061722	570-100189-5	Soil	Total solids, salinity, TOC, TPH, metals, mercury, PAHs, PCB Aroclors, pesticides
LCW-10/11-061722	570-100189-6	Soil	Total solids, salinity, TOC, TPH, metals, mercury, PAHs, PCB Aroclors, pesticides

Sample IDs	Laboratory Sample IDs	Matrix	Analyses
LCW-12/13-061722	570-100189-7	Soil	Total solids, salinity, TOC, TPH, metals, mercury, PAHs, PCB Aroclors, pesticides
LCW-02-061522	570-100189-8	Soil	VOCs
LCW-04-061522	570-100189-9	Soil	VOCs
LCW-09-061722	570-100189-10	Soil	VOCs
LCW-11-061622	570-100189-11	Soil	VOCs
LCW-12-061622	570-100189-12	Soil	VOCs

Data Validation and Qualifications

The following comments refer to the laboratory's performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the analytical procedures. QA/QC results were evaluated using the laboratory control limits and by using the following guidelines:

- *Quality Assurance Project Plan, Southern Los Cerritos Wetlands Restoration Project* (Anchor QEA 2021)
- *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (USEPA 1986)
- *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2020a)
- *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA 2020b)

Unless noted in this report, laboratory results for the samples listed in Table 1 were within QA/QC criteria.

Field Documentation

Field documentation was checked for completeness and accuracy. The chain-of-custody forms were signed by ECL at the time of sample receipt. Samples were received in good condition and within the recommended temperature range.

Sample Preservation and Holding Times

Samples were appropriately preserved and analyzed within holding times.

Laboratory Method Blanks

Laboratory method blanks were analyzed at the required frequency and no target analytes were detected, except for TOC, which was detected in the method blank at a concentration between the method detection limit (MDL) and method reporting limit (MRL). Associated sample concentrations were significantly (five times) greater than the concentration of the blank, so no data were qualified.

Field Quality Control

No field duplicate or equipment blank samples were required to be collected with this sample set.

Surrogate Recoveries

Sample surrogate recoveries were within the laboratory control limits

Laboratory Control Samples and Laboratory Control Sample Duplicates

Laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs) were analyzed at the required frequency and resulted in recoveries within project-required control limits, except for chloromethane, which recovered above the project limits in the LCS and LCSD. Associated samples were below detection, so no data were qualified.

Matrix Spike and Matrix Spike Duplicate Samples

Matrix spike (MS) and/or matrix spike duplicate (MSD) samples were analyzed at the required frequency or LCS/LCSDs were analyzed in place of MS/MSDs. MS and MSD analyses conducted on non-project samples were not included in this evaluation. MS/MSD recoveries and relative percent difference (RPD) values were within project-required control limits, except for the following:

- Pesticides: 4,4'-DDE, 4,4'-DDT, and endrin recovered above control limits in the MS/MSD analyzed on sample LCW-08/09-061722. Only 4,4'-DDE was detected in the parent sample, and the result has been qualified "J" to indicate a potentially high bias.
- PAHs: Several PAH compounds recovered above the control limits in the MSD analyzed on sample LCW-05-061722. Six RPD values were above the control limit as well. These compounds were not detected in the parent sample, so no data were qualified.

Qualified results are summarized in Table 3 at the end of this report.

Method Detection Limits and Method Reporting Limits

MDLs and MRLs were acceptable as reported. All values were reported using the laboratory MDLs. Values were reported as undiluted, or when reported as diluted, the MDL and MRL accurately reflects the dilution factor.

Overall Assessment

As was determined by this evaluation, the laboratory followed the specified analytical methods and all requested sample analyses were completed. Accuracy was acceptable as demonstrated by the LCS/LCSD and MS/MSD recovery values, with the exceptions noted in prior sections. Precision was acceptable as demonstrated by the laboratory duplicates, LCS/LCSD, and MS/MSD RPD values. All data are acceptable as reported or qualified. Table 3 summarizes the qualifiers applied to the sample results reviewed in this report.

Data Qualifier Definitions

J Indicates an estimated value.

Table 3
Data Qualification Summary

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
LCW-08/09-061722	Pesticides	4,4'-DDE	2.3 µg/kg	2.3J µg/kg	MS %R above control limit

Notes:
%R: percent recovery
µg/kg: micrograms per kilogram

References

Anchor QEA (Anchor QEA, LLC), 2021. *Sampling and Analysis Plan, Southern Los Cerritos Wetlands Restoration Project*. Prepared for Los Cerritos Wetlands Authority. July 2021.

USEPA (U.S. Environmental Protection Agency), 1986. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*. Third edition. Office of Solid Waste and Emergency Response. EPA-530/SW-846.

USEPA, 2020a. *National Functional Guidelines for Inorganic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. EPA-540-R-20-006. November 2020.

USEPA, 2020b. *National Functional Guidelines for Organic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. EPA-540-R-20-005. November 2020.

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Seattle, Washington 98101
206.287.9130

ANCHOR QEA

Data Validation Report – USEPA Stage 2A

September 14, 2022

Project:	Los Cerritos Wetlands Authority Restoration Project
Project Number:	210090-01.01
Validation ID:	AQ-2022-553658

This report summarizes the review of analytical results for 15 soil samples collected June 15 and 17, 2022. The samples were collected by Anchor QEA, LLC, and submitted to Eurofins Calscience, LLC (ECL), in Garden Grove, California. The following analytical parameter results were reviewed in this report:

- Total solids by Standard Method (SM) 2540 G
- Metals by U.S. Environmental Protection Agency (USEPA) Methods 6020 and 7471A
- Polychlorinated biphenyl (PCB) Aroclors by USEPA Method 8082

ECL sample delivery group number 570-107575-1 was reviewed in this report. Sample IDs are presented in Table 1.

Table 1
Sample IDs

Sample IDs	Laboratory Sample IDs	Matrix	Analyses
LCW-02-Z-061522	570-107575-1	Soil	Total solids, metals
LCW-03-0_2-061522	570-107575-2	Soil	Total solids, PCB Aroclors
LCW-03-2_4-061522	570-107575-3	Soil	Total solids, PCB Aroclors
LCW-03-Z-061522	570-107575-4	Soil	Total solids, metals, PCB Aroclors
LCW-04-0_2-061522	570-107575-5	Soil	Total solids, PCB Aroclors
LCW-04-2_4-061522	570-107575-6	Soil	Total solids, PCB Aroclors
LCW-04-4_6-061522	570-107575-16	Soil	Total solids, PCB Aroclors
LCW-04-Z-061522	570-107575-8	Soil	Total solids, metals, PCB Aroclors
LCW-05-Z-061722	570-107575-9	Soil	Total solids, metals
LCW-07-Z-061722	570-107575-10	Soil	Total solids, metals
LCW-08-Z-061522	570-107575-11	Soil	Total solids, metals
LCW-09-Z-061722	570-107575-12	Soil	Total solids, metals
LCW-10-Z-061722	570-107575-13	Soil	Total solids, metals
LCW-12-Z-061522	570-107575-14	Soil	Total solids, metals
LCW-13-Z-061722	570-107575-15	Soil	Total solids, metals

Data Validation and Qualifications

The following comments refer to the laboratory's performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the analytical procedures. QA/QC results were evaluated using the following guidelines:

- *Sampling and Analysis Plan, Southern Los Cerritos Wetlands Restoration Project* (Anchor QEA 2021)
- *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (USEPA 1986)
- *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2020a)
- *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA 2020b)

Unless noted in this report, laboratory results for the samples listed in Table 1 were within QA/QC criteria.

Field Documentation

Field documentation was checked for completeness and accuracy. The chain-of-custody forms were signed by ECL at the time of sample receipt. Samples were received in good condition except for LCW-07-Z-061722, which was received broken. The laboratory transferred the sample to a new jar upon receipt. All samples were received within the recommended temperature range.

Sample Preservation and Holding Times

Samples were stored in frozen archive until delivered to the laboratory for analysis. Mercury was analyzed past the 28-day holding time and was qualified "J" to indicate a potentially low bias.

Laboratory Method Blanks

Laboratory method blanks were analyzed at the required frequency and no target analytes were detected, except for barium and molybdenum, which were detected in the method blanks at concentrations between the method detection limit (MDL) and method reporting limit (MRL). Associated barium sample concentrations were significantly (five times) greater than the concentration of the blank, so no data were qualified. One molybdenum concentration associated with this method blank was detected at a concentration between the MDL and MRL; therefore, the result was reported as below detection at the reporting limit.

Qualified data are summarized in Table 2 at the end of this report.

Field Quality Control

No field duplicate or equipment blank samples were required to be collected with this sample set.

Surrogate Recoveries

Sample surrogate recoveries were within the laboratory control limits.

Laboratory Control Samples and Laboratory Control Sample Duplicates

Laboratory control samples (LCS) and laboratory control sample duplicates (LCSD) were analyzed at the required frequency and resulted in recoveries and relative percent difference (RPD) values within project-required control limits.

Matrix Spike and Matrix Spike Duplicate Samples

Matrix spike (MS) and/or matrix spike duplicate (MSD) samples were analyzed at the required frequency. MS and MSD samples analyzed on non-project samples were not evaluated. MS/MSD recoveries and RPD values were within project-required control limits, except for the following:

- PCB Aroclors: Aroclor-1016 and Aroclor-1260 recovered below control limits in the MSD analyzed on sample LCW-03-Z-061522, and the RPD was above the control limit. Parent sample results have been qualified "UJ" to indicate a potentially low bias.
- Metals: Antimony recovered below 30% in the MS and MSD analyzed on sample LCW-02-Z-061522. Low recovery of antimony is a common issue in sediments because in the presence of silicates, antimony can form insoluble oxides during the nitric acid digestion. Using hydrochloric acid could help minimize the issue but can also create chloride interference on the inductively coupled plasma mass spectrometry (ICP-MS). Associated sample results that were below detection were rejected; detected results have been qualified "J" to indicate a potentially low bias. Barium recovered above the project control limits, and associated sample results have been qualified "J" to indicate a potentially high bias.

Qualified results are summarized in Table 2 at the end of this report.

Duplicate Samples

Duplicate samples were analyzed for total solids, and the RPD values were within project control limits.

Method Detection Limits and Method Reporting Limits

MDLs and MRLs were acceptable as reported. All values were reported using the laboratory MDLs. Values were reported as undiluted, or when reported as diluted, the MDL and MRL accurately reflects the dilution factor.

Overall Assessment

As was determined by this evaluation, the laboratory followed the specified analytical methods and all requested sample analyses were completed. Accuracy was acceptable as demonstrated by the

LCS/LCSD and MS/MSD recovery values, with the exceptions noted in a prior section. Precision was acceptable as demonstrated by the laboratory duplicates, LCS/LCSD, and MS/MSD RPD values. Most data are acceptable as reported or qualified. Two antimony results were rejected, but the metals completeness was 99%, which met the project completeness data quality objective. Table 2 summarizes the qualifiers applied to the sample results reviewed in this report.

Data Qualifier Definitions

J Indicates an estimated value

R Indicates the result is rejected and unusable.

U Indicates the compound or analyte was analyzed for but not detected at or above the specified limit.

UJ Indicates the compound or analyte of interest was analyzed for but not detected and the specified limit reported is estimated.

Table 2
Data Qualification Summary

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
LCW-02-Z-061522	Metals	Antimony	0.341J mg/kg	0.341J mg/kg	MS/MSD below 30%
		Barium	179B F1 mg/kg	179J mg/kg	MS/MSD above control limit
		Mercury	0.0604J mg/kg	0.0604J mg/kg	Analyzed past holding time
LCW-03-Z-061522	PCBs	Aroclor 1016	6.6U µg/kg	6.6UJ µg/kg	MSD %R below control limit
		Aroclor 1221	6.6U µg/kg	6.6UJ µg/kg	
		Aroclor 1232	6.6U µg/kg	6.6UJ µg/kg	
		Aroclor 1242	6.6U µg/kg	6.6UJ µg/kg	
		Aroclor 1248	6.6U µg/kg	6.6UJ µg/kg	
		Aroclor 1254	5.9U µg/kg	5.9UJ µg/kg	
		Aroclor 1260	5.9U µg/kg	5.9UJ µg/kg	
		Aroclor 1262	5.9U µg/kg	5.9UJ µg/kg	
		Aroclor 1268	5.9U µg/kg	5.9UJ µg/kg	
	Metals	Antimony	0.196J mg/kg	0.196J mg/kg	MS/MSD below 30%
		Barium	135B mg/kg	135J mg/kg	MS/MSD above control limit
		Mercury	0.0278J mg/kg	0.0278J mg/kg	Analyzed past holding time

Sample ID	Parameter	Analyte	Reported Result	Qualified Result	Reason
LCW-04-Z-061522	Metals	Antimony	0.507J mg/kg	0.507J mg/kg	MS/MSD below 30%
		Barium	344B mg/kg	344J mg/kg	MS/MSD above control limit
		Mercury	0.0949J mg/kg	0.0949J mg/kg	Analyzed past holding time
LCW-05-Z-061722	Metals	Antimony	0.194J mg/kg	0.194J mg/kg	MS/MSD below 30%
		Barium	98.5B mg/kg	98.5J mg/kg	MS/MSD above control limit
		Mercury	0.0558J mg/kg	0.0558J mg/kg	Analyzed past holding time
LCW-07-Z-061722	Metals	Molybdenum	0.293J mg/kg	1.24U mg/kg	Method blank contamination
		Mercury	0.0202J mg/kg	0.0202J mg/kg	Analyzed past holding time
LCW-08-Z-061522	Metals	Antimony	0.159U mg/kg	R	MS/MSD below 30%
		Barium	68.7B mg/kg	68.7J mg/kg	MS/MSD above control limit
		Mercury	0.0259J mg/kg	0.0269J mg/kg	Analyzed past holding time
LCW-09-Z-061722	Metals	Antimony	0.496J mg/kg	0.496J mg/kg	MS/MSD below 30%
		Barium	166B mg/kg	166J mg/kg	MS/MSD above control limit
		Mercury	0.125 mg/kg	0.125J mg/kg	Analyzed past holding time
LCW-10-Z-061722	Metals	Antimony	0.379J mg/kg	0.379J mg/kg	MS/MSD below 30%
		Barium	146B mg/kg	146J mg/kg	MS/MSD above control limit
		Mercury	0.0479J mg/kg	0.0479J mg/kg	Analyzed past holding time
LCW-12-Z-061522	Metals	Antimony	0.211J mg/kg	0.211J mg/kg	MS/MSD below 30%
		Barium	187B mg/kg	187J mg/kg	MS/MSD above control limit
		Mercury	0.0806J mg/kg	0.0806J mg/kg	Analyzed past holding time
LCW-13-Z-061722	Metals	Antimony	0.170U mg/kg	R	MS/MSD below 30%
		Barium	97.9B mg/kg	97.9J mg/kg	MS/MSD above control limit
		Mercury	0.0632J mg/kg	0.0632J mg/kg	Analyzed past holding time

Notes:
%R: percent recovery
μg/kg: micrograms per kilogram
mg/kg: milligrams per kilogram

References

Anchor QEA (Anchor QEA, LLC), 2021. *Sampling and Analysis Plan, Southern Los Cerritos Wetlands Restoration Project*. Prepared for Los Cerritos Wetlands Authority. July 2021.

USEPA (U.S. Environmental Protection Agency), 1986. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*. Third edition. Office of Solid Waste and Emergency Response. EPA-530/SW-846.

USEPA, 2020a. *National Functional Guidelines for Inorganic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. EPA-540-R-20-006. November 2020.

USEPA, 2020b. *National Functional Guidelines for Organic Superfund Methods Data Review*. Office of Superfund Remediation and Technology Innovation. EPA-540-R-20-005. November 2020.

Appendix F
Geotechnical Laboratory Report

GeoTesting
EXPRESS

Technologies to manage risk for infrastructure

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New York

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Transmittal

TO:

Chris Osuch
Anchor QEA, LLC
1201 3rd Ave, Suite 2600
Seattle, WA 98101

DATE: 8/26/2022	GTX NO: 315751
RE: Los Cerritos Wetland Restoration	

COPIES	DATE	DESCRIPTION
	8/26/2022	**July 2022 Laboratory Test Report**

REMARKS:

SIGNED:

Jonathan Campbell, Laboratory Manager

APPROVED BY:

Joe Tomei, Vice President and Director of Testing Services

August 26, 2022

Chris Osuch
Anchor QEA, LLC
1201 3rd Ave, Suite 2600
Seattle, WA 98101

RE: Los Cerritos Wetland Restoration, Seal Beach, CA (GTX-315751)

Dear Chris Osuch:

Enclosed are the test results you requested for the above referenced project. GeoTesting Express, Inc. (GTX) received 26 samples from you on 7/5/2022.

GTX performed the following tests on these samples:

19 ASTM D2216 - Moisture Content
7 ASTM D4318 - Atterberg Limits
7 ASTM D6913 - Sieve Analysis
9 ASTM D6913/D7928 - Grain Size Analysis - Sieve and Hydrometer

A copy of your test request is attached.

The results presented in this report apply only to the items tested. This report shall not be reproduced except in full, without written approval from GeoTesting Express. The remainder of these samples will be retained for a period of sixty (60) days and will then be discarded unless otherwise notified by you. Please call me if you have any questions or require additional information. Thank you for allowing GeoTesting Express the opportunity of providing you with testing services. We look forward to working with you again in the future.

Respectfully yours,

Jonathan Campbell
Laboratory Manager

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Geotechnical Test Report **8/26/2022**

GTX-315751

Los Cerritos Wetland Restoration

Seal Beach, CA

Client Project No.: 210090-01.01

Prepared for:

Anchor QEA, LLC

GeoTesting EXPRESS

Client:	Anchor QEA, LLC				
Project:	Los Cerritos Wetland Restoration				
Location:	Seal Beach, CA			Project No:	GTX-315751
Boring ID:	---	Sample Type:	---	Tested By:	ckg
Sample ID:	---	Test Date:	07/19/22	Checked By:	ank
Depth :	---	Test Id:	676670		

Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
---	LCW- 05-0-1.5	---	Moist, dark grayish brown silty sand with gravel	3.1
---	LCW- 05-0-4.5-6	---	Moist, dark yellowish brown clay	17.0
---	LCW- 09-0-1.5	---	Moist, brown sandy silt	11.9
---	LCW- 09-6-7.5	---	Moist, gray silt	55.3
---	LCW- 11-0-2	---	Moist, grayish brown silty sand	5.5
---	LCW- 11-4-6	---	Moist, dark gray clay	37.7
---	LCW- 13-0-1.5	---	Moist, black, sandy silt with gravel	10.9
---	LCW- 13-4.5-6	---	Moist, dark grayish brown clay	40.7
---	LCW- 17-0-1.5	---	Moist, light brownish gray sand with silt	2.2
---	LCW- 17-5-6.5	---	Moist, light yellowish brown gravelly sand	8.3

Notes: Temperature of Drying : 110° Celsius

GeoTesting EXPRESS

Client:	Anchor QEA, LLC				
Project:	Los Cerritos Wetland Restoration				
Location:	Seal Beach, CA			Project No:	GTX-315751
Boring ID:	---	Sample Type:	---	Tested By:	ckg
Sample ID:	---	Test Date:	07/26/22	Checked By:	ank
Depth :	---	Test Id:	676679		

Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
---	LCW- 17-10-11.5	---	Moist, dark gray clay	36.2
---	LCW- 17-15-16.5	---	Moist, dark gray clay	189.9
---	LCW- 17-20-21.5	---	Moist, dark gray clayey sand	15.8
---	LCW- 18-0-1.5	---	Moist, grayish brown silty sand	2.6
---	LCW- 18-5-6.5	---	Moist, dark grayish brown silty sand	28.4
---	LCW- 18-10-11.5	---	Moist, gray clay	56.1
---	LCW- 18-15.4-16.3	---	Moist, dark gray silty sand	18.6
---	LCW- 18-20-21.5	---	Moist, very dark grayish brown silty sand	16.5
---	LCW- 18-25-26.5	---	Moist, olive brown silty sand	28.1

Notes: Temperature of Drying : 110° Celsius

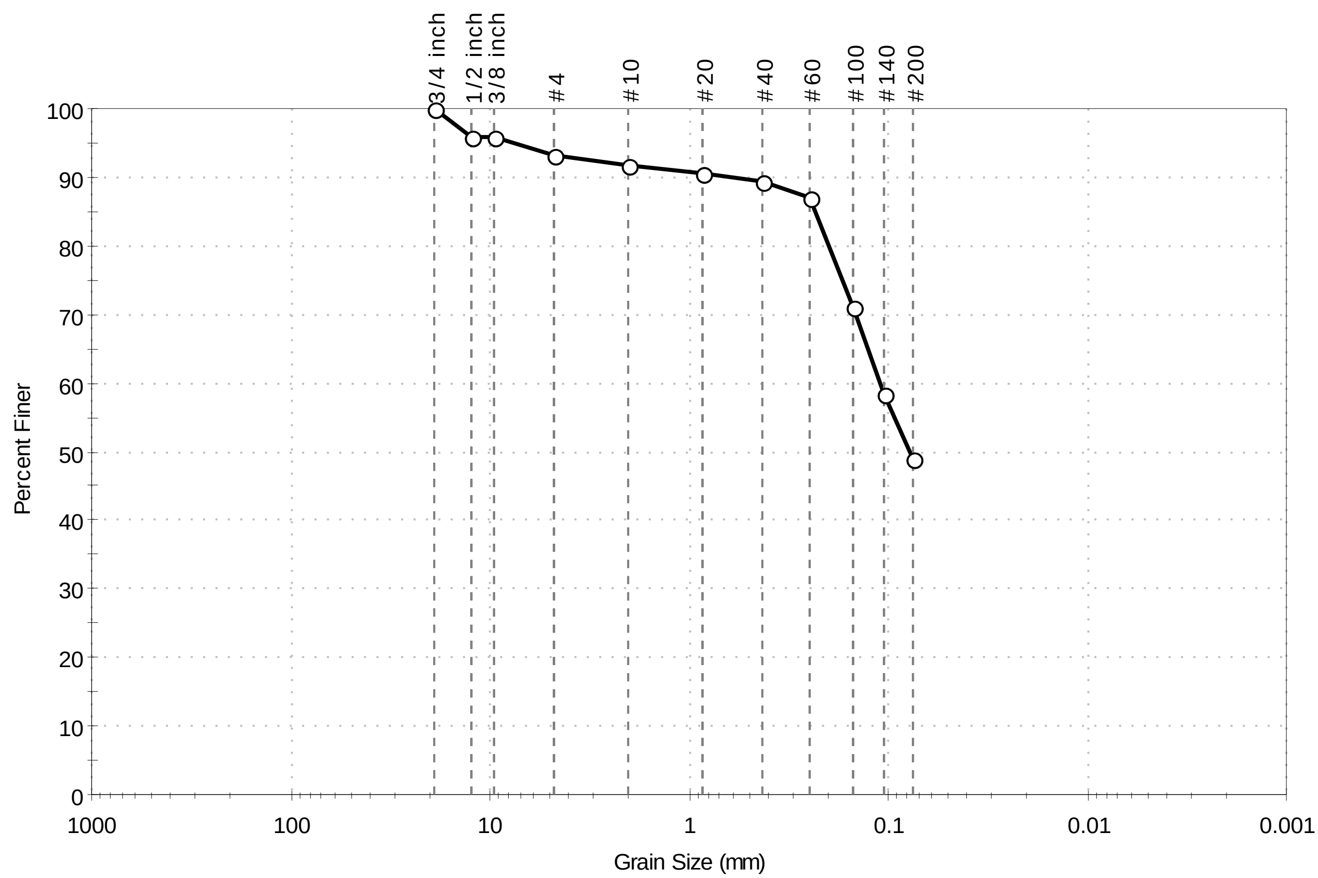
printed 7/26/2022 9:58:30 AM

Client: Anchor QEA, LLC
Project: Los Cerritos Wetland Restoration
Location: Seal Beach, CA
Project No: GTX-315751

Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	LCW-01/02-061522	Test Date:	07/13/22	Checked By:	ank
Depth :	---	Test Id:	676654		

Test Comment: ---
Visual Description: Moist, brown silty sand
Sample Comment: ---

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	6.9	44.2	48.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/4 inch	19.00	100		
1/2 inch	12.50	96		
3/8 inch	9.50	96		
#4	4.75	93		
#10	2.00	92		
#20	0.85	91		
#40	0.42	90		
#60	0.25	87		
#100	0.15	71		
#140	0.11	58		
#200	0.075	49		

Coefficients

D_{85} = 0.2350 mm
D_{30} = N/A
D_{60} = 0.1109 mm
D_{15} = N/A
D_{50} = 0.0781 mm
D_{10} = N/A
C_u = N/A
C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

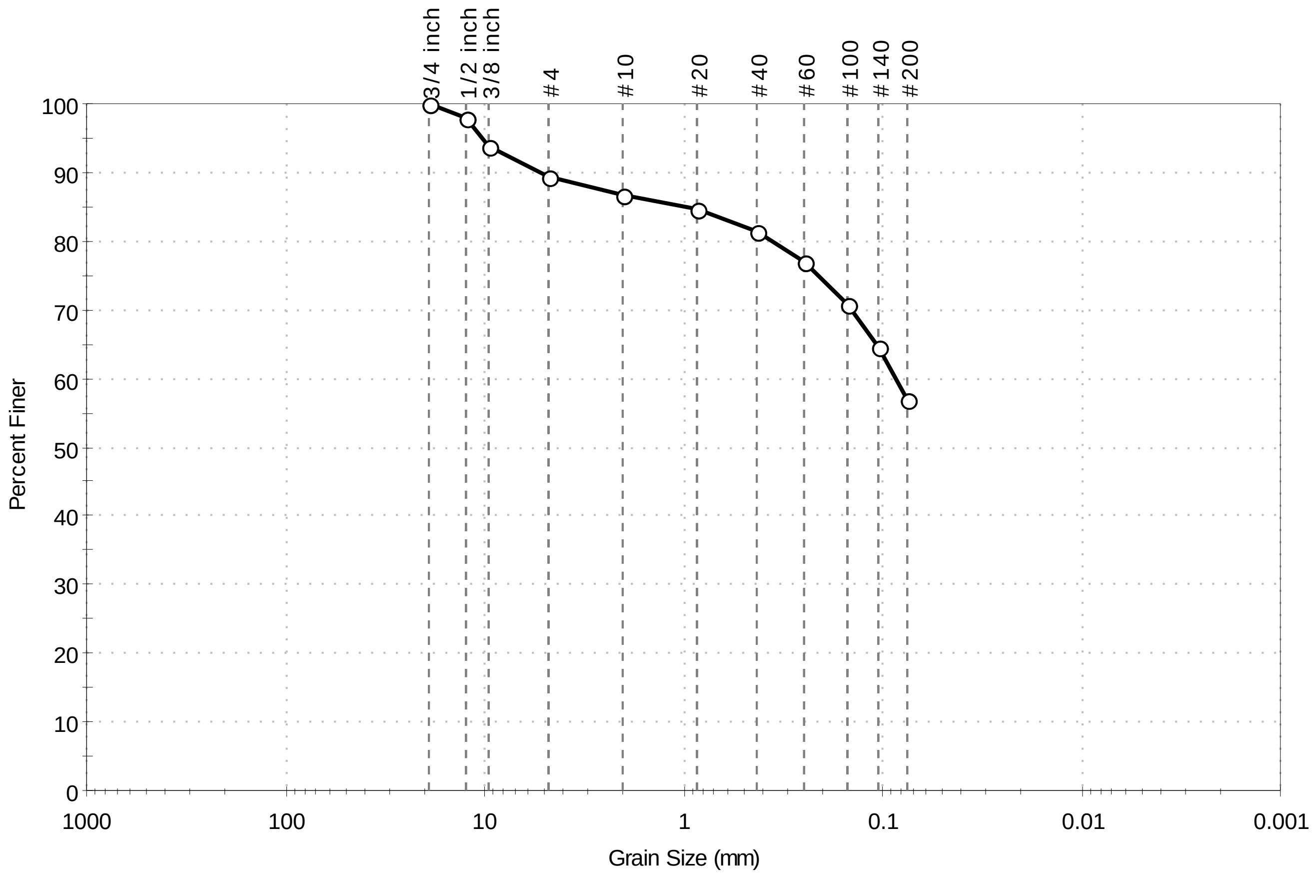
printed 7/26/2022 9:15:37 AM

Client:	Anchor QEA, LLC		
Project:	Los Cerritos Wetland Restoration		
Location:	Seal Beach, CA	Project No:	GTX-315751

Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	LCW-03/04-061522	Test Date:	07/13/22	Checked By:	ank
Depth :	---	Test Id:	676655		

Test Comment: ---
Visual Description: Moist, olive brown sandy silt
Sample Comment: ---

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	10.5	32.7	56.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/4 inch	19.00	100		
1/2 inch	12.50	98		
3/8 inch	9.50	94		
#4	4.75	89		
#10	2.00	87		
#20	0.85	85		
#40	0.42	82		
#60	0.25	77		
#100	0.15	71		
#140	0.11	64		
#200	0.075	57		

Coefficients

D_{85} = 1.0040 mm	D_{30} = N/A
D_{60} = 0.0867 mm	D_{15} = N/A
D_{50} = N/A	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

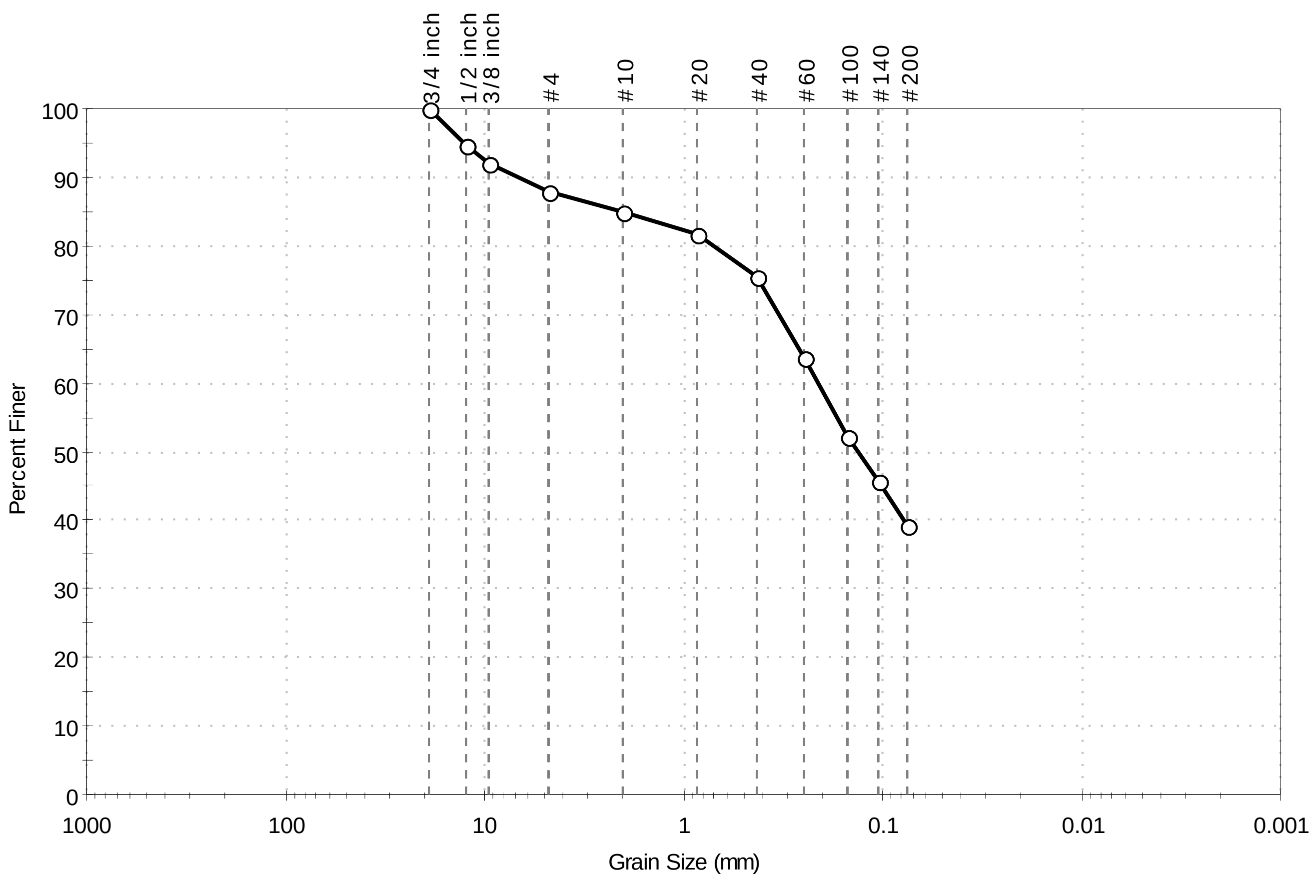
Sand/Gravel Hardness : HARD

printed 7/26/2022 9:15:39 AM

GeoTesting EXPRESS

Client: Anchor QEA, LLC			
Project: Los Cerritos Wetland Restoration			
Location: Seal Beach, CA		Project No:	GTX-315751
Boring ID: ---	Sample Type: bag	Tested By:	ckg
Sample ID: LCW-5-061722	Test Date: 07/13/22	Checked By:	ank
Depth : ---	Test Id: 676656		
Test Comment: ---			
Visual Description: Moist, brown silty sand			
Sample Comment: ---			

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	12.3	48.4	39.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/4 inch	19.00	100		
1/2 inch	12.50	95		
3/8 inch	9.50	92		
#4	4.75	88		
#10	2.00	85		
#20	0.85	82		
#40	0.42	75		
#60	0.25	64		
#100	0.15	52		
#140	0.11	46		
#200	0.075	39		

Coefficients

D_{85} = 2.1024 mm — D_{30} = N/A

D_{60} = 0.2113 mm — D_{15} = N/A

D_{50} = 0.1329 mm — D_{10} = N/A

C_u = N/A — C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

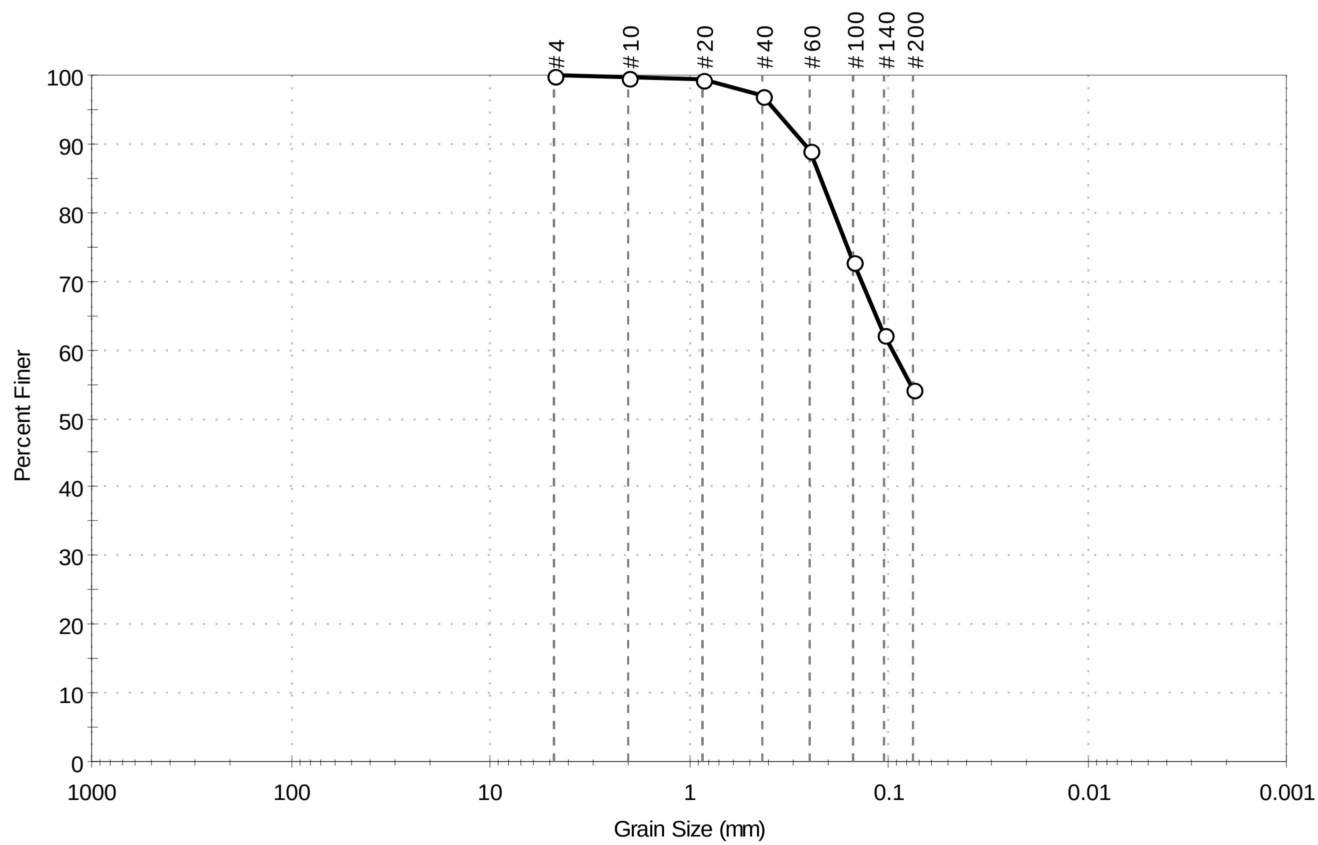
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	Anchor QEA, LLC		
Project:	Los Cerritos Wetland Restoration		
Location:	Seal Beach, CA	Project No:	GTX-315751
Boring ID: ---	Sample Type: bag	Tested By:	ckg
Sample ID: LCW-07-061722	Test Date: 07/13/22	Checked By:	ank
Depth : ---	Test Id: 676657		
Test Comment:	---		
Visual Description:	Moist, very dark gray sandy clay		
Sample Comment:	---		

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	45.6	54.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	97		
#60	0.25	89		
#100	0.15	73		
#140	0.11	62		
#200	0.075	54		

Coefficients

D_{85} = 0.2202 mm D_{30} = N/A

D_{60} = 0.0958 mm D_{15} = N/A

D_{50} = N/A D_{10} = N/A

C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

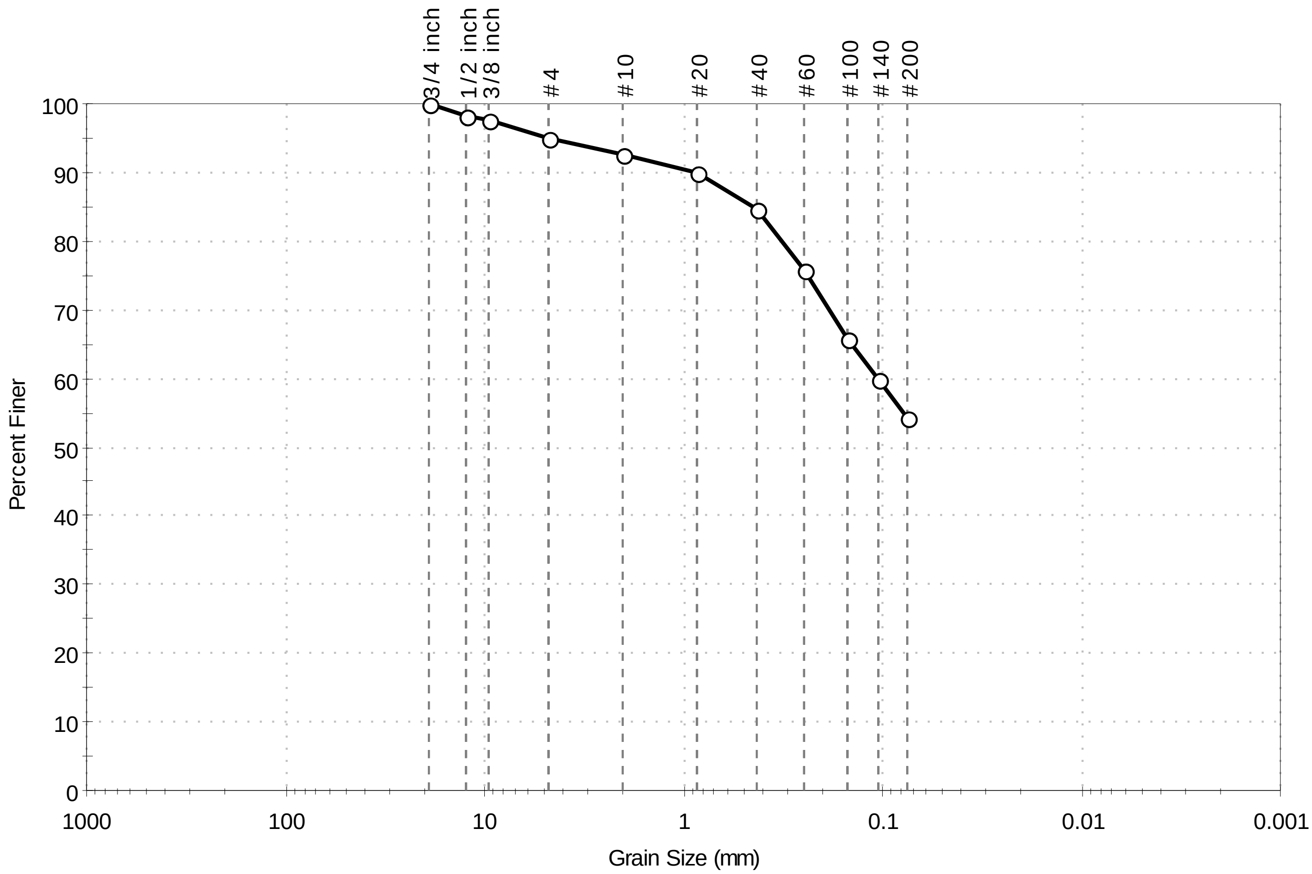
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

printed 7/26/2022 9:15:40 AM

Client:	Anchor QEA, LLC				
Project:	Los Cerritos Wetland Restoration				
Location:	Seal Beach, CA			Project No:	GTX-315751
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	LCW-08/09-061722	Test Date:	07/13/22	Checked By:	ank
Depth :	---	Test Id:	676658		
Test Comment:	---				
Visual Description:	Moist, dark olive brown sandy silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	4.9	40.8	54.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/4 inch	19.00	100		
1/2 inch	12.50	98		
3/8 inch	9.50	98		
#4	4.75	95		
#10	2.00	93		
#20	0.85	90		
#40	0.42	85		
#60	0.25	76		
#100	0.15	66		
#140	0.11	60		
#200	0.075	54		

Coefficients

D_{85} = 0.4443 mm D_{30} = N/A

D_{60} = 0.1068 mm D_{15} = N/A

D_{50} = N/A D_{10} = N/A

C_u = N/A C_c = N/A

Classification

ASTM   N/A

AASHTO   Silty Soils (A-4 (0))

Sample/Test Description

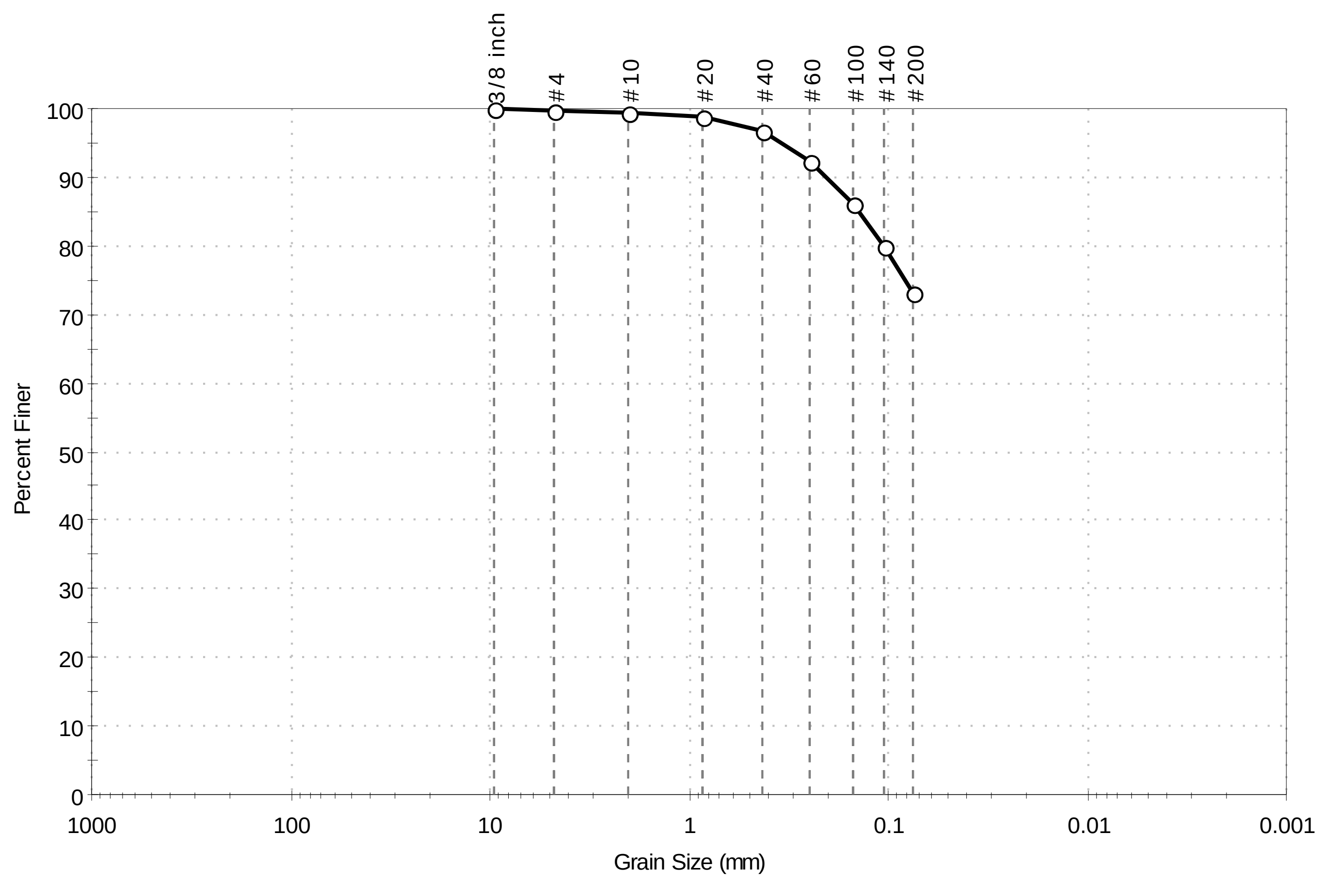
Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

printed 7/26/2022 9:15:41 AM

Client:	Anchor QEA, LLC
Project:	Los Cerritos Wetland Restoration
Location:	Seal Beach, CA
Project No:	GTX-315751
Boring ID:	---
Sample Type:	bag
Tested By:	ckg
Sample ID:	LCW-10/11-061722
Test Date:	07/13/22
Checked By:	ank
Depth :	---
Test Id:	676659
Test Comment:	---
Visual Description:	Moist, dark grayish brown silt with sand
Sample Comment:	---

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.3	26.6	73.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/8 inch	9.50	100		
#4	4.75	100		
#10	2.00	99		
#20	0.85	99		
#40	0.42	97		
#60	0.25	92		
#100	0.15	86		
#140	0.11	80		
#200	0.075	73		

Coefficients

D_{85} = 0.1413 mm	D_{30} = N/A
D_{60} = N/A	D_{15} = N/A
D_{50} = N/A	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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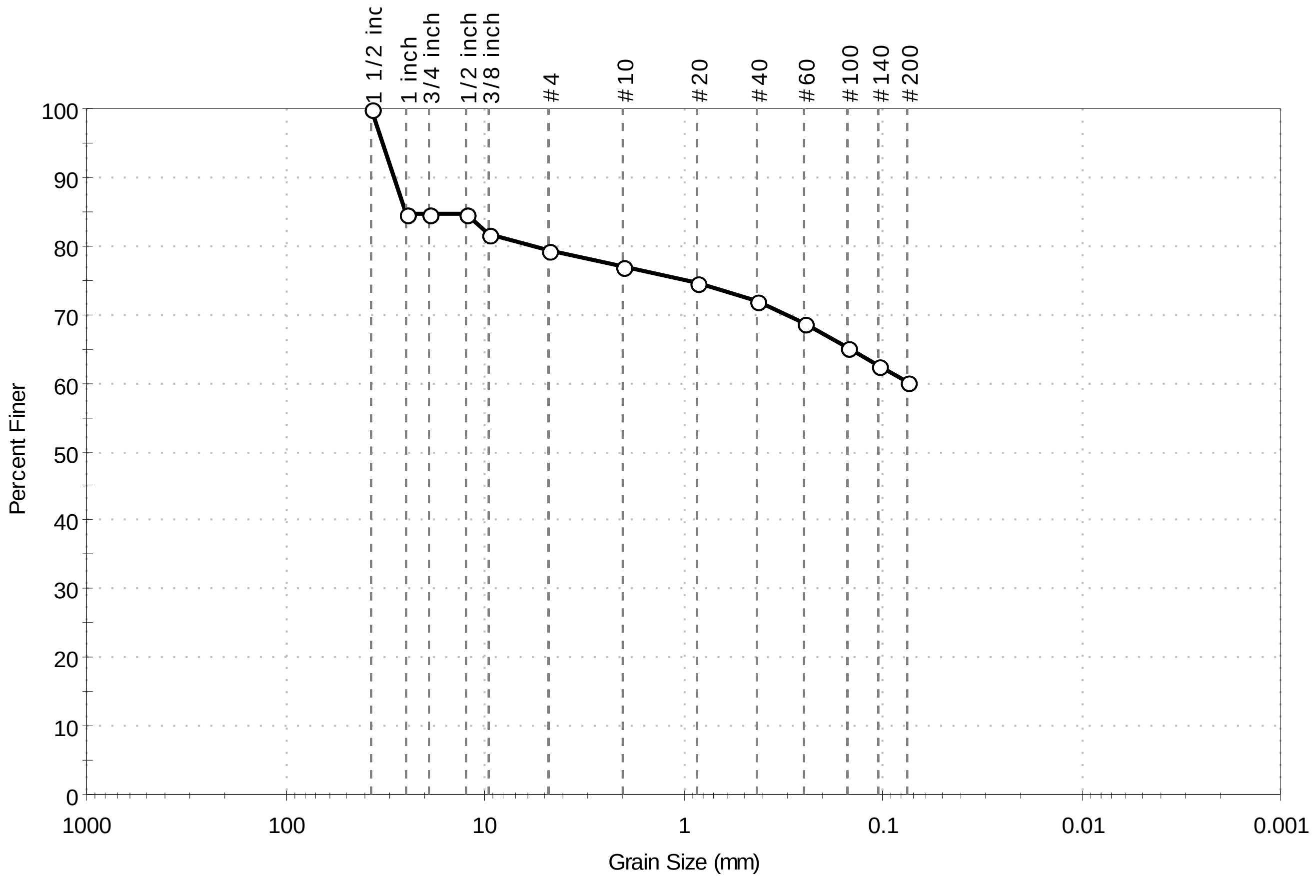
Client:	Anchor QEA, LLC		
Project:	Los Cerritos Wetland Restoration		
Location:	Seal Beach, CA	Project No:	GTX-315751

Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	LCW-12-13-061722	Test Date:	07/13/22	Checked By:	ank
Depth :	---	Test Id:	676660		

Test Comment: ---
Visual Description: Moist, very dark gray gravelly clay with sand
Sample Comment: ---

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	20.7	19.1	60.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 1/2 inch	37.50	100		
1 inch	25.00	85		
3/4 inch	19.00	85		
1/2 inch	12.50	85		
3/8 inch	9.50	82		
#4	4.75	79		
#10	2.00	77		
#20	0.85	75		
#40	0.42	72		
#60	0.25	69		
#100	0.15	65		
#140	0.11	63		
#200	0.075	60		

Coefficients

D_{85} = 25.2535 mm	D_{30} = N/A
D_{60} = N/A	D_{15} = N/A
D_{50} = N/A	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

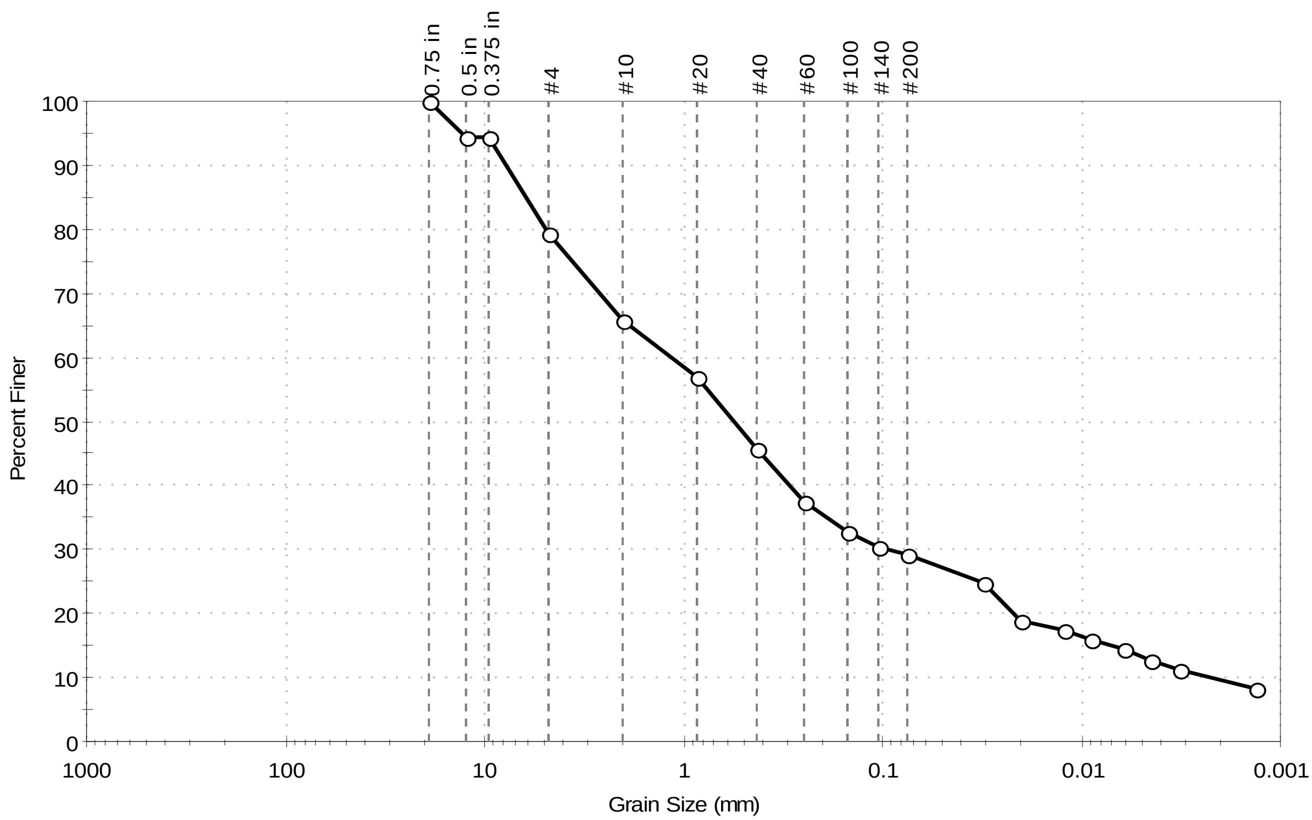
Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

printed 7/26/2022 9:15:43 AM

Client:	Anchor QEA, LLC		
Project:	Los Cerritos Wetland Restoration		
Location:	Seal Beach, CA	Project No:	GTX-315751
Boring ID: ---	Sample Type: bag	Tested By:	ckg
Sample ID: LCW-05-0-1.5	Test Date: 07/26/22	Checked By:	ank
Depth : ---	Test Id: 676687		
Test Comment:	---		
Visual Description:	Moist, dark grayish brown silty sand with gravel		
Sample Comment:	---		

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	20.8	50.1	29.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	95		
0.375 in	9.50	95		
#4	4.75	79		
#10	2.00	66		
#20	0.85	57		
#40	0.42	46		
#60	0.25	38		
#100	0.15	33		
#140	0.11	31		
#200	0.075	29		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0310	25		
---	0.0203	19		
---	0.0121	17		
---	0.0089	16		
---	0.0062	14		
---	0.0045	13		
---	0.0032	11		
---	0.0013	8		

Coefficients

D_{85} = 6.1646 mm D_{30} = 0.0933 mm
D_{60} = 1.1465 mm D_{15} = 0.0073 mm
D_{50} = 0.5548 mm D_{10} = 0.0022 mm
C_u = 521.136 C_c = 3.451

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

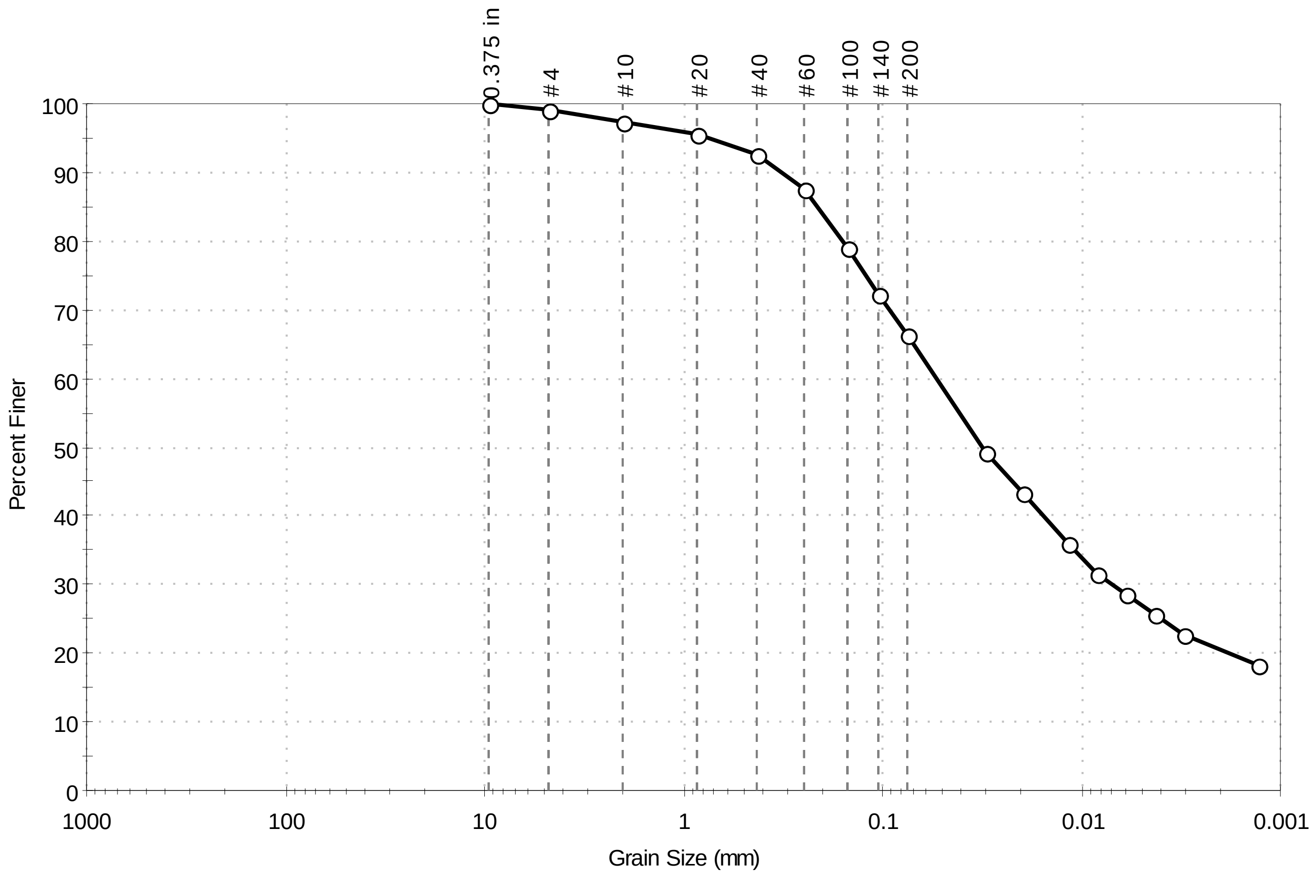
printed 7/26/2022 9:15:45 AM

Client:	Anchor QEA, LLC		
Project:	Los Cerritos Wetland Restoration		
Location:	Seal Beach, CA	Project No:	GTX-315751

Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	LCW-09-0-1.5	Test Date:	07/26/22	Checked By:	ank
Depth :	---	Test Id:	676688		

Test Comment: ---
Visual Description: Moist, brown sandy silt
Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.8	32.8	66.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	97		
#20	0.85	96		
#40	0.42	93		
#60	0.25	87		
#100	0.15	79		
#140	0.11	72		
#200	0.075	66		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0300	49		
---	0.0196	43		
---	0.0117	36		
---	0.0085	32		
---	0.0060	29		
---	0.0043	26		
---	0.0031	23		
---	0.0013	18		

Coefficients

D_{85} = 0.2144 mm
D_{30} = 0.0069 mm
D_{60} = 0.0532 mm
D_{15} = N/A
D_{50} = 0.0311 mm
D_{10} = N/A
C_u = N/A
C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

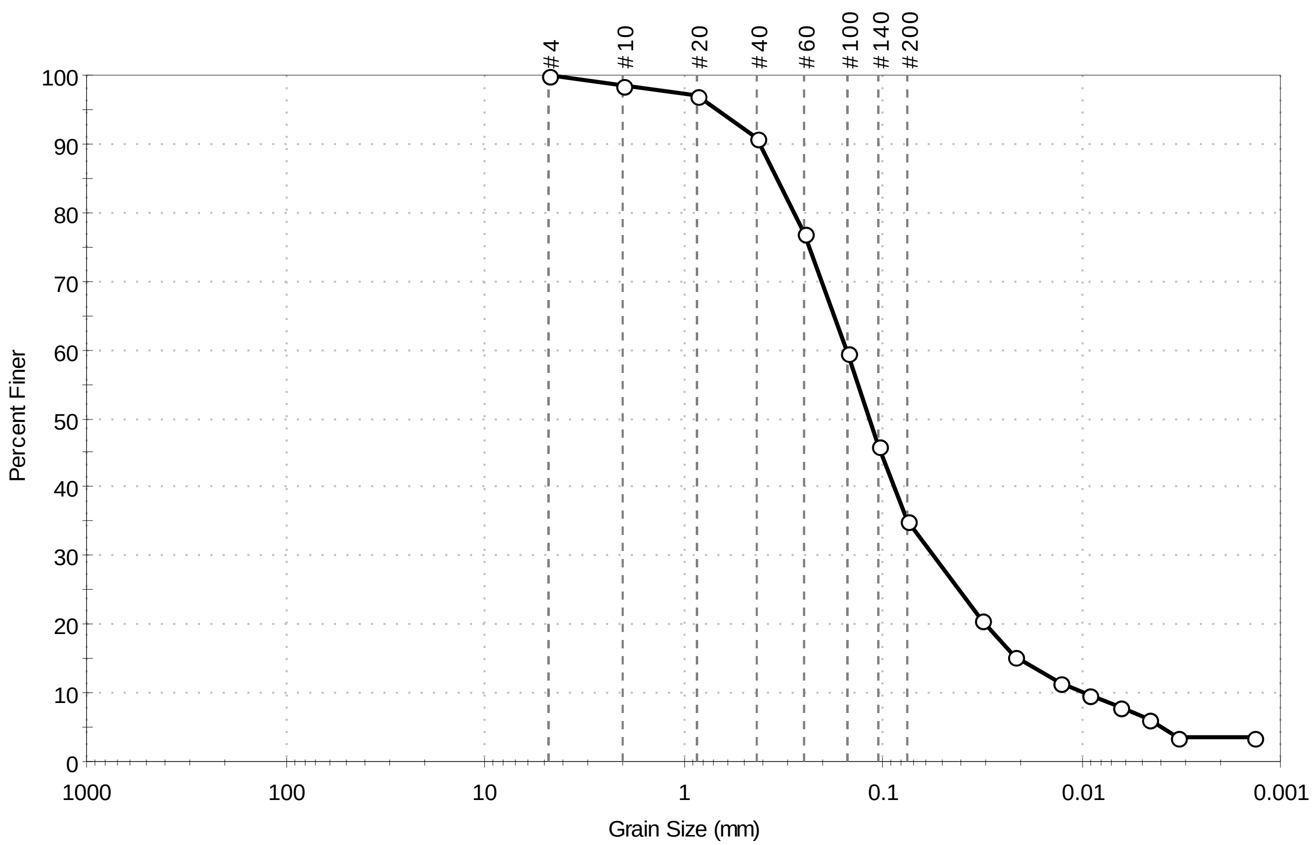
Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

printed 7/26/2022 9:15:46 AM

GeoTesting EXPRESS

Client:	Anchor QEA, LLC		
Project:	Los Cerritos Wetland Restoration		
Location:	Seal Beach, CA	Project No:	GTX-315751
Boring ID: ---	Sample Type: bag	Tested By:	ckg
Sample ID: LCW-11-0-2	Test Date: 07/26/22	Checked By:	ank
Depth : ---	Test Id: 676689		
Test Comment:	---		
Visual Description:	Moist, grayish brown silty sand		
Sample Comment:	---		

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	64.8	35.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	97		
#40	0.42	91		
#60	0.25	77		
#100	0.15	60		
#140	0.11	46		
#200	0.075	35		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0320	21		
---	0.0219	15		
---	0.0129	12		
---	0.0092	10		
---	0.0064	8		
---	0.0047	6		
---	0.0033	4		
---	0.0014	4		

Coefficients

D_{85} = 0.3393 mm
D_{30} = 0.0553 mm
D_{60} = 0.1517 mm
D_{15} = 0.0212 mm
D_{50} = 0.1174 mm
D_{10} = 0.0094 mm
C_u = 16.138
C_c = 2.145

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

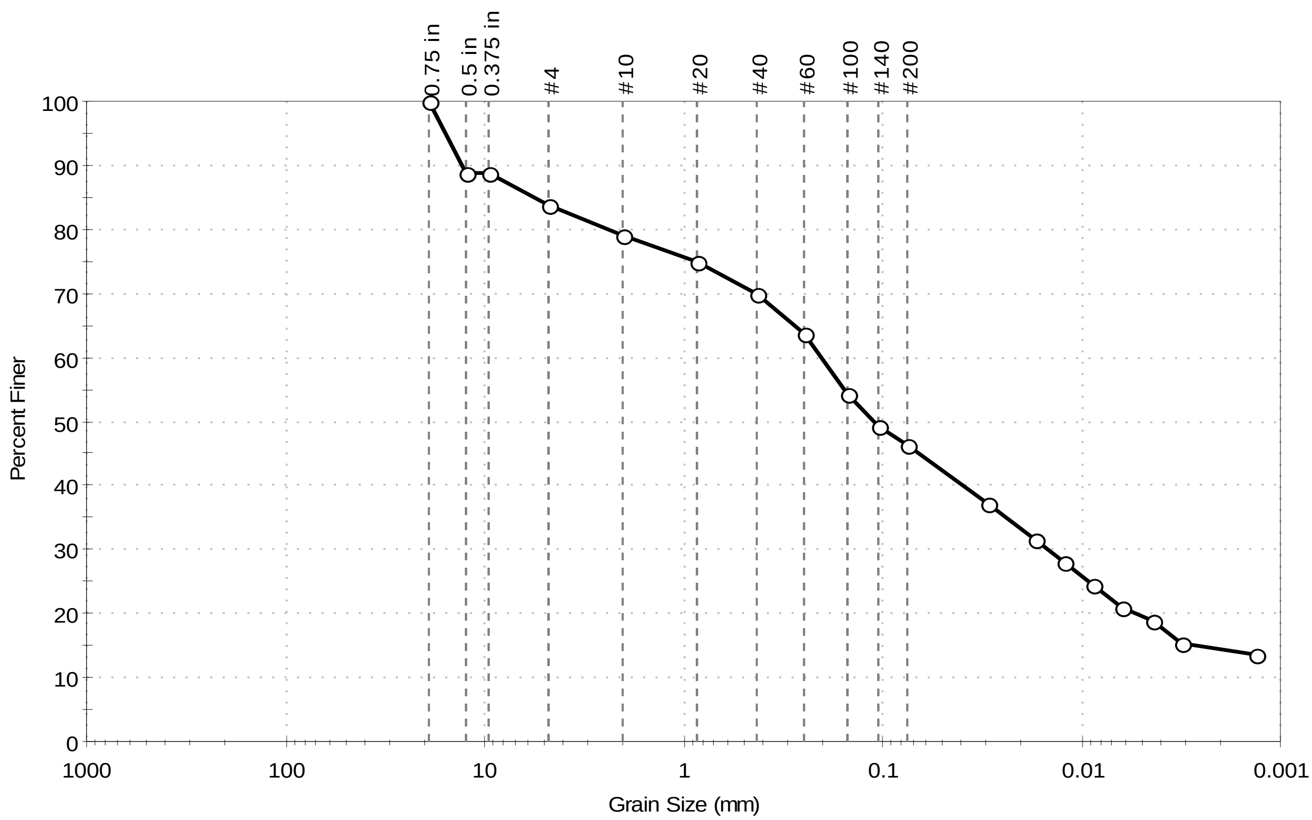
printed 7/26/2022 9:15:48 AM

Client:	Anchor QEA, LLC		
Project:	Los Cerritos Wetland Restoration		
Location:	Seal Beach, CA	Project No:	GTX-315751

Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	LCW-13-0-1.5	Test Date:	07/26/22	Checked By:	ank
Depth :	---	Test Id:	676690		

Test Comment: ---
Visual Description: Moist, black silty sand with gravel
Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	16.2	37.6	46.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	89		
0.375 in	9.50	89		
#4	4.75	84		
#10	2.00	79		
#20	0.85	75		
#40	0.42	70		
#60	0.25	64		
#100	0.15	54		
#140	0.11	49		
#200	0.075	46		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0295	37		
---	0.0170	32		
---	0.0123	28		
---	0.0087	24		
---	0.0063	21		
---	0.0044	19		
---	0.0032	15		
---	0.0013	14		

Coefficients

D_{85} = 5.6314 mm
D_{30} = 0.0146 mm
D_{60} = 0.2036 mm
D_{15} = 0.0026 mm
D_{50} = 0.1112 mm
D_{10} = N/A
C_u = N/A
C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

printed 7/26/2022 9:15:49 AM

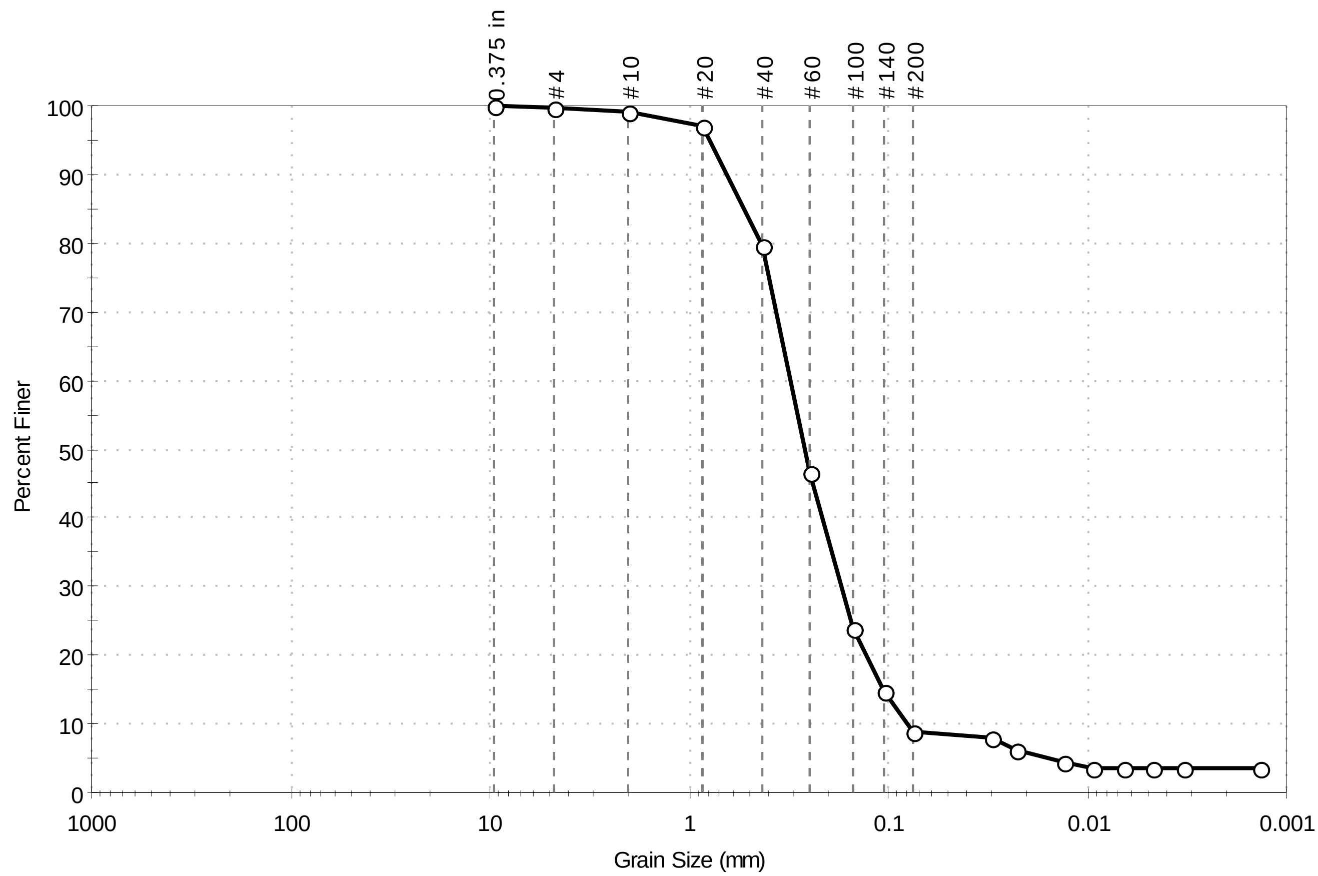
Client:	Anchor QEA, LLC		
Project:	Los Cerritos Wetland Restoration		
Location:	Seal Beach, CA	Project No:	GTX-315751
Boring ID: ---	Sample Type: bag	Tested By:	ckg
Sample ID: LCW-17-0-1.5	Test Date: 07/26/22	Checked By:	ank
Depth : ---	Test Id: 676691		

Test Comment: ---

Visual Description: Moist, light brownish gray sand with silt

Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.4	90.7	8.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	99		
#20	0.85	97		
#40	0.42	80		
#60	0.25	47		
#100	0.15	24		
#140	0.11	15		
#200	0.075	8.9		
Hydrometer	**Particle Size (mm)**	**Percent Finer**	**Spec. Percent**	**Complies**
---	0.0300	8		
---	0.0228	6		
---	0.0132	4		
---	0.0094	3		
---	0.0065	3		
---	0.0047	3		
---	0.0033	3		
---	0.0014	3		

Coefficients

D_{85} = 0.5240 mm | D_{30} = 0.1722 mm

D_{60} = 0.3097 mm | D_{15} = 0.1072 mm

D_{50} = 0.2639 mm | D_{10} = 0.0799 mm

C_u = 3.876 | C_c = 1.198

Classification

ASTM N/A

AASHTO Fine Sand (A-3 (1))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

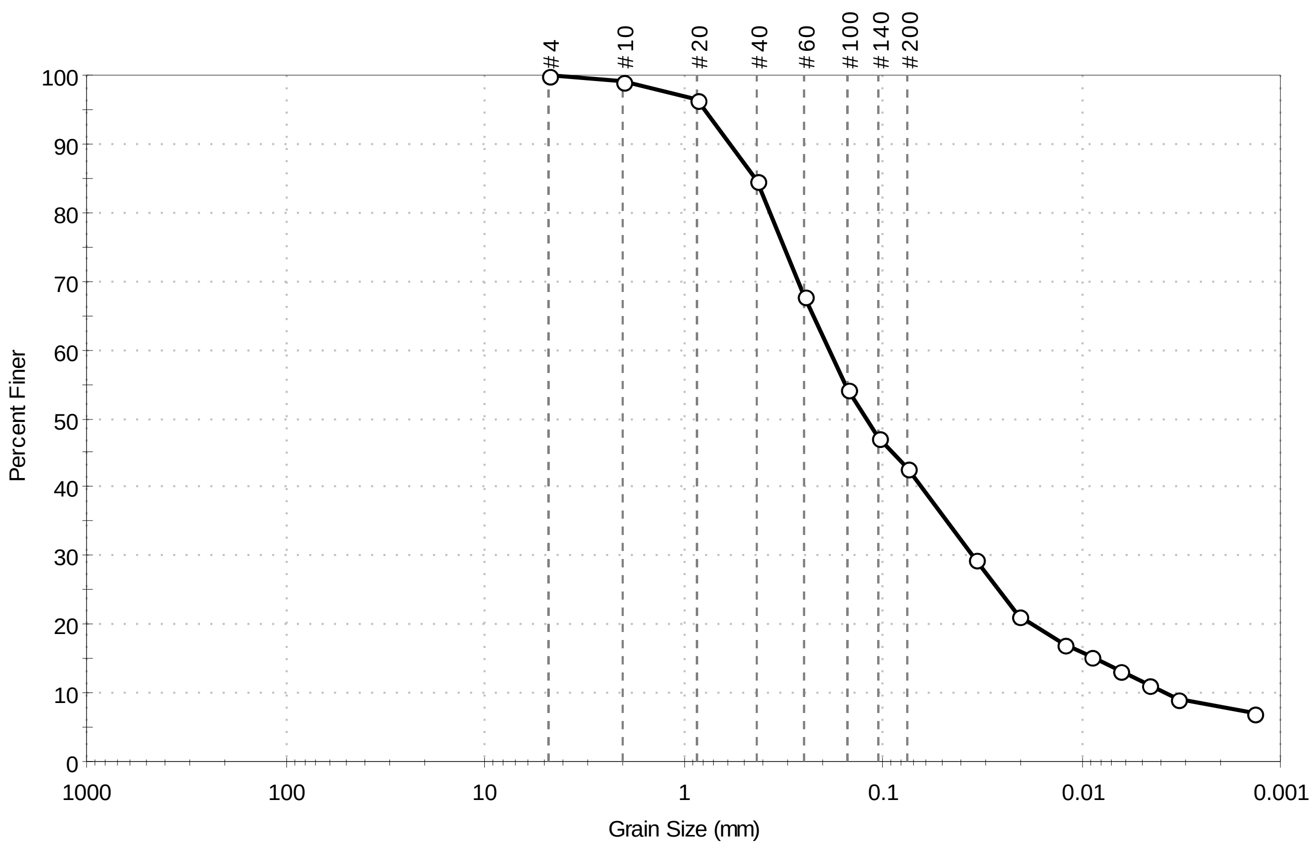
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

printed 7/26/2022 9:15:51 AM

Client:	Anchor QEA, LLC
Project:	Los Cerritos Wetland Restoration
Location:	Seal Beach, CA
Project No:	GTX-315751
Boring ID:	---
Sample Type:	bag
Tested By:	ckg
Sample ID:	LCW-17-20-21.5
Test Date:	07/26/22
Checked By:	ank
Depth :	---
Test Id:	676692
Test Comment:	---
Visual Description:	Moist, dark gray clayey sand
Sample Comment:	---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	57.3	42.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	97		
#40	0.42	85		
#60	0.25	68		
#100	0.15	54		
#140	0.11	47		
#200	0.075	43		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0342	29		
---	0.0205	21		
---	0.0122	17		
---	0.0089	15		
---	0.0064	13		
---	0.0046	11		
---	0.0033	9		
---	0.0014	7		

Coefficients

D_{85} = 0.4335 mm
D_{30} = 0.0354 mm
D_{60} = 0.1867 mm
D_{15} = 0.0087 mm
D_{50} = 0.1217 mm
D_{10} = 0.0038 mm
C_u = 49.132
C_c = 1.766

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

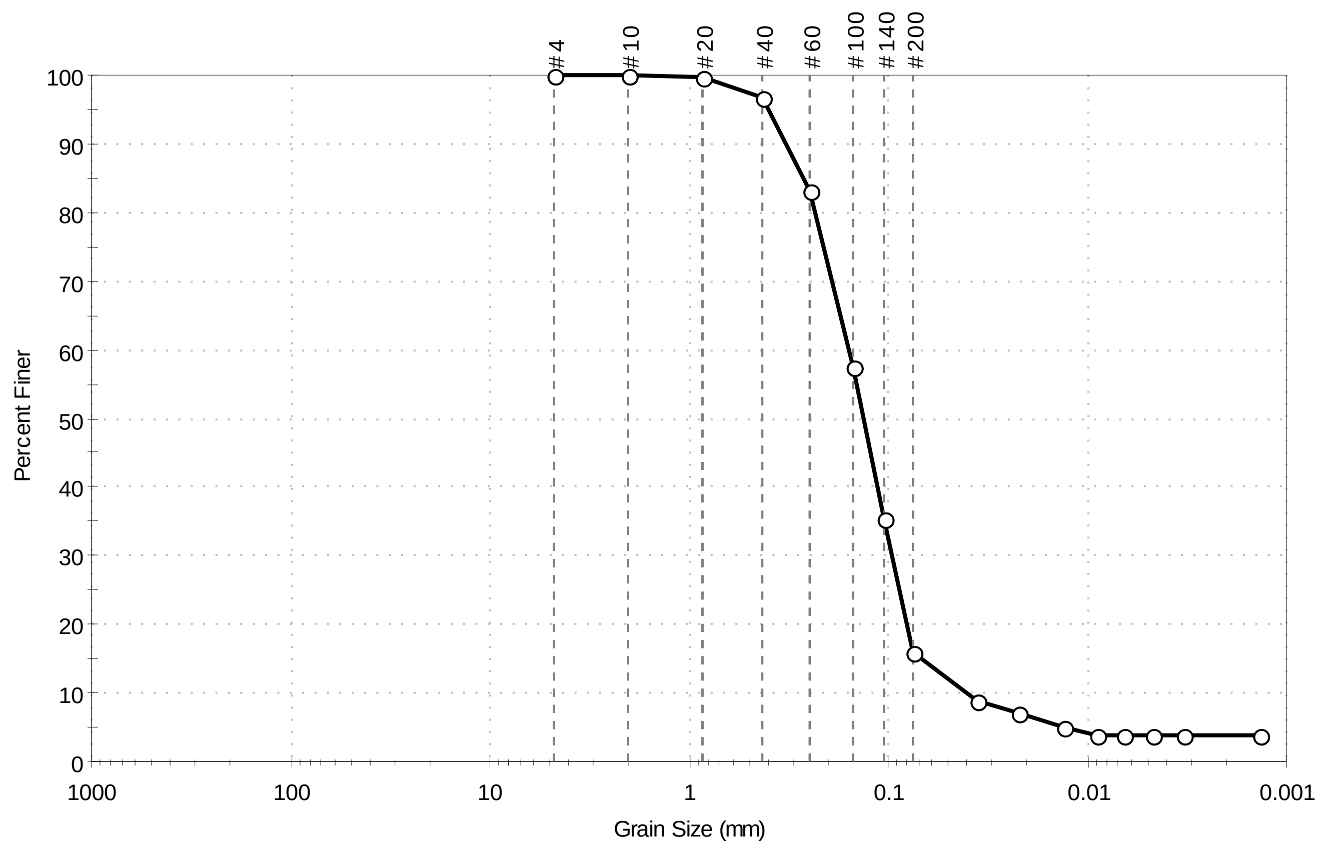
Separation of Sample: #200 Sieve

printed 7/26/2022 9:15:52 AM

Client:	Anchor QEA, LLC		
Project:	Los Cerritos Wetland Restoration		
Location:	Seal Beach, CA	Project No:	GTX-315751
Boring ID: ---	Sample Type: bag	Tested By:	ckg
Sample ID: LCW-18-5-6.5	Test Date: 07/26/22	Checked By:	ank
Depth : ---	Test Id: 676693		

Test Comment: ---
Visual Description: Moist, dark grayish brown silty sand
Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	84.0	16.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	97		
#60	0.25	83		
#100	0.15	57		
#140	0.11	35		
#200	0.075	16		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0359	9		
---	0.0221	7		
---	0.0133	5		
---	0.0090	4		
---	0.0066	4		
---	0.0047	4		
---	0.0033	4		
---	0.0014	4		

Coefficients

D_{85} = 0.2695 mm | D_{30} = 0.0965 mm
D_{60} = 0.1579 mm | D_{15} = 0.0678 mm
D_{50} = 0.1335 mm | D_{10} = 0.0401 mm
C_u = 3.938 | C_c = 1.471

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

printed 7/26/2022 9:15:53 AM

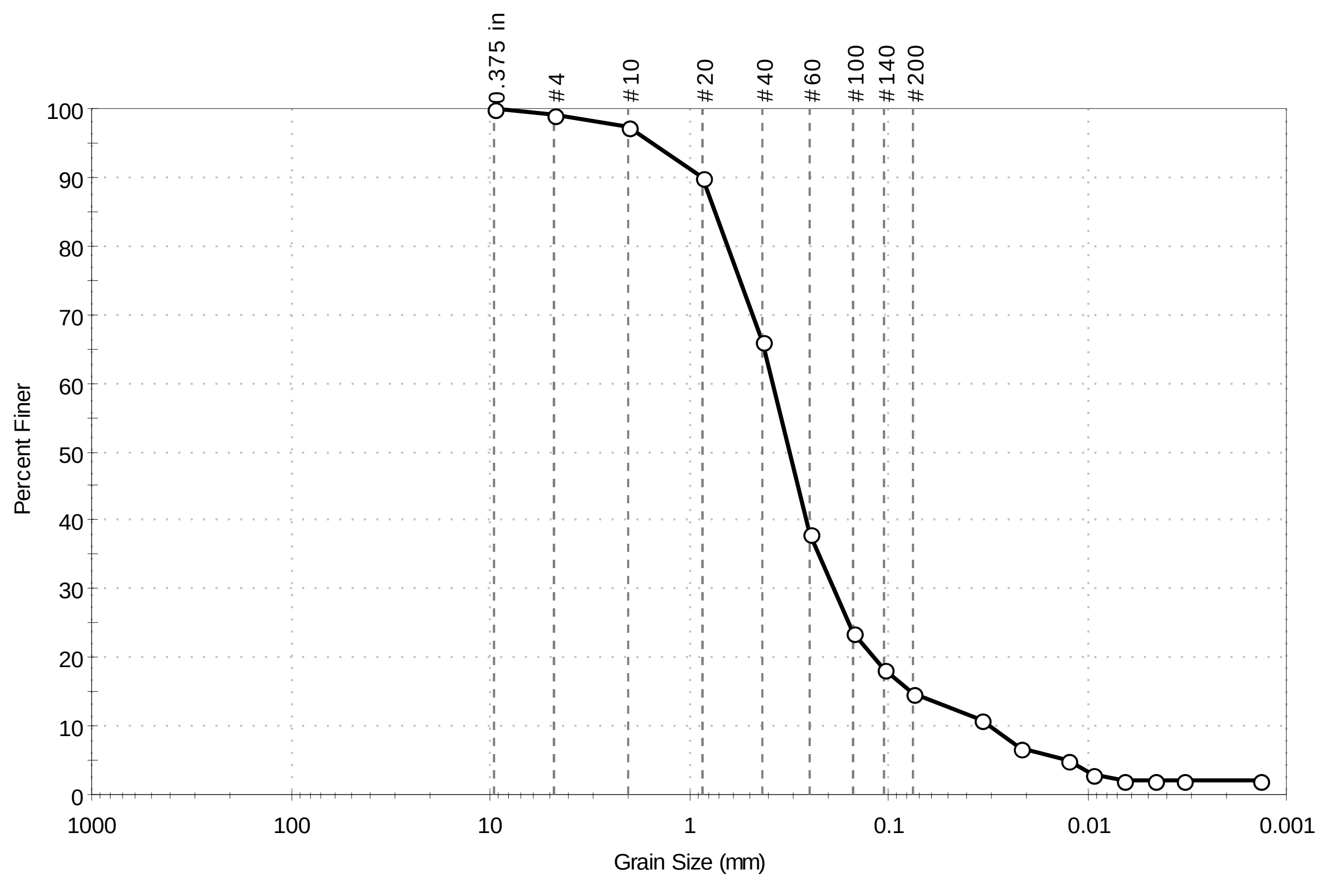
Client: Anchor QEA, LLC			
Project: Los Cerritos Wetland Restoration			
Location: Seal Beach, CA		Project No:	GTX-315751
Boring ID: ---	Sample Type: bag	Tested By:	ckg
Sample ID: LCW-18-20-21.5	Test Date: 07/26/22	Checked By:	ank
Depth : ---	Test Id: 676694		

Test Comment: ---

Visual Description: Moist, very dark grayish brown silty sand

Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	1.0	84.3	14.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	97		
#20	0.85	90		
#40	0.42	66		
#60	0.25	38		
#100	0.15	23		
#140	0.11	18		
#200	0.075	15		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0343	11		
---	0.0215	7		
---	0.0127	5		
---	0.0094	3		
---	0.0067	2		
---	0.0047	2		
---	0.0033	2		
---	0.0014	2		

Coefficients

D_{85} = 0.7353 mm D_{30} = 0.1889 mm

D_{60} = 0.3786 mm D_{15} = 0.0771 mm

D_{50} = 0.3136 mm D_{10} = 0.0311 mm

C_u = 12.174 C_c = 3.031

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

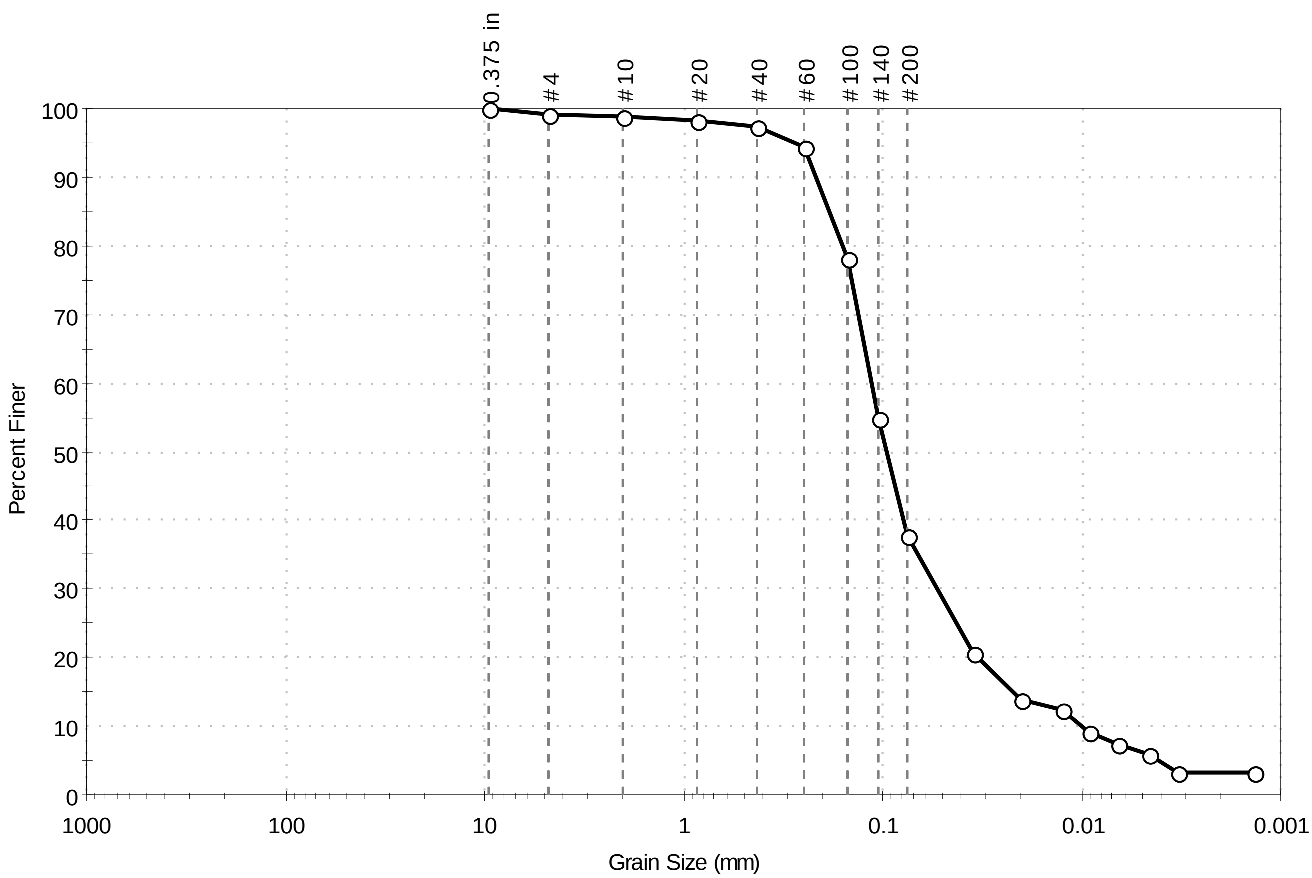
printed 7/26/2022 9:15:55 AM

GeoTesting EXPRESS

Client: Anchor QEA, LLC			
Project: Los Cerritos Wetland Restoration			
Location: Seal Beach, CA		Project No:	GTX-315751
Boring ID: ---	Sample Type: bag	Tested By:	ckg
Sample ID: LCW-18-25-26.5	Test Date: 07/26/22	Checked By:	ank
Depth : ---	Test Id: 676695		

Test Comment: ---
Visual Description: Moist, olive brown silty sand
Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	1.0	61.3	37.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	99		
#20	0.85	98		
#40	0.42	97		
#60	0.25	94		
#100	0.15	78		
#140	0.11	55		
#200	0.075	38		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0347	21		
---	0.0200	14		
---	0.0126	12		
---	0.0091	9		
---	0.0065	7		
---	0.0046	6		
---	0.0033	3		
---	0.0014	3		

Coefficients

D_{85} = 0.1863 mm　　D_{30} = 0.0531 mm
D_{60} = 0.1145 mm　　D_{15} = 0.0218 mm
D_{50} = 0.0962 mm　　D_{10} = 0.0100 mm
C_u = 11.450　　C_c = 2.463

Classification

ASTM　N/A

AASHTO　Silty Soils (A-4 (0))

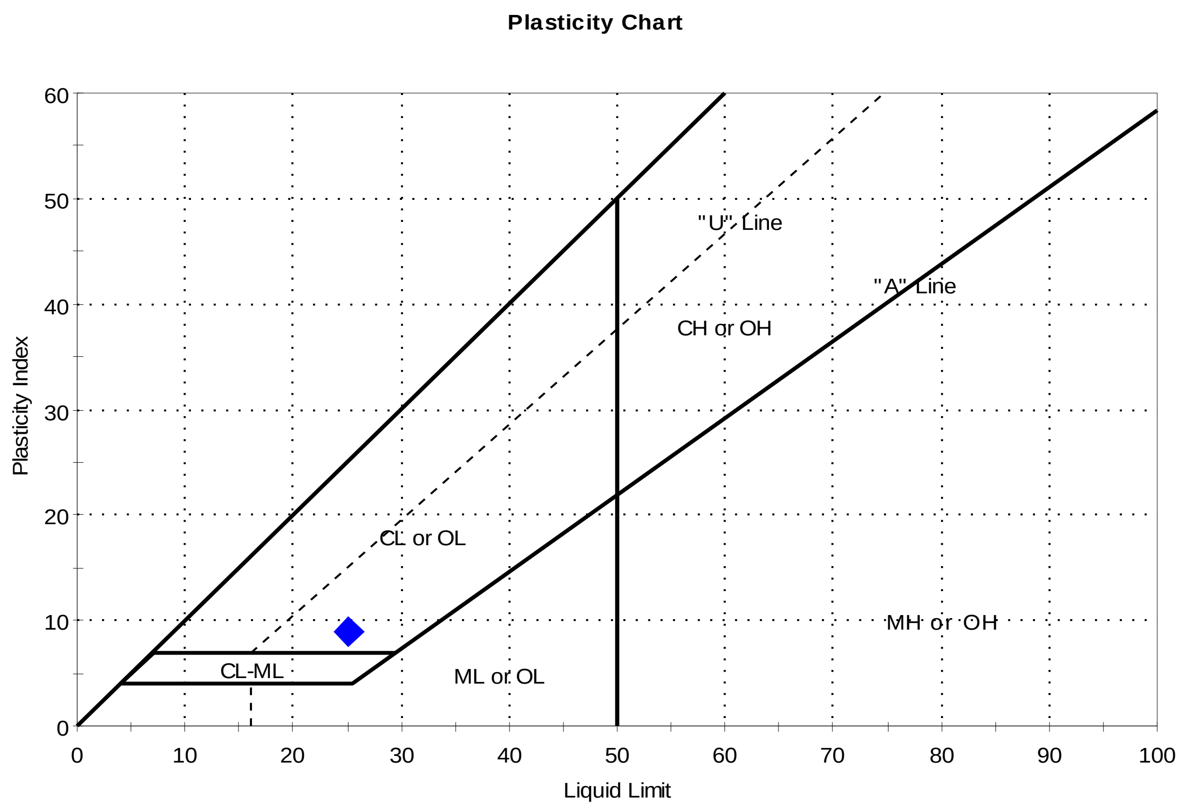
Sample/Test Description

Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

printed 7/26/2022 9:15:56 AM

Client:	Anchor QEA, LLC				
Project:	Los Cerritos Wetland Restoration				
Location:	Seal Beach, CA			Project No:	GTX-315751
Boring ID:	---	Sample Type:	bag	Tested By:	cam
Sample ID:	LCW-05-0-4.5-6	Test Date:	07/22/22	Checked By:	ank
Depth :	---	Test Id:	676680		
Test Comment:	---				
Visual Description:	Moist, dark yellowish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	LCW-05-0-4.5-6	---	---	17	25	16	9	0.1	

Sample Prepared using the WET method

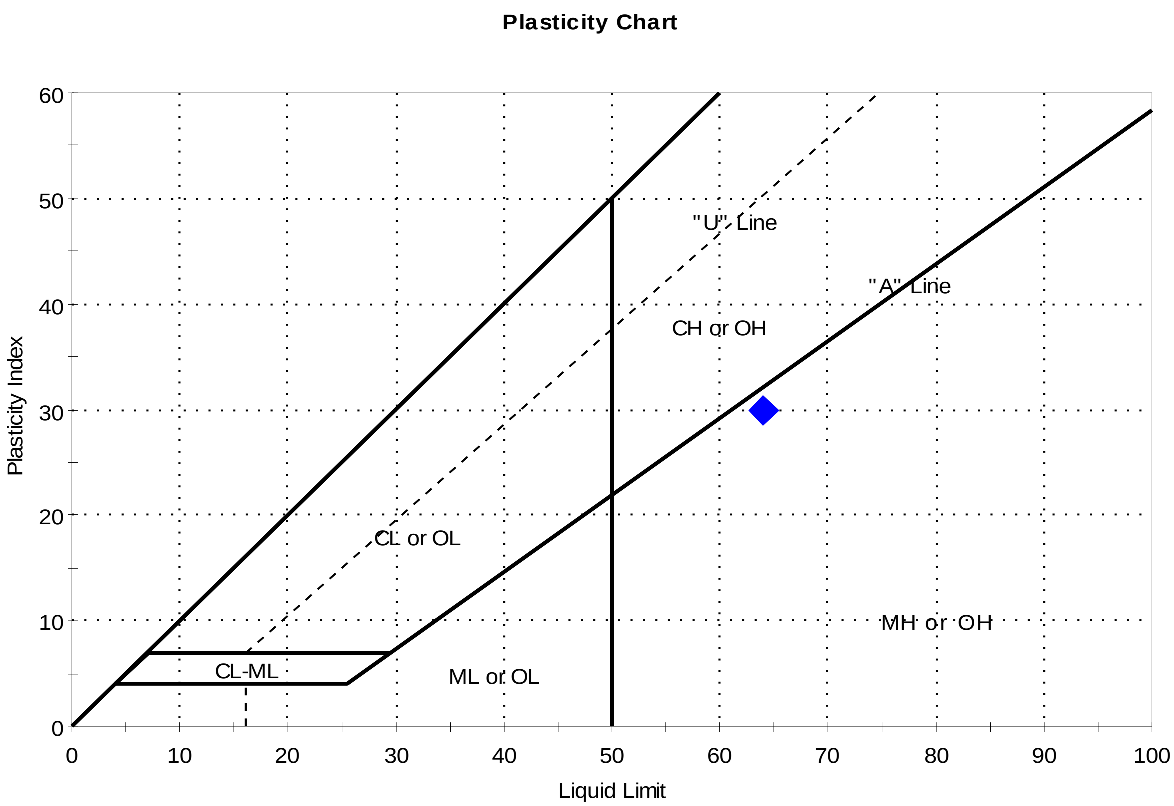
Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

Client:	Anchor QEA, LLC				
Project:	Los Cerritos Wetland Restoration				
Location:	Seal Beach, CA			Project No:	GTX-315751
Boring ID:	---	Sample Type:	bag	Tested By:	cam
Sample ID:	LCW-09-6-7.5	Test Date:	07/25/22	Checked By:	ank
Depth :	---	Test Id:	676681		
Test Comment:	---				
Visual Description:	Moist, gray silt				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	LCW-09-6-7.5	---	---	55	64	34	30	0.7	

Sample Prepared using the WET method

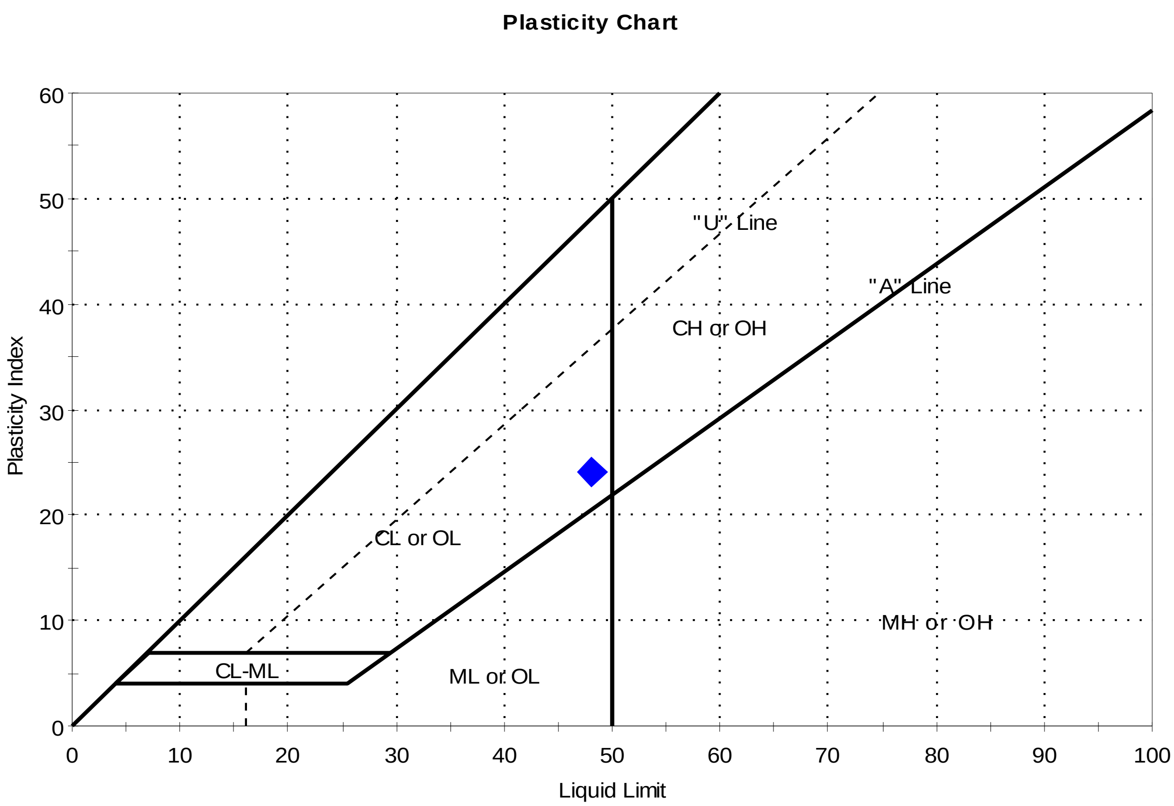
Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

Client:	Anchor QEA, LLC		
Project:	Los Cerritos Wetland Restoration		
Location:	Seal Beach, CA	Project No:	GTX-315751
Boring ID: ---	Sample Type: bag	Tested By:	cam
Sample ID: LCW-11-4-6	Test Date: 07/25/22	Checked By:	ank
Depth : ---	Test Id: 676682		
Test Comment:	---		
Visual Description:	Moist, dark gray clay		
Sample Comment:	---		

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	LCW-11-4-6	---	---	38	48	24	24	0.6	

Sample Prepared using the WET method

Dry Strength: VERY HIGH

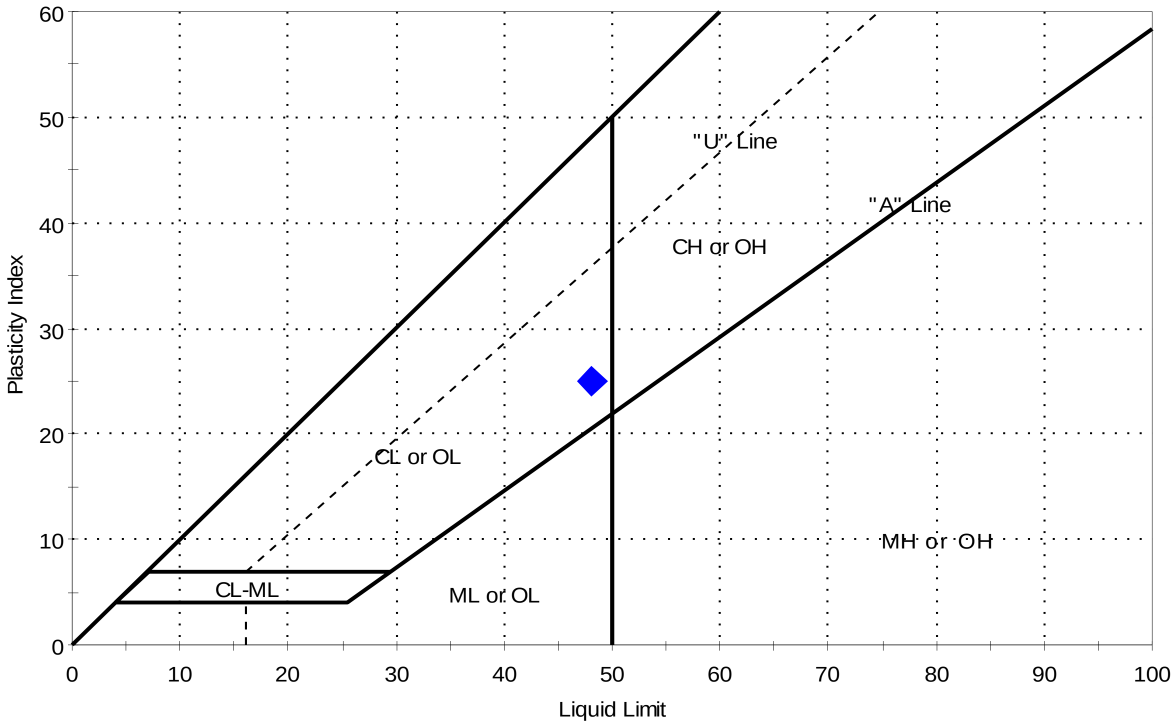
Dilatancy: SLOW

Toughness: LOW

GeoTesting EXPRESS

Client:	Anchor QEA, LLC		
Project:	Los Cerritos Wetland Restoration		
Location:	Seal Beach, CA	Project No:	GTX-315751
Boring ID: ---	Sample Type: bag	Tested By:	cam
Sample ID: LCW-13-4.5-6	Test Date: 07/25/22	Checked By:	ank
Depth : ---	Test Id: 676683		
Test Comment:	---		
Visual Description:	Moist, dark grayish brown clay		
Sample Comment:	---		

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	LCW-13-4.5-6	---	---	41	48	23	25	0.7	

Sample Prepared using the WET method

Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

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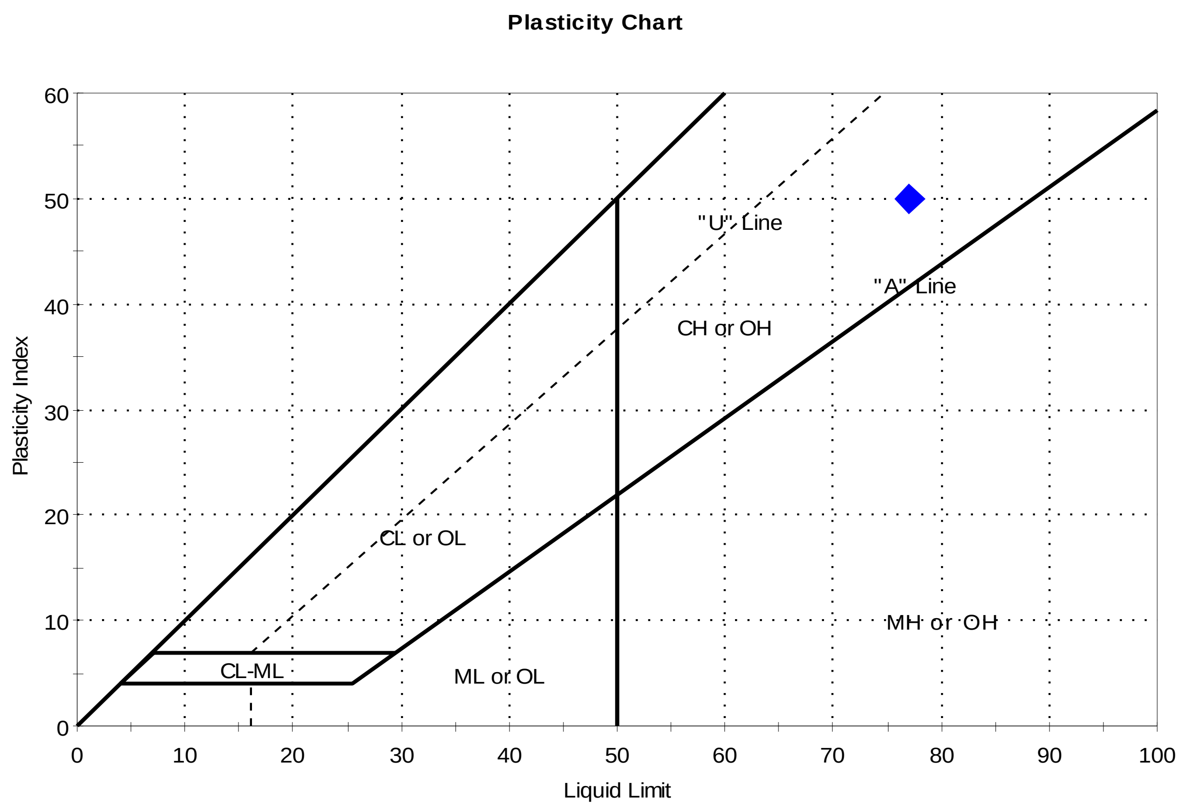
Client: Anchor QEA, LLC			
Project: Los Cerritos Wetland Restoration			
Location: Seal Beach, CA		Project No:	GTX-315751
Boring ID: ---	Sample Type: bag	Tested By:	cam
Sample ID: LCW-17-10-11.5	Test Date: 07/25/22	Checked By:	ank
Depth : ---	Test Id: 676684		
Test Comment: ---			
Visual Description: Moist, dark gray clay			
Sample Comment: ---			

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	LCW-17-10-11.5	---	---	36	77	27	50	0.2	

Sample Prepared using the WET method

Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

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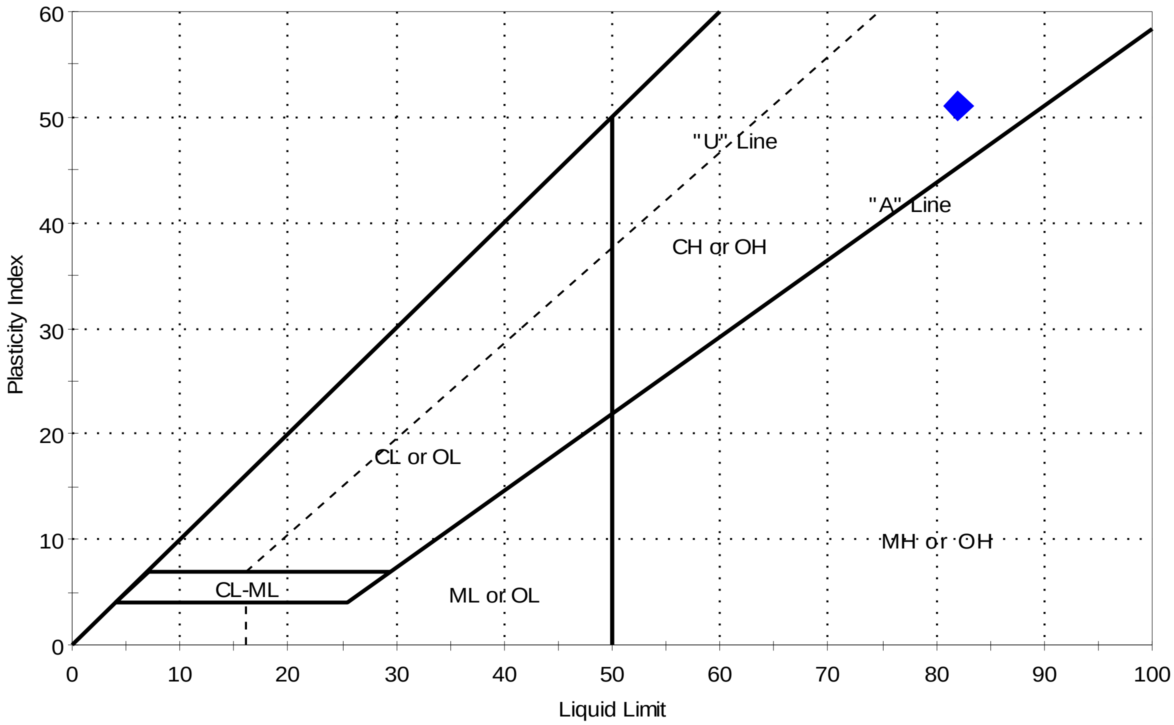
Client:	Anchor QEA, LLC				
Project:	Los Cerritos Wetland Restoration				
Location:	Seal Beach, CA			Project No:	GTX-315751
Boring ID:	---	Sample Type:	bag	Tested By:	cam
Sample ID:	LCW-18-10-11.5	Test Date:	07/25/22	Checked By:	ank
Depth :	---	Test Id:	676685		
Test Comment:	---				
Visual Description:	Moist, gray clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	LCW-18-10-11.5	---	---	56	82	31	51	0.5	

Sample Prepared using the WET method

Dry Strength: n/a

Dilatancy: SLOW

Toughness: LOW

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Client:	Anchor QEA, LLC				
Project:	Los Cerritos Wetland Restoration				
Location:	Seal Beach, CA			Project No:	GTX-315751
Boring ID:	---	Sample Type:	bag	Tested By:	cam
Sample ID:	LCW-18-15.4-16.3	Test Date:	07/22/22	Checked By:	ank
Depth :	---	Test Id:	676686		

Test Comment: ---
Visual Description: Moist, dark gray silty sand
Sample Comment: ---

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	LCW-18-15.4-16.3	---	---	19	n/a	n/a	n/a	n/a	

Dry Strength: LOW
Dilatancy: RAPID
Toughness: n/a
The sample was determined to be Non-Plastic

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CHAIN OF CUSTODY

GeoTesting EXPRESS

GeoTesting Express, Inc. 125 Nagog Park
Acton, MA 01720
800-434-1062 Toll Free
978-635-0424 Phone
978-635-0266 Fax

Sales Order No.:
GTX No.:

Company Name: Anchor QEA
Address:
Contact: Chris Osuch
e-mail: cosuch@anchorqea.com
Phone Number: 949-334-9632
Fax Number:
Project Name: Los Cerritos Wetland Restoration
Project Number: 210090-01.01
Project Location: Seal Beach, CA

Analysis

Sample Type: 1. Soil 2. Geosynthetic 3. Rock 4. Concrete 5. Other

Container Type: 1. Bucket 2. Bag 3. Jar 4. Tube 5. Roll

Sample Identification	Sampling Date	Sampling Time	Sample Type	Container Type	Particle Size (D4464)					Comments
LCW-01/02-061522	6/15/2022	13:00	Soil	Bag	x					
LCW-03/04-061522	6/15/2022	13:00	Soil	Bag	x					
LCW-5-061722	6/17/2022	17:10	Soil	Bag	x					
LCW-07-061722	6/17/2022	11:00	Soil	Bag	x					
LCW-08/09-061722	6/17/2022	17:15	Soil	Bag	x					
LCW-10/11-061722	6/17/2022	10:00	Soil	Bag	x					
LCW-12/13-061722	6/17/2022	17:15	Soil	Bag	x					

Relinquished By: Makenna Brown [signature]	Date: 6/30/22 Time: 17:00	**Received By:** [signature]	Date: 7/5/22 Time: 9:30	**Turn-Around Time Requested:** No. of Business Days: ________
Relinquished By:	Date: Time:	**Received By:**	Date: Time:	
Relinquished By:	Date: Time:	**Received By:**	Date: Time:	**Special Instructions:**
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Acton, MA 01720
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978-635-0424 Phone
978-635-0266 Fax

Sales Order No.:
GTX No.:

Company Name: Anchor QEA
Address:
Contact: Chris Osuch
e-mail: cosuch@anchorqea.com
Phone Number: 949-334-9632
Fax Number:
Project Name: Los Cerritos Wetland Restoration
Project Number: 210090-01.01
Project Location: Seal Beach, CA

Analysis

Sample Type: 1. Soil 2. Geosynthetic 3. Rock 4. Concrete 5. Other

Container Type: 1. Bucket 2. Bag 3. Jar 4. Tube 5. Roll

Sample Identification	Sampling Date	Sampling Time	Sample Type	Container Type	Moisture Content ASTM D2216	Atterberg Limits ASTM D4318	Particle Size (sieve & hydrometer) ASTM D422	Specific Gravity ASTM D854	Bulk Density ASTM D7263	Direct Shear ASTM D3080	Consolidation ASTM D2435	Comments
LCW-05-0-1.5	6/17/2022	17:15	Soil	Bag	X		X					
LCW-05-0-4.5-6	6/17/2022	17:38	Soil	Bag	X	X						
LCW-09-0-1.5	6/17/2022	15:15	Soil	Bag	X		X					
LCW-09-6-7.5	6/17/2022	13:40	Soil	Bag	X	X						
LCW-11-0-2	6/16/2022	12:45	Soil	Bag	X		X					
LCW-11-4-6	6/16/2022	13:10	Soil	Bag	X	X						
LCW-13-0-1.5	6/17/2022	13:30	Soil	Bag	X		X					
LCW-13-4.5-6	6/17/2022	13:50	Soil	Bag	X	X						

Relinquished By: Makenna Brown [signature]	Date: 6/30/22 Time: 17:00	**Received By:** [signature]	Date: 7/5/22 Time: 9:30	**Turn-Around Time Requested:** No. of Business Days: ________
Relinquished By:	Date: Time:	**Received By:**	Date: Time:	
Relinquished By:	Date: Time:	**Received By:**	Date: Time:	**Special Instructions:**
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GeoTesting Express, Inc. 125 Nagog Park
Acton, MA 01720
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978-635-0424 Phone
978-635-0266 Fax

Sales Order No.:
GTX No.:

Company Name: Anchor QEA
Address:
Contact: Chris Osuch
e-mail: cosuch@anchorqea.com
Phone Number: 949-334-9632
Fax Number:
Project Name: Los Cerritos Wetland Restoration
Project Number: 210090-01.01
Project Location: Seal Beach, CA

Analysis

Sample Type: 1. Soil 2. Geosynthetic 3. Rock 4. Concrete 5. Other

Container Type: 1. Bucket 2. Bag 3. Jar 4. Tube 5. Roll

Sample Identification	Sampling Date	Sampling Time	Sample Type	Container Type	Moisture Content ASTM D2216	Atterberg Limits ASTM D4318	Particle Size (sieve & hydrometer) ASTM D422	Specific Gravity ASTM D854	Bulk Density ASTM D7263	Direct Shear ASTM D3080	Consolidation ASTM D2435	Comments
LCW-17-0-1.5	6/17/2022	14:00	Soil	Bag	X		X					sand
LCW-17-5-6.5	6/17/2022	14:20	Soil	Bag	X							sand
LCW-17-10-11.5	6/17/2022	14:30	Soil	Bag	X	X						clay
LCW-17-15-16.5	6/17/2022	14:59	Soil	Bag	X							clay (more volume than above)
LCW-17-20-21.5	6/17/2022	15:25	Soil	Bag	X		X					
			Soil	Bag								
			Soil	Bag								
			Soil	Bag								

Relinquished By: Makenna Brown [signature]	Date: 6/30/22 Time: 17:00	Received By: [signature]	Date: 7/5/22 Time: 9:30	Turn-Around Time Requested:
Relinquished By:	Date: Time:	Received By:	Date: Time:	No. of Business Days: ________
Relinquished By:	Date: Time:	Received By:	Date: Time:	Special Instructions:
SHIPPED VIA:				

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Acton, MA 01720
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978-635-0266 Fax

Sales Order No.:
GTX No.:

Company Name: Anchor QEA
Address:
Contact: Chris Osuch
e-mail: cosuch@anchorqea.com
Phone Number: 949-334-9632
Fax Number:
Project Name: Los Cerritos Wetland Restoration
Project Number: 210090-01.01
Project Location: Seal Beach, CA

Sample Type: 1. Soil 2. Geosynthetic 3. Rock 4. Concrete 5. Other
Container Type: 1. Bucket 2. Bag 3. Jar 4. Tube 5. Roll

Sample Identification	Sampling Date	Sampling Time	Sample Type	Container Type	Moisture Content ASTM D2216	Atterberg Limits ASTM D4318	Particle Size (sieve & hydrometer) ASTM D422	Specific Gravity ASTM D854	Bulk Density ASTM D7263	Direct Shear ASTM D3080	Consolidation ASTM D2435	Comments
LCW-18-0-1.5	6/17/2022	8:40	Soil	Bag	X							sand
LCW-18-5-6.5	6/17/2022	8:55	Soil	Bag	X		X					sand
LCW-18-10-11.5	6/17/2022	9:10	Soil	Bag	X	X						clay
LCW-18-15.4-16.3	6/17/2022	9:35	Soil	Bag	X	X						sandy silt
LCW-18-20-21.5	6/17/2022	9:55	Soil	Bag	X		X					sand
LCW-18-25-26.5	6/17/2022	10:10	Soil	Bag	X		X					sand

Relinquished By: Makenna Brown	Date: 6/30/22 Time: 17:00	**Received By:**	Date: 7/5/22 Time: 9:30	**Turn-Around Time Requested:** No. of Business Days: ________
Relinquished By:	Date: Time:	**Received By:**	Date: Time:	
Relinquished By:	Date: Time:	**Received By:**	Date: Time:	**Special Instructions:**
SHIPPED VIA:				

GeoTesting
EXPRESS

WARRANTY and LIABILITY

GeoTesting Express (GTX) warrants that all tests it performs are run in general accordance with the specified test procedures and accepted industry practice. GTX will correct or repeat any test that does not comply with this warranty. GTX has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GTX may report engineering parameters that require us to interpret the test data. Such parameters are determined using accepted engineering procedures. However, GTX does not warrant that these parameters accurately reflect the true engineering properties of the *in situ* material. Responsibility for interpretation and use of the test data and these parameters for engineering and/or construction purposes rests solely with the user and not with GTX or any of its employees.

GTX's liability will be limited to correcting or repeating a test which fails our warranty. GTX's liability for damages to the Purchaser of testing services for any cause whatsoever shall be limited to the amount GTX received for the testing services. GTX will not be liable for any damages, or for any lost benefits or other consequential damages resulting from the use of these test results, even if GTX has been advised of the possibility of such damages. GTX will not be responsible for any liability of the Purchaser to any third party.

Commonly Used Symbols

A	pore pressure parameter for $\Delta\sigma_1 - \Delta\sigma_3$
B	pore pressure parameter for $\Delta\sigma_3$
CAI	CERCHAR Abrasiveness Index
CIU	isotropically consolidated undrained triaxial shear test
CR	compression ratio for one dimensional consolidation
CSR	cyclic stress ratio
C_c	coefficient of curvature, $(D_{30})^2 / (D_{10} \times D_{60})$
C_u	coefficient of uniformity, D_{60}/D_{10}
C_c	compression index for one dimensional consolidation
C_α	coefficient of secondary compression
c_v	coefficient of consolidation
c	cohesion intercept for total stresses
c'	cohesion intercept for effective stresses
D	diameter of specimen
D	damping ratio
D_{10}	diameter at which 10% of soil is finer
D_{15}	diameter at which 15% of soil is finer
D_{30}	diameter at which 30% of soil is finer
D_{50}	diameter at which 50% of soil is finer
D_{60}	diameter at which 60% of soil is finer
D_{85}	diameter at which 85% of soil is finer
d_{50}	displacement for 50% consolidation
d_{90}	displacement for 90% consolidation
d_{100}	displacement for 100% consolidation
E	Young's modulus
e	void ratio
e_c	void ratio after consolidation
e_o	initial void ratio
G	shear modulus
G_s	specific gravity of soil particles
H	height of specimen
H_R	Rebound Hardness number
i	gradient
I_S	Uncorrected point load strength
$I_{S(50)}$	Size corrected point load strength index
H_A	Modified Taber Abrasion
H_T	Total hardness
K_o	lateral stress ratio for one dimensional strain
k	permeability
LI	Liquidity Index
m_v	coefficient of volume change
n	porosity
PI	plasticity index
P_c	preconsolidation pressure
p	$(\sigma_1 + \sigma_3) / 2$, $(\sigma_v + \sigma_h) / 2$
p'	$(\sigma'_1 + \sigma'_3) / 2$, $(\sigma'_v + \sigma'_h) / 2$
p'_c	p' at consolidation
Q	quantity of flow
q	$(\sigma_1 - \sigma_3) / 2$
q_f	q at failure
q_o, q_i	initial q
q_c	q at consolidation
S_r	Post cyclic undrained shear strength
T	temperature
t	time
U, UC	unconfined compression test
UU, Q	unconsolidated undrained triaxial test
u_a	pore gas pressure
u_e	excess pore water pressure
u, u_w	pore water pressure
V	total volume
V_g	volume of gas
V_s	volume of solids
V_s	shear wave velocity
V_v	volume of voids
V_w	volume of water
V_o	initial volume
v	velocity
W	total weight
W_s	weight of solids
W_w	weight of water
w	water content
w_c	water content at consolidation
w_f	final water content
w_l	liquid limit
w_n	natural water content
w_p	plastic limit
w_s	shrinkage limit
w_o, w_i	initial water content
α	slope of q_f versus p_f
α'	slope of q_f versus p_f'
γ_t	total unit weight
γ_d	dry unit weight
γ_s	unit weight of solids
γ_w	unit weight of water
ε	strain
ε_{vol}	volume strain
ε_h, ε_v	horizontal strain, vertical strain
μ	Poisson's ratio, also viscosity
σ	normal stress
σ'	effective normal stress
σ_c, σ'_c	consolidation stress in isotropic stress system
σ_h, σ'_h	horizontal normal stress
σ_v, σ'_v	vertical normal stress
σ'_{vc}	Effective vertical consolidation stress
σ_1	major principal stress
σ_2	intermediate principal stress
σ_3	minor principal stress
τ	shear stress
φ	friction angle based on total stresses
φ'	friction angle based on effective stresses
φ'_r	residual friction angle
φ_{ult}	φ for ultimate strength

Appendix H: 65% Southern Los Cerritos Wetlands Restoration, Phases 1 and 2 Hydraulic and Hydrology Modeling

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MEMORANDUM

To: LCW Design Team

From: Weixia Jin, Qing Wang and Chris Webb

Date: 1/31/2023

Subject: 65% Southern Los Cerritos Wetlands Restoration, Phases 1 and 2 Hydraulic and Hydrology Modeling, Updated for a Bridge-Type Crossing

M&N Job No.: 210644

1 Introduction

This updated version of the Hydrology/Hydraulics memorandum addresses minor modifications considered on the main channel to accommodate a bridge-type crossing on 1st Street. No other modifications are addressed, and the remaining portions of the memo are unmodified from the original.

The Southern Los Cerritos Wetland Restoration Project is focused on restoring 105 acres of tidal wetlands in Los Cerritos Wetland (LCW), Seal Beach California. Moffatt & Nichol (M&N) and its team partners have contracted with Los Cerritos Wetlands Authority (LCWA) to provide engineering services for the 65% design of the Southern LCW Restoration Project. This memorandum presents the hydraulic modeling of the 65% design of Phases 1 and 2 conditions. The hydraulic models were mainly developed to support the engineering design by providing inundation curves in the wetlands that serve to inform the grading plans, and to help quantify the areas inundated by the project. Figure 1 illustrates the project area of the Southern LCW Restoration.

Figure 1: Southern LCW Restoration Project Area

2 Existing Tidal Conditions

Existing tidal conditions in the marsh were measured in both 2011 and 2021 by M&N with a tide gage near First Street (just upstream). The tide gage was a calibrated RBR Solo pressure transducer. Tidal elevations are provided in feet relative to the vertical datum of National Geodetic Vertical Datum of 1929, or NGVD29. This datum is essentially equivalent to mean sea level in 1929, or MSL.

Data show that the existing tidal range is approximately 2 feet (2.1 feet in 2011 and 2.0 feet in 2021, while the San Gabriel River possessed a tidal range of 7.4 feet in 2011 and 6.9 feet in 2021). Variations in tidal range in the river and marsh are due to specific conditions occurring during the time of tidal measurements. Data in 2011 were obtained in July and August (summer) while data in 2021 were obtained in October (fall), and phases of the moon were different during both periods.

Tidal elevations in the wetland were approximately a high of 3.58 feet and a low of 1.57 feet in 2011 (tidal range of 2.1 feet), and a high of 3.67 feet and a low of 1.47 feet in 2021 (tidal range of 2.0 feet). Clearly, the marsh is muted compared to the river by effects of the existing 42-inch to 48-inch culvert. The culvert is slightly smaller on its upstream end at the marsh, and slightly larger on its downstream end at the river. It is composed of five segments connected in the shape of an inverted U when viewed in plan. The culvert's invert elevation is -1.0 feet NGVD29 at the upstream end and -1.1 feet NGVD29 at the downstream end.

3 Numerical Modeling to Predict Future Tides After Restoration

Two models were developed to analyze the different phases of construction due to different types of tidal connections proposed. Phase 1 assumes connection through the existing culvert and was analyzed using a link-node model, such as was used for the Los Cerritos Wetlands Conceptual Restoration Plan Project (CRP) in 2014 (M&N 2014) and for previous concepts proposed in the 1990s and early 2000s. Phase 2 assumes connection through a new open channel with a larger channel network and was analyzed using a two-dimensional (2-D) numerical model called Mike21. Each model is described below.

Based on the above background information, the following tasks were performed:

Phase 1

1. Develop the Phase 1 link-node model set up to cover the Phase 1 area with the proposed topography.
2. Calculate storage curves of water within the respective nodes and determine the cross-sectional areas and invert elevations for the links.
3. Perform numerical modeling for the following scenarios:
    - Typical spring tide condition with existing sea level,
    - 1.6-feet (0.5-m) sea level rise (SLR) together with typical spring tide condition, and
    - 3.3-feet (1-m) SLR together with typical spring tide condition.
4. Prepare inundation frequency curves for three scenarios modeled in Task 3.

Phase 2

1. Develop the 2-D numerical model mesh to cover Phase 2 area with the proposed topographic grading.
2. Perform numerical modeling for the following scenarios:
    - Typical spring tide condition with existing sea level,
    - 1.6-feet (0.5-m) SLR together with typical spring tide condition, and
    - 3.3-feet (1-m) SLR together with typical spring tide condition.
3. Prepare inundation frequency curves for three scenarios modeled in Task 6.

4 Numerical Model Development

4.1.1 Phase 1 Model Selection and Description

Phase 1 is a relatively simple wetland configuration that can be modeled using a one-dimensional (1-D) model called link-node. The model is an internally-developed lumped parameter type routine with a series of basins (nodes) interconnected by channels (links). Equations of motion and continuity are solved at successive time steps to give the water elevations at the nodes and the velocities at the links. The system is driven by a sequence of tide elevations applied at the downstream interface, which in this case is the San Gabriel River mouth. The model is capable of handling culverts and other special structures, as well as natural channels of approximately trapezoidal cross-section. A diagram of the model system representing the proposed wetland is provided in Figure 2. It consists of four nodes and three links.

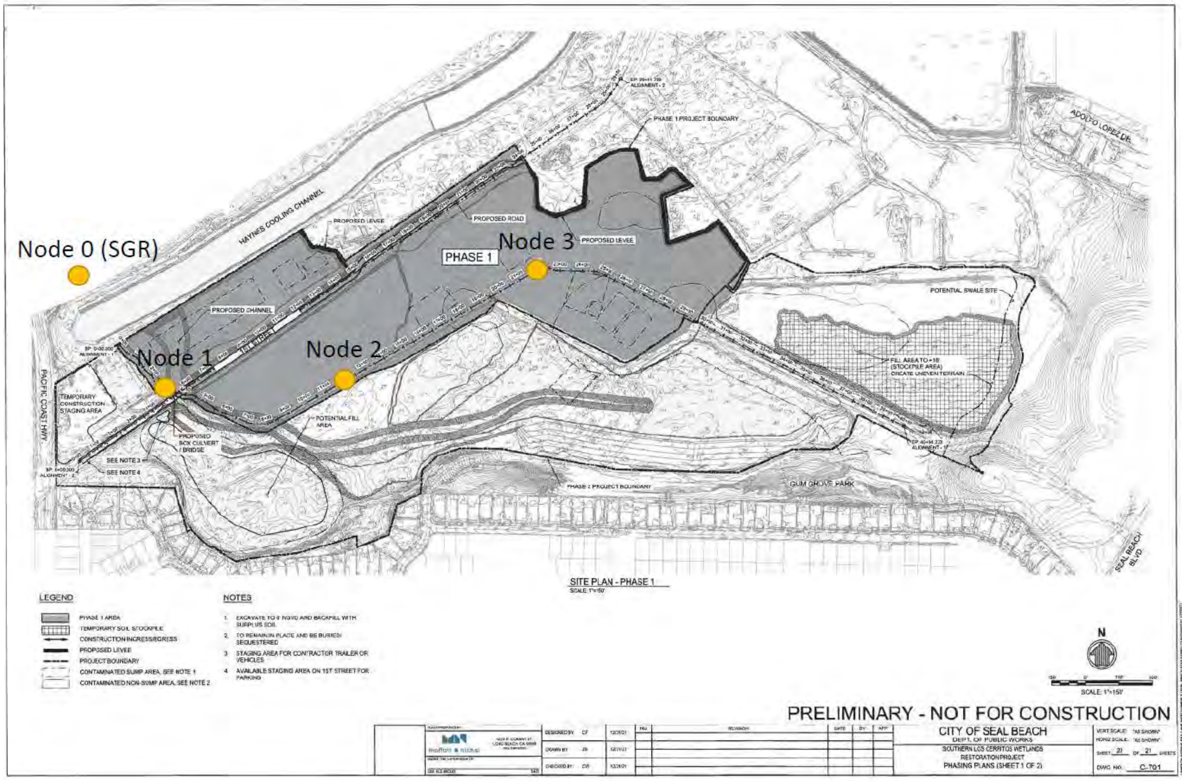


Figure 2: 30% Design of the Phase 1 Area

This model is simplified over the model used in Phase 2 and described below. The simplified link-node model was used for Phase 1 because the configuration of the wetland is more basic than in Phase 2 and the wetland is smaller, plus it is connected to the San Gabriel River by a culvert. Culvert connections are better approximated using the link-node approach, and this model has been used for three prior restoration planning efforts at this site in the past with success, including the LCWCRP (2014) as mentioned above. Also, the model was calibrated with the measured tidal data shown in Figure 3. The model-predicted water levels matched well with the recorded water levels. Therefore, it was selected for predicting Phase 1 hydrologic and hydraulic conditions to keep results consistent with the prior efforts.

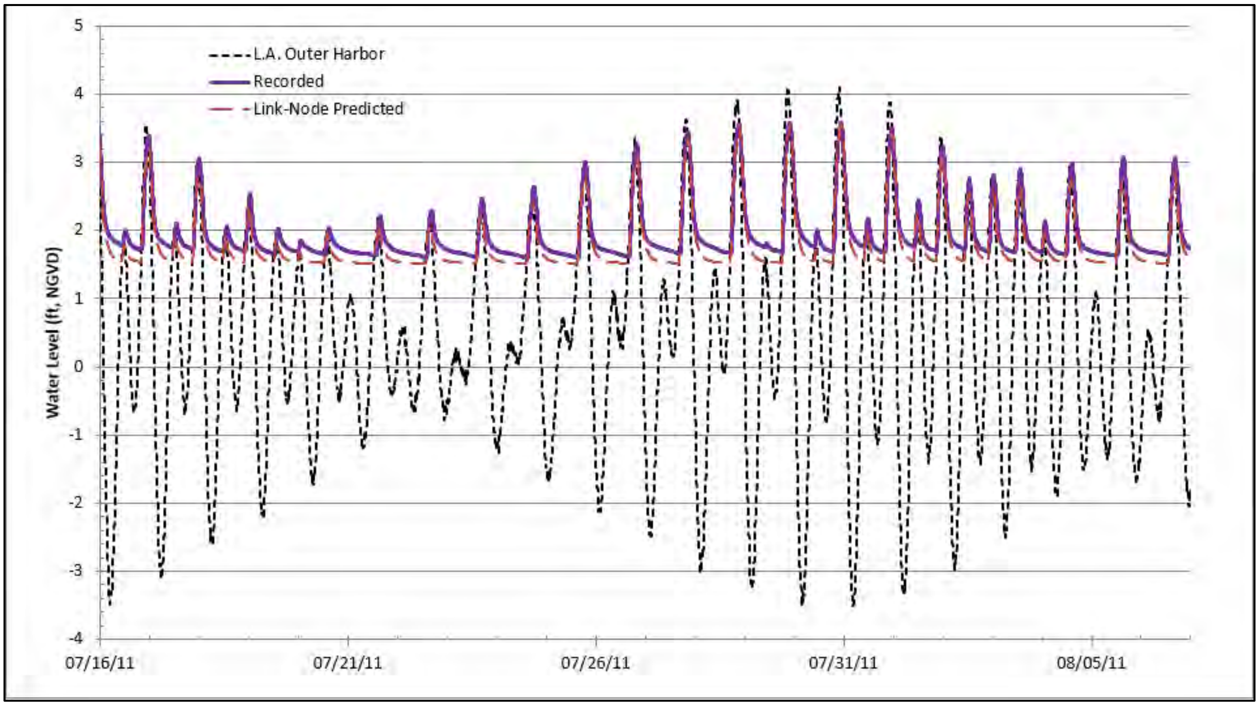


Figure 3: Calibration of Link-Node Model (Hellman Channel) with 2011 Data

4.1.2 Phase 2 Model Selection and Description

The hydraulic complexity introduced in the Phase 2 project design is more suitable to modeling using a 2-D model for increased resolution and probable accuracy, and the project requires simulations of hydrodynamics for the larger hydraulic system. In this study, the Mike21 Flexible Mesh (FM) Hydrodynamic (HD) model from DHI was used for hydraulic modeling. The model simulates the hydrodynamic flow system based on the finite volume method over an unstructured flexible mesh. It also contains other essential features such as wetting and drying, completely coupled sediment transport, constituents transport (temperature and salinity), and wind effects. It is a state-of-art tool for simulating flow conditions for coastal wetland systems.

This is the model that was used to test results of installing a new bridge-type crossing at 1st Street.

4.1.2.1 Mike21 Model Domain and Integrated Model Bathymetry and Topography

The model mesh for Phase 2 was developed based on the grading plan dated January 2022 (Figure 3). The elevation of the levee crest at the northern boundary of the project area is at +7.5 feet NGVD29. As shown in the Boundary Condition Section, the highest water surface elevation during typical spring tide is 4.1 feet NGVD29. The designed levee will not be overtopped under the considered 1.6-feet and 3.3-feet SLR scenarios. Therefore, the model domain for Phase 2 hydraulic modeling was set to be the same for all three modeling scenarios shown in Figure 4.

Figure 5 is the developed flexible model mesh for Phase 2. It includes 63,264 nodes and 125,296 elements. The element size varies from the longest element side length of 50 feet near the model boundary to less than 3 feet on channel slopes. Model elevations were based on the integrated elevation surface of the topographic survey by MDS Consulting completed in 1999 (MDS Consulting, Personal Communication 2021) and the proposed Phase 2 grading plan. Figure 4 demonstrates the integrated model elevations, and elevations of “no grading” areas were based on the existing topographic survey. The invert of the open channel that connects the marsh to Haynes cooling channel is set at an elevation of -4.5 feet NGVD29. The open channel shown in Figure 5 is sized to have a large cross-sectional area to convey the flow between the Haynes Channel and the wetland without causing tidal muting. Figure 6 shows the model domain and proposed elevations.

The model was modified at the location of 1st Street to simulate effects of installing a bridge-type crossing of the channel. The modifications made were to replace the reach of the channel under 1st Street with a box culvert that is 20 feet wide and 12 feet high, with a cross-sectional area of 240 square feet. This is a conservatively small representation of the proposed opening. The proposed opening will be a trapezoidal channel cross-section with 2:1 side slopes from slope toe to the top of the channel. Therefore, the actual proposed channel cross-sectional area under the bridge will be 528 square feet, or nearly twice the size of that modeled. This allows for reduced hydraulic impedance compared to a narrower channel, and maintenance of the tide and flow velocity condition throughout the entire channel reach. Figure 7 shows the model domain with the proposed new crossing.

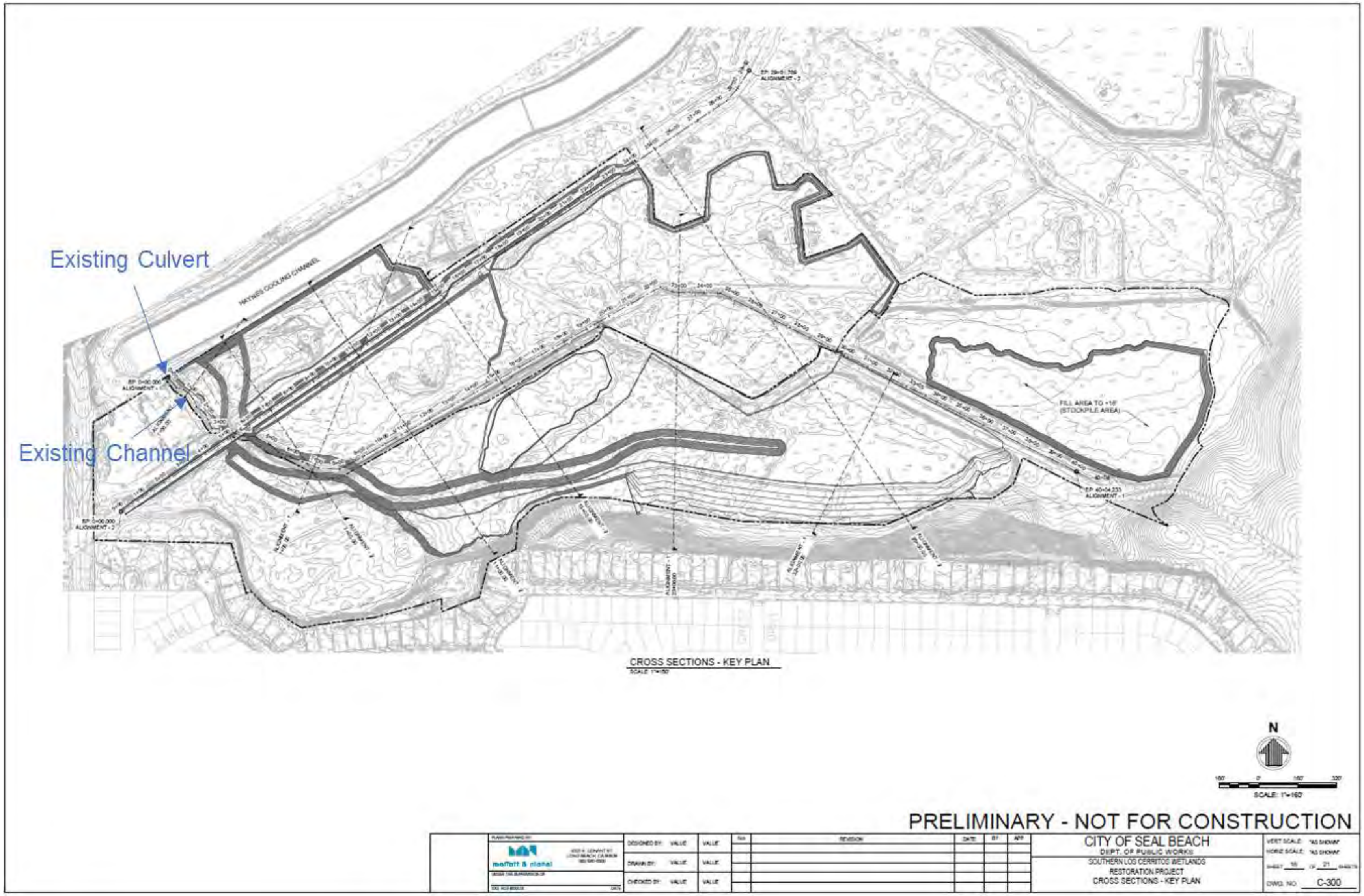

Existing Culvert
Existing Channel
HAYNES COOLING CHANNEL
FILL AREA TO +18'
(STOCKPILE AREA)
CROSS SECTIONS - KEY PLAN
N
SCALE: 1"=160'
PRELIMINARY - NOT FOR CONSTRUCTION
CITY OF SEAL BEACH
DEPT. OF PUBLIC WORKS
SOUTHERN LOS CERRITOS WETLANDS
RESTORATION PROJECT
CROSS SECTIONS - KEY PLAN
C-300

Figure 4: 30% Design of the Phase 2 Area and Grading Plan

Figure 5: Model Mesh for the Southern LCW Restoration, Phase 2

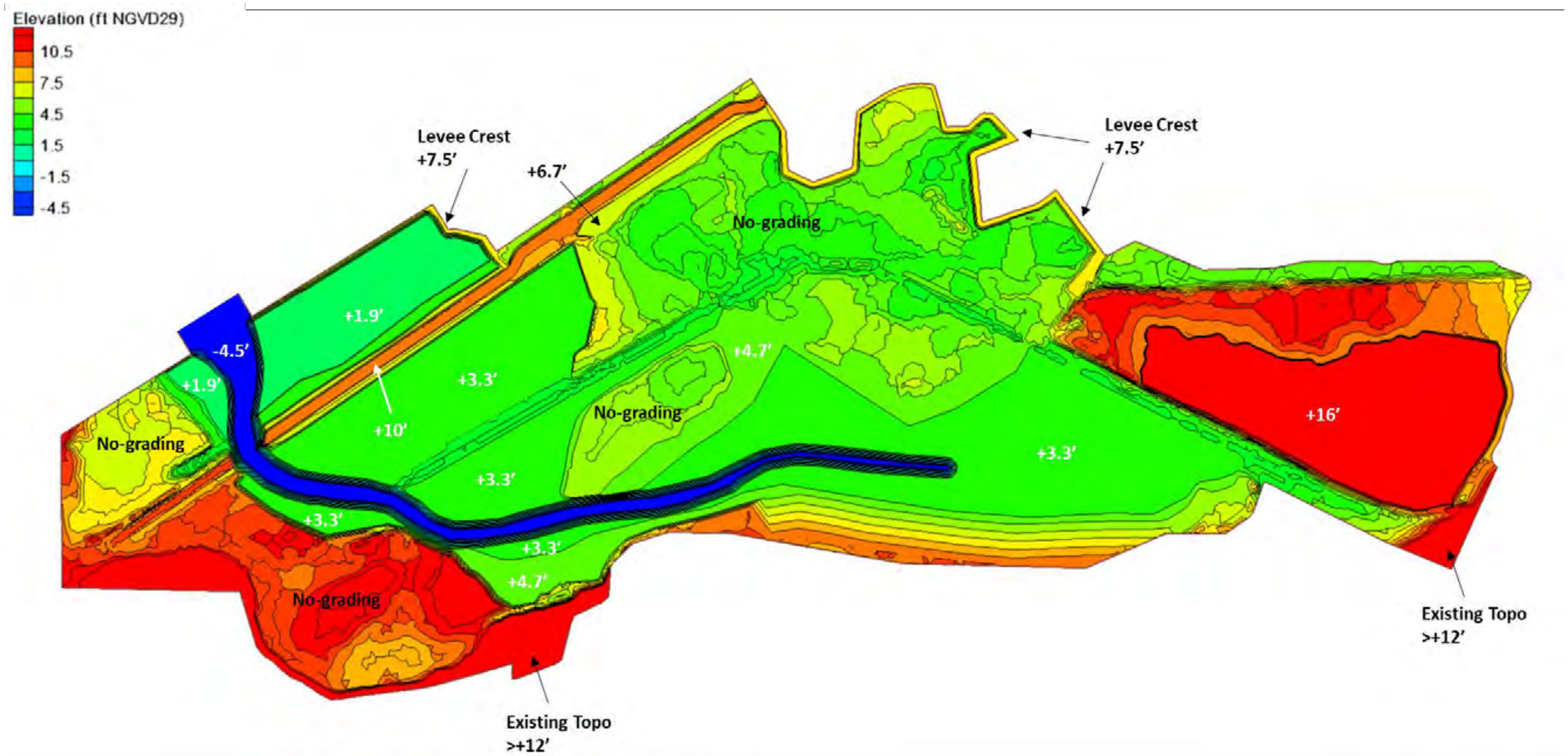


Figure 6: Model Domain and Proposed Elevations

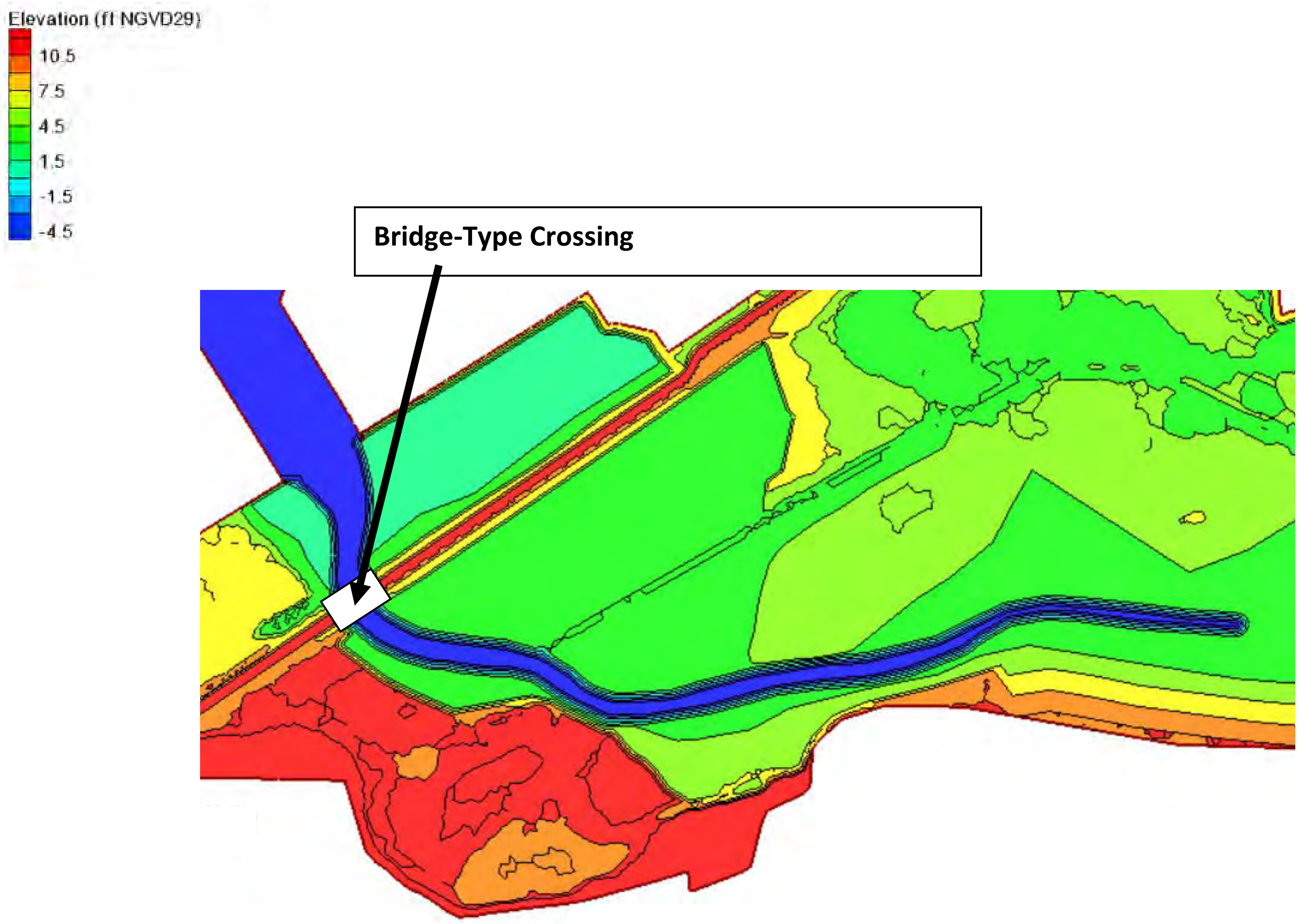


Figure 7: Updated Model Domain and Proposed Elevations With a Bridge-Type Crossing

4.1.3 Boundary Conditions for Phases 1 and 2

4.1.3.1 Tides

There are no tide stations within Alamitos Bay; the nearest tide station administered by National Oceanic and Atmospheric Administration (NOAA) at Los Angeles Outer Harbor is considered to be representative of the ocean boundary tidal conditions. A representative spring-neap tidal cycle (its spring high elevation, mean sea level, and low tide elevation are closest to the 19-year average values based on the latest 19-year monthly tidal elevation data) was selected and is presented in Figure 6. The highest water surface elevation in the tidal cycle (or average spring high tide) is 4.1 feet NGVD29, equivalent to 6.52 feet NAVD.

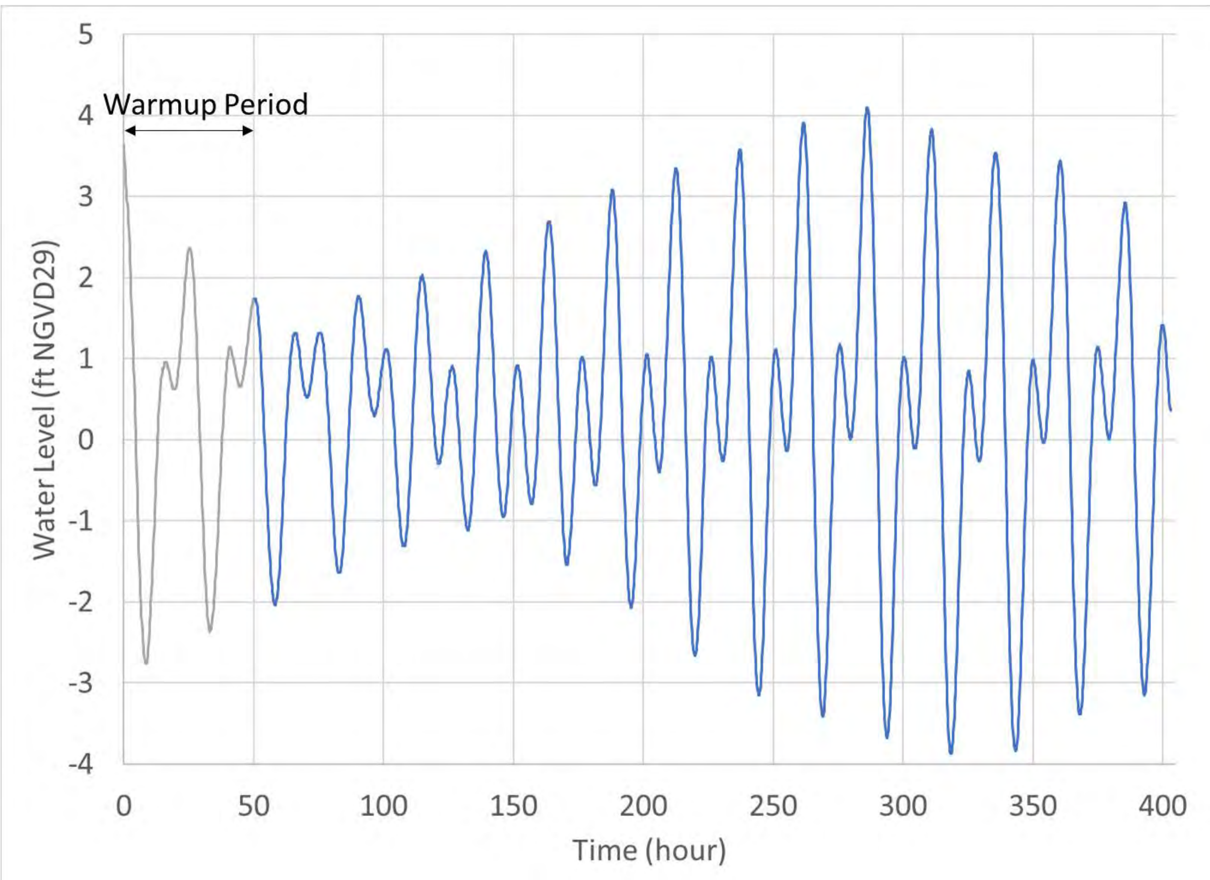


Figure 7: Typical Spring-Neap Tide Cycle

4.1.3.2 Sea Level Rise

Climate change with rising sea levels is expected to continue and worsen in the coming years. Ocean Protection Council (OPC) Guidance (2018) provides SLR projections for the Los Angeles area (Figure 7). Two SLR scenarios modeled for Southern LCW Restoration Phase 2 condition are 1.6 feet (0.5m) and 3.3 feet (1m). The 1.6-feet SLR falls in the "Likely Range" of OPC's projections by 2070 under the Low Risk Aversion scenario, and 2050 under the Medium-High Risk Aversion scenario. The 3.3-feet SLR falls in the "Likely Range" of OPC's projections by

2110 under the Low Risk Aversion scenario, and 2070 under the Medium-High Risk Aversion scenario. The SLR amount is added to the typical spring-neap tide cycle to evaluate the impacts of SLR.

		Probabilistic Projections (in feet) (based on Kopp et al. 2014)					H++ scenario (Sweet et al. 2017) *Single scenario
		MEDIAN	LIKELY RANGE		1-IN-20 CHANCE	1-IN-200 CHANCE	
		50% probability sea-level rise meets or exceeds...	66% probability sea-level rise is between...		5% probability sea-level rise meets or exceeds...	0.5% probability sea-level rise meets or exceeds...	
				Low Risk Aversion		Medium - High Risk Aversion	Extreme Risk Aversion
High emissions	2030	0.3	0.2 -	0.5	0.6	0.7	1.0
	2040	0.5	0.4 -	0.7	0.9	1.2	1.7
	2050	0.7	0.5 -	1.0	1.2	1.8	2.6
Low emissions	2060	0.8	0.5 -	1.1	1.4	2.2	
High emissions	2060	1.0	0.7 -	1.3	1.7	2.5	3.7
Low emissions	2070	0.9	0.6 -	1.3	1.8	2.9	
High emissions	2070	1.2	0.8 -	1.7	2.2	3.3	5.0
Low emissions	2080	1.0	0.6 -	1.6	2.1	3.6	
High emissions	2080	1.5	1.0 -	2.2	2.8	4.3	6.4
Low emissions	2090	1.2	0.7 -	1.8	2.5	4.5	
High emissions	2090	1.8	1.2 -	2.7	3.4	5.3	8.0
Low emissions	2100	1.3	0.7 -	2.1	3.0	5.4	
High emissions	2100	2.2	1.3 -	3.2	4.1	6.7	9.9
Low emissions	2110*	1.4	0.9 -	2.2	3.1	6.0	
High emissions	2110*	2.3	1.6 -	3.3	4.3	7.1	11.5
Low emissions	2120	1.5	0.9 -	2.5	3.6	7.1	
High emissions	2120	2.7	1.8 -	3.8	5.0	8.3	13.8
Low emissions	2130	1.7	0.9 -	2.8	4.0	8.1	
High emissions	2130	3.0	2.0 -	4.3	5.7	9.7	16.1
Low emissions	2140	1.8	0.9 -	3.0	4.5	9.2	
High emissions	2140	3.3	2.2 -	4.9	6.5	11.1	18.7
Low emissions	2150	1.9	0.9 -	3.3	5.1	10.6	
High emissions	2150	3.7	2.4 -	5.4	7.3	12.7	21.5

Figure 8: Projected Future SLR for Los Angeles (OPC 2018)

5 Modeling Results

Modeling results for both Phase 1 and Phase 2 are presented below. Results are in the form of tidal elevations, tidal inundation frequency, and tidal water residence times. Both phases included analyses of existing sea level, and SLR of 1.6 feet (0.5m) and 3.3 feet (1m). Table 1 lists the modeling scenarios. Each SLR condition was analyzed with the typical spring-neap tide cycle. For Phase 2, modeling is not required for the two SLR scenarios as the wetland will experience the full ocean tidal conditions. Hence, the tidal conditions in the wetland will be the same as those in the ocean. The results for the bridge-type crossing are presented in the Phase 2 section below because the modeling was intended to show the ultimate hydraulic condition. The crossing will be installed in Phase 1; however, when tidal flow and prism are smaller compared to Phase 2.

Table 1: SLR Scenarios

Scenario	SLR	Offshore Water Level
#1	No	Typical Spring-Neap Tide Cycle
#2	+1.6 ft	Typical Spring-Neap Tide Cycle
#3	+3.3 ft	Typical Spring-Neap Tide Cycle

6 Phase 1

6.1.1 Tidal Elevations and Ranges

The modeled water surface elevations at the three nodes (Node 1 through Node 3) shown in Figure 2 are compared with water levels in the San Gabriel River (assumed to be the same as those in the open ocean) during the typical spring-neap tidal cycle. As presented in Figure 9, the water levels at each node are muted compared to ocean (river) water levels: High tides in the wetland are predicted to reach maximum elevations of 2.90 feet relative to NGVD29, while ocean water levels reach up to 4.10 feet NGVD29. The low tide in the wetland will reach down to an elevation of 0.10 feet NGVD at Nodes 1 and 2 while the low tide in the ocean reaches down to -3.88 feet. As summarized in Table 2, the wetland tidal range is predicted to be approximately 2.80 feet while that in the ocean is approximately 7.98 feet. The farthest upstream node (Node 3) is more muted than the downstream nodes (Nodes 1 and 2) due to distance from the culvert and the constricted channel condition all the way to that node.

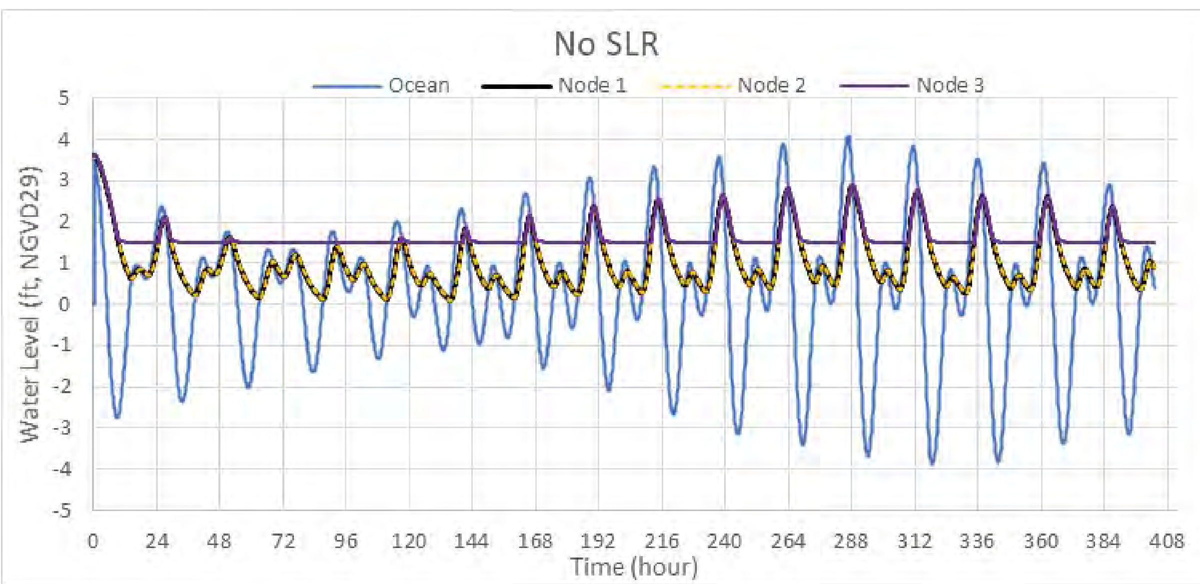


Figure 9: Modeled Water Levels at Phase 1 Marsh Under No SLR Scenario

Table 2: Comparison of Post-Phase 1 Restoration Average Spring High & Low Tides and Tide Ranges with No SLR

Locations	Offshore (Node 0)	Southern LCW		
		Node 1	Node 2	Node 3
Spring High Tide (ft NGVD29)	+4.10	+2.90	+2.90	+2.90
Spring Low Tide (ft NGVD29)	-3.88	+0.10	+0.10	+1.50
Spring Tide Range (ft)	7.98	2.80	2.80	1.40

Tidal muting in the wetland during Phase 1 is due to effects of the existing 42-inch culvert. The culvert limits the amount of water entering and exiting the marsh. The existing wetland area is approximately 38 acres (CRC 2021). The limited surface area of the Phase 1 restored marsh (40 acres) is similar to the existing condition, so the tidal storage capacity in the wetland and the tidal range should be similar. The model predicts the tidal range to be similar to existing conditions with a modest increase of approximately 0.6 feet, but the maximum and minimum tidal elevations are lower for future conditions compared to existing values. This is caused by the effect of the proposed grading (lowering) of the entrance channel down to -4 feet NGVD29, as compared to an existing marsh channel invert elevation of +1 foot NGVD29. Existing measured tides remain above the existing invert by 0.5 feet, so the existing low tide is +1.5 feet. The conveyance capacity of the culvert is sufficient to allow high tides to reach within 1.2 feet of the high tide in the river.

The existing culvert has sufficient conveyance capacity to provide tides to the site in Phase 1 in the near term so that it does not need to be replaced with a larger culvert, nor does the existing corroded flap gate on the river end need to be replaced. The only potential action that could occur is cleaning the culvert of sediment and debris to continue water conveyance. In conclusion for Phase 1, the tidal range will expand from approximately 2.0 feet to 2.8 feet (40% increase) but drop in elevation by approximately 1.5 feet due to the proposed channel grading. This effect may help to maintain existing salt marsh habitat on-site by not causing tidal inundation to occur more often than the existing marsh habitat can tolerate. No additional hydraulic changes to these results nor those presented below will occur from installing a bridge-type crossing at 1st Street. The bridge-type crossing is less influential on tides than the existing 42-inch culvert.

The predicted water levels under the 1.6-feet SLR scenario are shown in Figure 10. The high tide reaches the same elevation at all three nodes, but the low tide is still muted more at Node 3 compared to Nodes 1 and 2, as it is further away from the culvert near the end of a long and narrow channel.

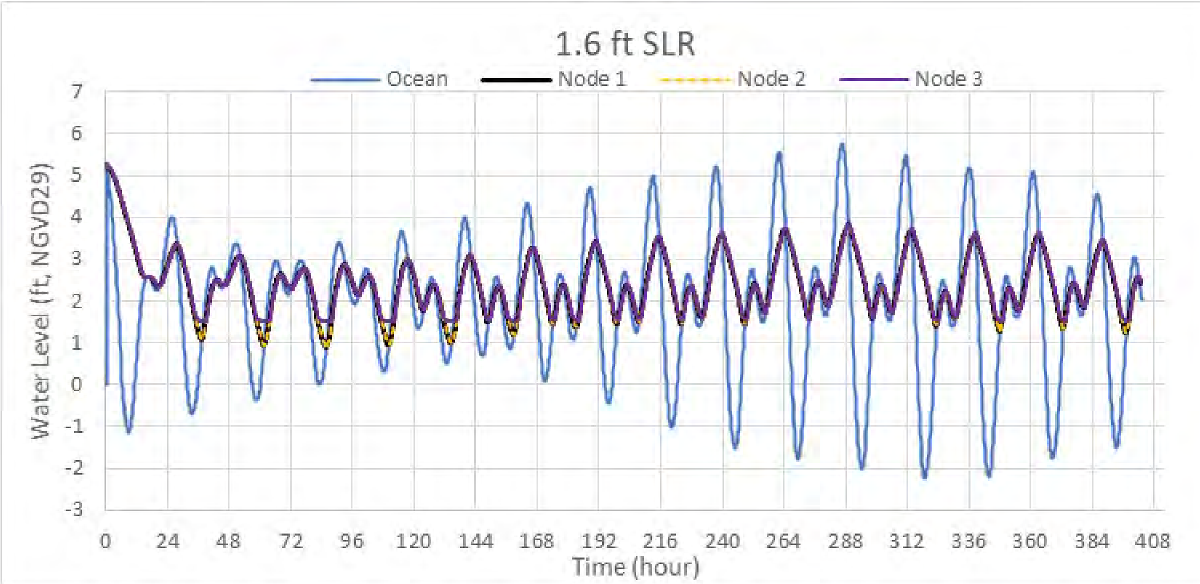


Figure 10: Modeled Water Levels at Phase 1 Marsh Under 1.6-ft SLR Scenario

Figure 11 shows predicted water levels under the 3.3-feet SLR scenario. All nodes, in other words the entire wetland, will experience a similar tidal range of 2.04 feet. Table 3 lists the high and low tidal elevations and tidal ranges at Node 1 by SLR scenario. The high and low spring tide elevations increase with SLR, but the tidal range decreases as SLR increases. This tidal range decrease likely occurs as the storage capacity of the marsh area increases and more water can be stored on-site during high tide, but that increased water volume cannot pass through the limited culvert cross-section during ebbing tides, thus limiting the low tide elevation. If Phase 1 is the only restoration to occur on-site, then one long-term objective could be to replace the culvert with a larger one or add additional culverts to the existing one. One possible future adaptation strategy during SLR would be to increase the size of the culvert.

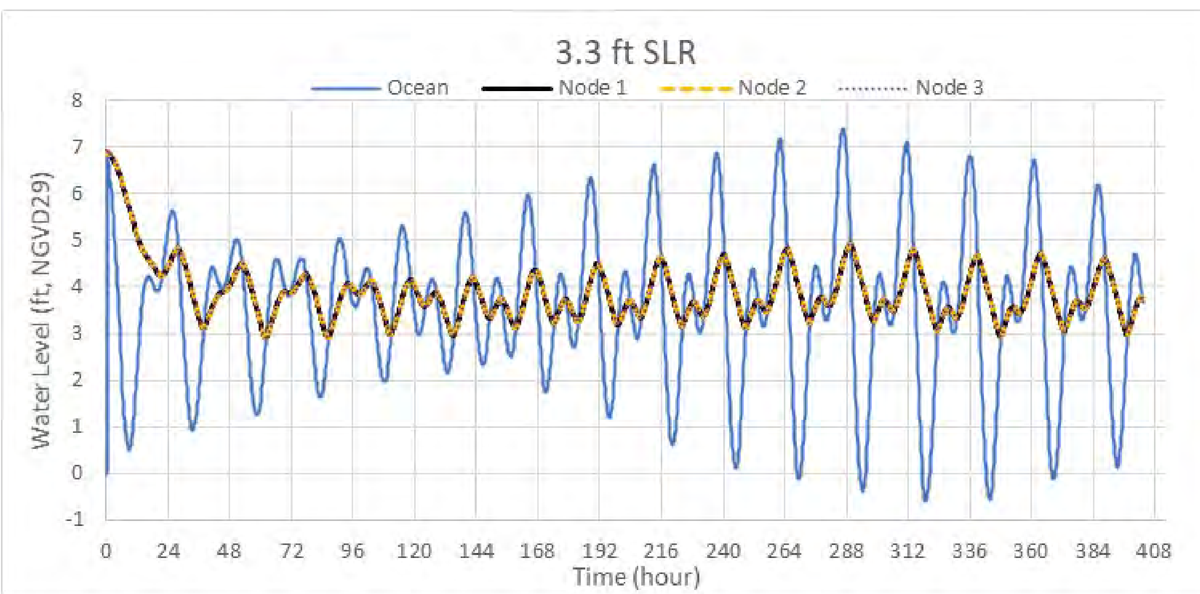


Figure 11: Modeled Water Levels at Phase 1 Marsh Under 3.3-ft SLR Condition

Table 3: Post-Phase 1 Restoration Average Spring High & Low Tides and Tide Ranges at Node 1 by SLR Scenarios[1]

Locations	Southern LCW [1]		
Scenarios	No SLR	+1.6 ft SLR	+3.3 ft SLR
Spring High Tide (ft NGVD29)	+2.90	+3.82	+4.93
Spring Low Tide (ft NGVD29)	+0.10	+1.52	2.89
Spring Tide Range (ft)	2.80	2.30	2.04

Note: [1] The results from Pt 1 are presented in this table, and the differences among Pt 1, Pt 2 and Pt 3 are less than 0.03 ft.

6.1.2 Tidal Inundation Frequency

The tidal inundation frequency analysis provides the frequency of inundation statistics over specific elevation thresholds at a given location. It is extremely beneficial in planning marsh restoration activities and habitat designs. The inundation frequency determines the elevations at which specific marsh habitats will be established and the area and distribution of wetland habitats. Figure 12 presents the predicted inundation frequencies at South LCW wetland for no SLR condition. There are no differences between the inundation curves at Nodes 1 and 2, but Node 3 is very different with a much more compressed range of tidal elevations and a compressed habitat establishment elevation range. There are three inundation percentage breaks, 4%, 20% and 40% for high marsh, mid marsh, low marsh and mudflat, respectively. Tidal elevations may generally be slightly lower than existing conditions and the inundation frequency may reflect that condition, so the team is considering lowering the target elevations of low marsh and mid-marsh in the 30% design by 0.5 feet to compensate.

Table 4 through Table 6 list the habitat break elevations at Node 1 through Node 3 in the southern LCW for three sea level scenarios, respectively. Due to the minimum differences in tidal range and high/low tide elevations at Nodes 1 and 2, the habitat break elevations at these two points are also very similar under the same SLR scenario. Node 3 has a very different range of habitat elevations due to its distance inland and low marsh is eliminated.

For SLR, Figure 13 and Figure 14 show the inundation frequency curves for 1.6 feet and 3.3 feet, respectively, although Node 3 varies from the other two at the low end of the tide for the 1.6 feet of SLR scenario. The sites take on similar traits with no significant difference between them. The curve is steep meaning that there is very little range of elevation between habitats, however, each habitat type may exist within its respective elevation band. Overall, the site is fairly resilient to SLR as habitat establishment becomes a bit more diverse as sea levels rise.

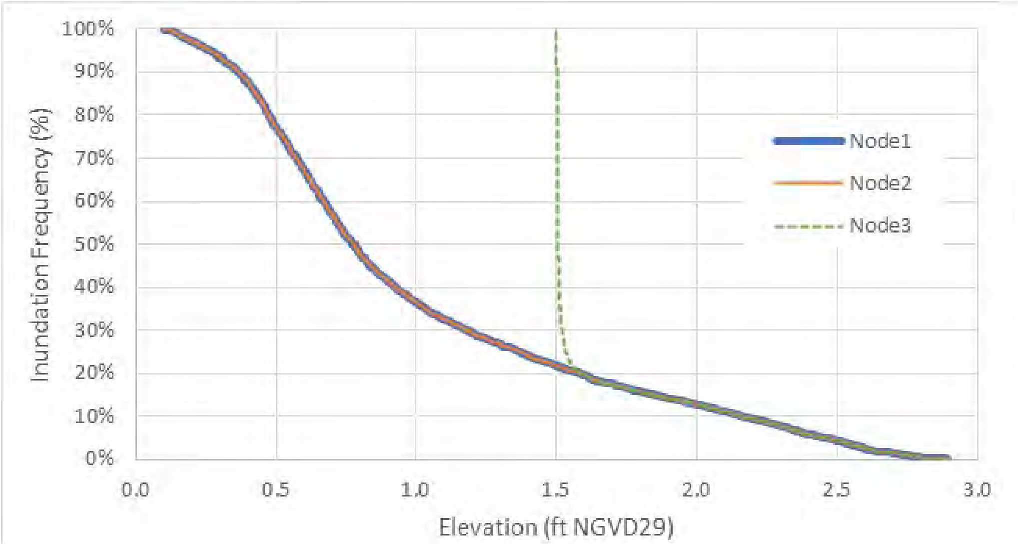


Figure 12: South LCW Wetland Inundation Frequency Curves, Phase 1 – No SLR Scenario

Table 4: Habitat Elevation Breaks in Southern LCW Phase 1 – No SLR Scenario

Habitat Type	Freq (%)	Habitat Breaks (WL, ft, NGVD29)		
		Node1	Node2	Node3
Transitional	0%	2.89	2.90	2.90
High- Marsh	4%	2.53	2.53	2.52
Mid-Marsh	20%	1.58	1.59	1.59
Low-Marsh	40%	0.93	0.92	1.51
Mudflat	100%	0.10	0.10	1.50

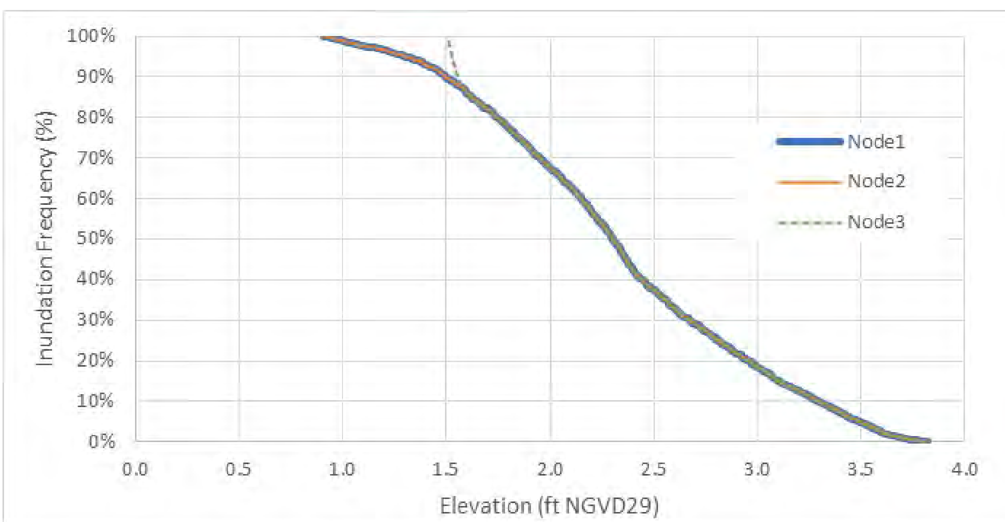


Figure 13: South LCW Wetland Inundation Frequency Curves, Phase 1 – 1.6 Feet of SLR Condition

Table 5: Habitat Elevation Breaks in Southern LCW Phase 1 – 1.6 Feet of SLR Scenario

Habitat Type	Freq (%)	Habitat Breaks (WL, ft, NGVD29)		
		Node1	Node2	Node3
Transitional	0%	3.82	3.82	3.82
High- Marsh	4%	3.54	3.54	3.54
Mid-Marsh	20%	2.96	2.96	2.96
Low-Marsh	40%	2.44	2.44	2.44
Mudflat	100%	0.91	0.90	1.51

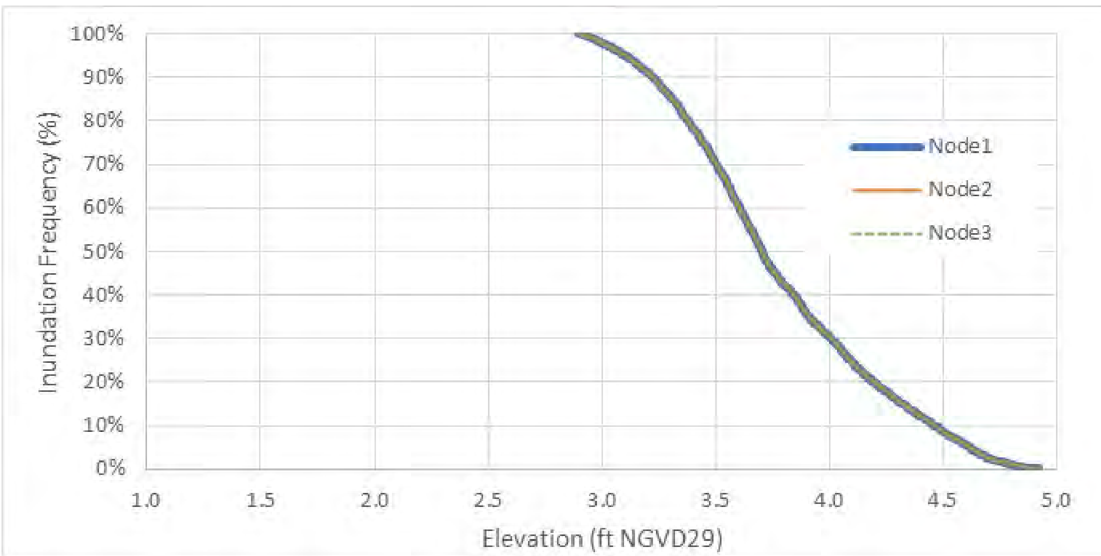


Figure 14: South LCW Wetland Inundation Frequency Curves, Phase 1 – 3.3 Feet of SLR Condition

Table 6: Habitat Elevation Breaks in Southern LCW Phase 1 – 3.3 Feet of SLR Scenario

Habitat Type	Freq (%)	Habitat Breaks (WL, ft, NGVD29)		
		Node1	Node2	Node3
Transitional	0%	4.92	4.93	4.93
High- Marsh	4%	4.65	4.65	4.65
Mid-Marsh	20%	4.20	4.20	4.20
Low-Marsh	40%	3.84	3.84	3.84
Mudflat	100%	2.90	2.90	2.89

7 Modeling Results – Phase 2

Figure 15 presents the three locations where tidal elevations and the tidal inundation frequency were analyzed based on the model water level outputs. The three points are all located within the proposed open channel and numbered Pt 1 through Pt 3 from west to east. Evaluation of the bridge-type crossing required analysis of an additional point, so Figure 16 shows the model output locations.

Figure 15: Location Map of Three Monitoring Points

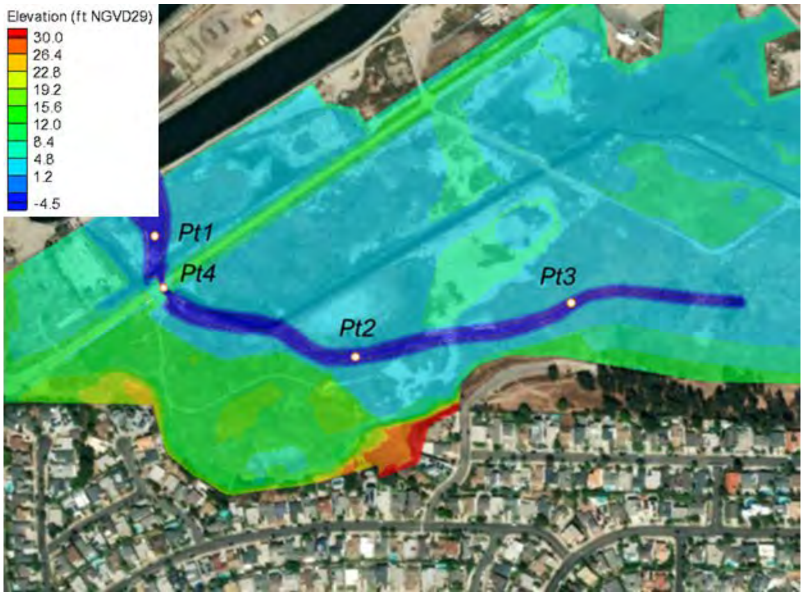


Figure 16: Location Map of Four Monitoring Points to Consider a Bridge-Type Crossing

7.1.1 Tidal Elevations and Ranges

The modeled surface elevations at the three monitoring points are compared with offshore water levels during the typical spring-neap tidal cycle. As presented in Figure 17, the water levels at Pt 1 are the same as offshore water levels: The highest spring tidal level is 4.10 feet above NGVD29, and the lowest is 3.88 feet below NGVD29, resulting in a spring tidal range of 7.98 feet. There is no “tidal muting” observed, nor tidal phase lag. This is due to the designed open channel in Phase 2 being wide enough to fully convey the tidal flow in and out of the State Lands Commission (SLC) wetland. Table 7 compares the high and low tide elevations and the associated tidal ranges among offshore and the three monitor points. The differences are less than 0.03 feet and are considered neglectable since such differences are within the model accuracy range.

Table 8 lists the high and low tidal elevations and tidal ranges at Pt 1 by SLR scenarios. The tidal range remains the same for all three SLR scenarios, and the high and low spring tide elevations increase linearly with the SLR amount. The results of Pt 2 and Pt 3 are the same as Pt 1, thus not presented in the table. Values at Pt 4 at the new bridge-type crossing is the same as Pt 1. Also, Pts 2 and 3 located upstream of the future bridge also possess the same values as originally modeled, so no upstream effects of the structure’s presence are predicted.

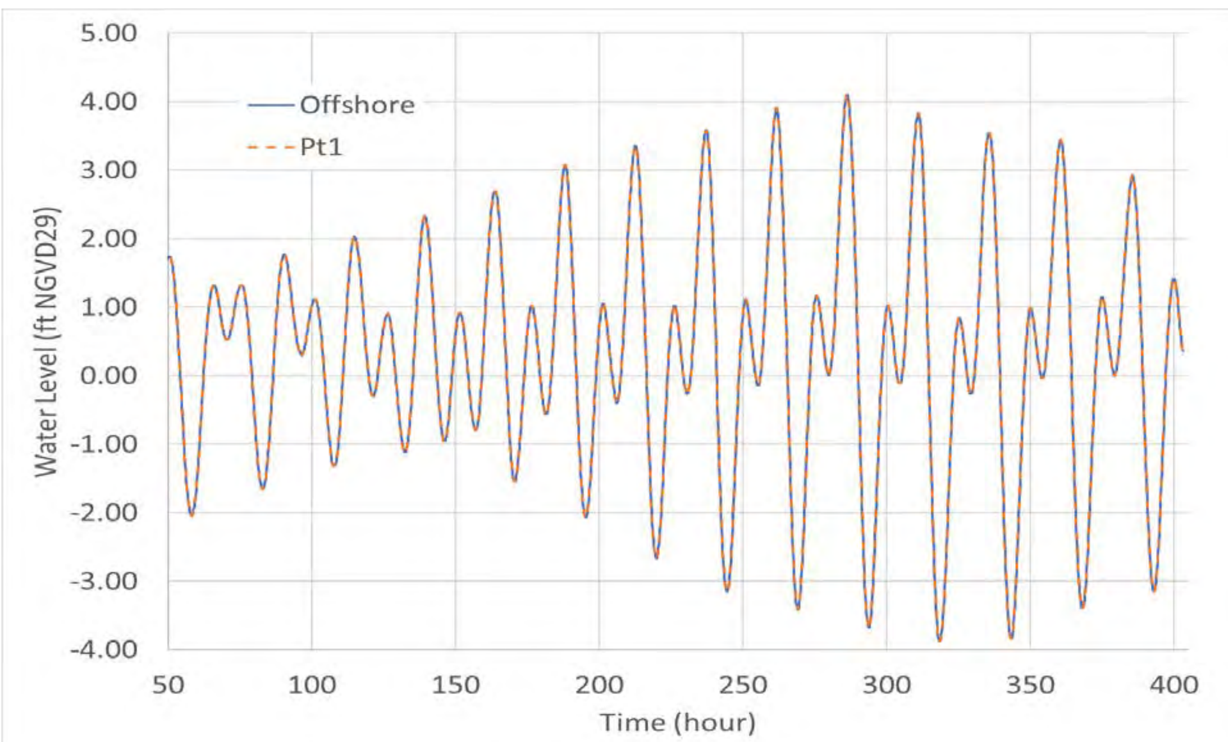


Figure 17: Modeled Water Levels at Pt 1 and Offshore During Typical Spring Tides

Table 7: Comparison of Post-Phase 2 Restoration Average Spring High & Low Tides and Tide Ranges with No SLR

Locations	Offshore	Southern LCW			
		Pt 1	Pt 2	Pt 3	Pt 4
Spring High Tide (ft NGVD29)	+4.10	+4.10	+4.12	+4.13	+4.10
Spring Low Tide (ft NGVD29)	-3.88	-3.87	-3.88	-3.88	-3.87
Spring Tide Range (ft)	7.98	7.97	8.00	8.00	7.97

Table 8: Average Spring High & Low Tides and Tide Ranges at Pt 1 by SLR Scenario[1]

Locations	Southern LCW [1]		
Scenarios	No SLR	+1.6 ft SLR	+3.3 ft SLR
Spring High Tide (ft NGVD29)	+4.10	+5.70	+7.40
Spring Low Tide (ft NGVD29)	-3.87	-2.27	-0.57
Spring Tide Range (ft)	7.97	7.97	7.97

Note: [1] The results from Pt 1 are presented in this table and the differences among Pt 1, Pt 2, and Pt 3 are less than 0.03 ft.

7.1.2 Tidal Inundation Frequency

The tidal inundation frequency analysis provides the frequency of inundation statistics over specific elevation thresholds at a given location. It is extremely beneficial in planning marsh restoration activities and habitat designs. The inundation frequency determines the elevations at which specific marsh habitats will be established and the area and distribution of wetland habitats. Figure 18 presents the predicted inundation frequencies at south LCW wetland for no SLR condition. There are no differences between the inundation curves at the four monitoring points, Pt 1 through Pt 4. There are three inundation percentage breaks, 4%, 20%, and 40% for high marsh, mid marsh, low marsh, and mudflat.

Table 9 through Table 11list the habitat break elevations at Pt 1 through Pt 4 in the southern LCW for three sea level scenarios, respectively. Due to the minimum differences in tidal range and high/low tide elevations at Pt 1 through Pt 4, the habitat break elevations at these four points are also very similar under the same SLR scenario. At a given location within the open channel in southern LCW, the habitat break elevation for certain habitat linearly increases with SLR.

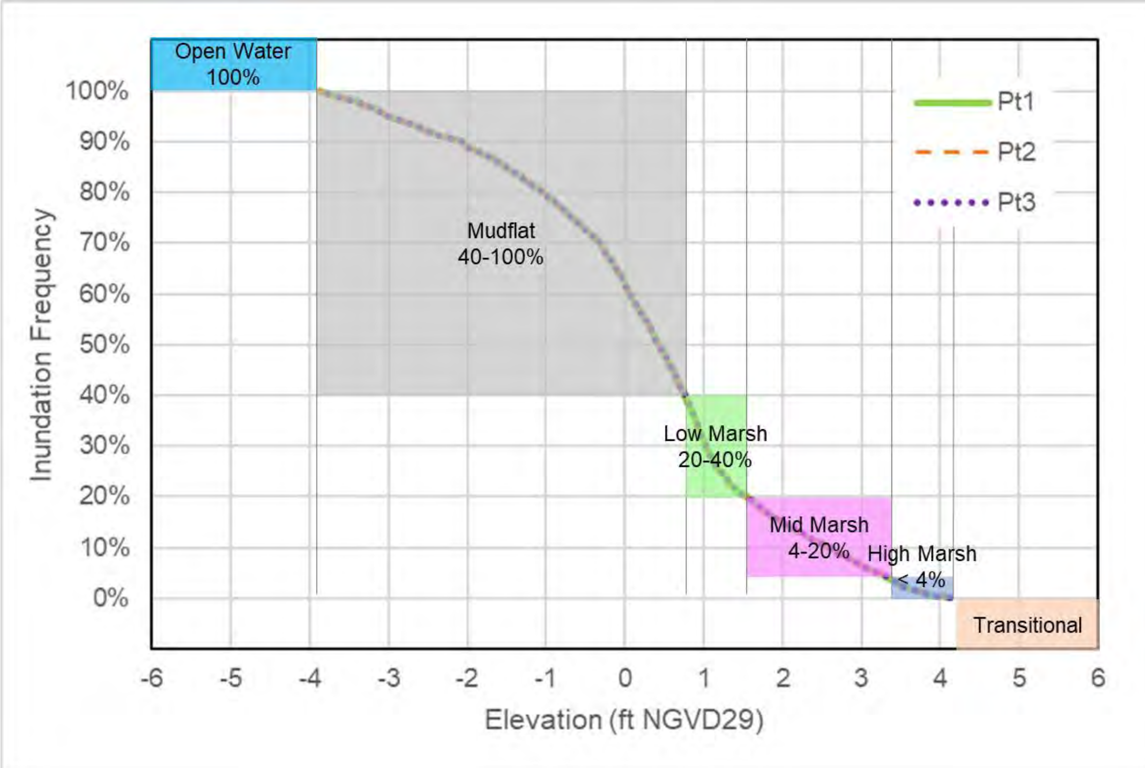


Figure 18: South LCW Wetland Inundation Frequency Curve – No SLR Condition

(Pts 1 and 4 Possess the Same Curves)

Table 9: Habitat Elevation Breaks in Southern LCW Phase 2 – No SLR Scenario

Habitat Type	Freq (%)	Habitat Elevation Breaks (ft NGVD29)		
		Pt1 and Pt 4	Pt2	Pt3
Transitional	0%	> 4.10	> 4.12	> 4.13
High- Marsh	4% - 0%	3.35 – 4.10	3.35 – 4.12	3.34 – 4.13
Mid-Marsh	20% - 4%	1.54 – 3.35	1.54 – 3.35	1.54 – 3.34
Low-Marsh	40% - 20%	0.76 – 1.54	0.76 – 1.54	0.76 – 1.54
Mudflat	100% - 40%	-3.87 – 0.76	-3.88 – 0.76	-3.88 – 0.76
Subtidal	100%	< -3.87	< -3.88	< -3.88

Table 10: Habitat Elevation Breaks in Southern LCW Phase 2 – 1.6-ft SLR Scenario

Habitat Type	Freq (%)	Habitat Elevation Breaks (ft NGVD29)		
		Pt1 and Pt 4	Pt2	Pt3
Transitional	0%	> 5.70	> 5.72	> 5.73
High- Marsh	4% - 0%	4.95 – 5.70	4.95 – 5.72	4.94 – 5.73
Mid-Marsh	20% - 4%	3.14 – 4.95	3.14 – 4.95	3.14 – 4.94
Low-Marsh	40% - 20%	2.36 – 3.14	2.36 – 3.14	2.36 – 3.14
Mudflat	100% - 40%	-2.27 – 2.36	-2.28 – 2.36	-2.28 – 2.36
Subtidal	100%	< -2.27	< -2.28	< -2.28

Table 11: Habitat Elevation Breaks in Southern LCW Phase 2 – 3.3-ft SLR Scenario

Habitat Type	Freq (%)	Habitat Elevation Breaks (ft NGVD29)		
		Pt1 and Pt 4	Pt2	Pt3
Transitional	0%	> 7.40	> 7.42	> 7.43
High- Marsh	4% - 0%	6.65 – 7.40	6.65 -7.42	6.64 -7.43
Mid-Marsh	20% - 4%	4.84 - 6.65	4.84 - 6.65	4.84 – 6.64
Low-Marsh	40% - 20%	4.06 – 4.84	4.06 – 4.84	4.06 – 4.84
Mudflat	100% - 40%	-0.57 – 4.06	-0.58 – 4.06	-0.58 – 4.06
Subtidal	100%	< -0.57	< -0.58	< -0.58

8 Conclusions

Conclusions from these hydraulic/hydrologic analyses are provided below.

8.1 Phase 1

1. The existing tide range is constricted to approximately 2.0 feet with a high tide elevation of 3.67 feet NGVD29 and a low of 1.47 feet NGVD29 as measured in 2021. Tidal muting is caused by the effects of a limited culvert cross-section area of 42 inches at the marsh and 48 inches at the San Gabriel River. Also, site topography and bathymetry within the main channel limits the existing low tide elevation because the bed elevation remains above +1.0 feet MSL.
2. The future tide range is predicted to expand from existing conditions but will still be muted and may range by approximately 2.80 feet, with high tide reaching 2.90 feet NGVD29 and low tide reaching 0.10 feet NGVD29. These tides are still determined to be sufficient to provide the desired habitat range within the site for Phase 1 restoration. The tide range will be limited by the size of the culvert. The range of tidal elevations will drop by nearly 1.5 feet from existing conditions because the elevation of the bed of the main channel is proposed to be lowered to -4 feet, which is below the elevation of the culvert invert. The proposed bridge-type crossing at 1st Street will have no effect on these tides because the tides are controlled by the existing 42-inch culvert.
3. For existing sea level, the existing culvert can remain as is with the only potential action to include cleaning. However, the culvert can still function acceptably without being cleaned. The culvert door to the San Gabriel River does not need to be removed, and the culvert does not need to be replaced with a larger one or supplemented with an additional one.

4. As sea level rises, the tidal range of the Phase 1 restored marsh will decrease due to increased storage capacity and the limited culvert. However, tidal elevations will shift up with the higher water levels in the river.
5. If Phase 1 restoration is the only project completed on the site, the long-term adaptation strategy to maximize tidal flushing and range during SLR is to either replace the culvert with a larger one or add another culvert to increase the hydraulic conveyance capacity.
6. Habitat elevations for low and mid-marsh may need to be reconsidered and lowered by 0.5 feet in the design to compensate for slightly lowered high and low tidal elevations with restoration.

8.2 Phase 2

1. Phase 2 results in a full tidal range in the marsh post-restoration without SLR, and also with SLR over time.
2. All tidal wetland habitats can be realized on-site with high quality and function for existing sea level.
3. As sea level rises, tidal elevations rise linearly with SLR, and the tide range remains as occurs with existing conditions.
4. Tidal wetland habitats can exist but will transition from the original distribution to a new mix of more subtidal, mudflat, and low marsh habitats, with less mid-marsh, high marsh, and transitional habitats over time.
5. Adaptation during SLR could consist of thin layer adaptation of adding sediment selectively to certain areas to maintain mid- and high marsh habitats over time.
6. The proposed bridge-type crossing at 1st Street has no effect on tides and the site will function similarly with the structure in place for existing sea level and for the SLR scenarios considered herein.

9 References

Coastal Restoration Consultants (CRC). 2021. The Los Cerritos Wetlands Habitat Restoration Plan. May 26, 2021.

MDS Consulting. Topographic Survey of the Hellman Ranch site. 1999. Personal Communication with Craig Frampton of Moffatt & Nichol on May 20, 2021.

Moffatt & Nichol. 2014. Los Cerritos Wetlands Conceptual Restoration Plan. 2014.

Ocean Protection Council (OPC) (2018), State of California Sea-Level Rise Guidance.

Appendix I: Responses to Comments Received on the Public Draft IS/MND

Introduction to the Responses to Comments on the Draft IS/MND

CEQA Guidelines Section 15088 requires the Lead Agency, Los Cerritos Wetlands Authority (LCWA), to evaluate comments on environmental issues received from public agencies and interested parties who reviewed the Draft IS/MND and prepared written responses. This appendix provides all written responses received on the Draft IS/MND and the LCWA's response to each comment. Comment letters and specific comments are coded with letters and numbers for reference purposes.

The following agencies, organization, and individuals who submitted comments on the Draft IS/MND during the public review period include the following:

- Rebecca Robles, Acjachemen Culture Keeper and Anna Christensen, Co-chair, LCWTF (Sierra Club)(No Date)
- California State Lands Commission (dated May 10, 2023)
- Department of Toxic Substances Control (dated May 3, 2023)
- Los Cerritos Wetlands Land Trust (dated May 10, 2023)
- Los Cerritos Wetlands Task Force, Angeles Chapter, Sierra Club
- Anna Christensen, Co-chair, LAWTF (Sierra Club)

Comments received on the Draft IS/MND and responses to those comments are provided on the following pages.

Comments

Rebecca Robles, Acjachemen Culture Keeper and
Anna Christensen, Co-chair, LCWTF (Sierra Club)(No Date) – page 1/1

To LCWA
RE Mitigated Negative Declaration Southern Los Cerritos Wetlands Restoration Project
From Rebecca Robles, Acjachemen Culture Keeper and Anna Christensen, Co-chair, LCWTF (Sierra Club)

A-1 **The LCWA has commented that TAG team members did not know of any ceremonies or other tribal activities being conducted in the Project Area. This statement leads one to think that tribal people do not see it as appropriate and so it is misleading.**

A-2 1. **Project area is entirely fenced in and not accessible to public other than when guided tours or restoration events are held.**

A-3 2. **Tribal people, including members of Tongva and Acjachemen tribes, do hold ceremony in the Los Cerritos Wetlands. The Annual Ancestor Walk has always held prayer ceremony at Motuucheyngna. Originally we gathered in Gum Grove Park, and more recently we meet at the circular stone circle site on the Heron Pointe trail overlooking the Southern Los Cerritos Wetlands. Prayer walks have been held for Puvungna and the Los Cerritos Wetlands, one from CSULB to the Los Cerritos Wetlands. The other originated at Heron Pointe and ended at 2nd St and Shopkeeper Rd.**

A-4 3. **Tribal Cultural activities in the Los Cerritos Wetlands include the gathering of tules to build a tule boat which was launched and piloted into Steamshovel Slough. For the first time in more than 100 years, a tule boat entered these waters and an Acjachemen woman was rowing it.**

A-5 4. **Ceremonies and prayers for the project area are being conducted by many tribal and non-tribal groups and individuals who have no access to this property. As with many other tribal Sacred Sites, hosting tribal cultural and ceremonial activities have not been a priority of the owners of the Project Area. Access to Sacred Sites is not guaranteed to tribal peoples as freedom of religion or as a human right. If it is granted at all, it is considered a favor.**

Responses

<u>Comment A-1</u>: The LCWA has commented that TAG team members did not know of any ceremonies or other tribal activities being conducted in the Project Area. This statement leads one to think that tribal people do not see it as appropriate and so it is misleading.

<u>Response A-1</u>: The Commenter notes that TAG team members were previously unaware of any ceremonies or other tribal activities conducted in the Project Area. Page 63 of the cultural resources assessment report (Appendix F) says “all of the [TAG Member] interviewees stated they would like reconnect the community with the salt marsh through the harvesting of plants and animals” which demonstrates that the TAC members see the continued importance of the Los Cerritos Wetlands complex, and this project area in particular. Restoration activities conducted in ongoing discussion with the TAG, and appropriate government to government consultation with the Tribes, would only enhance the Project Area as a potential venue for tribal activities. No changes to the IS/MND are warranted in response to this comment.

<u>Comment A-2:</u> Project area is entirely fenced in and not accessible to public other than when guided tours or restoration events are held.

<u>Response A-2</u>: The Commenter notes that access to the site is currently limited to guided tours and special events. The project proposes to provide improved public access and will also include a Tribal Access Plan per Mitigation Measure CUL-17. No changes to the IS/MND are warranted in response to this comment.

<u>Comment A-3</u>: Tribal people, including members of Tongva and Acjachemen tribes, do hold ceremony in the Los Cerritos Wetlands. The Annual Ancestor Walk has always held prayer ceremony at Motuucheyngna. Originally, we gathered in Gum Grove Park, and more recently we meet at the circular stone circle site on the Heron Pointe trail overlooking the Southern Los

Responses (con't)

Cerritos Wetlands. Prayer walks have been held for Puvungna and the Los Cerritos Wetlands, one from CSULB to the Los Cerritos Wetlands. The other originated at Heron Pointe and ended at 2nd St and Shopkeeper Rd.

Response A-3: The Commenter notes that Tribal people actively hold ceremonies in Los Cerritos Wetlands including during the Ancestor walk that visits Gum Grove Park and Heron Pointe trail. The suggested boundaries of a geographic entity such as the Los Cerritos Wetlands are likely to vary person to person. With that in mind interviewees were asked to comment most directly on the Project Area as defined by Figure C-3 on page 132 of the cultural resources assessment report (Appendix F).While the indicated locations fall outside of the Project site they are directly adjacent within the Program site, the LCWA is supportive of Tribal groups accessing the Project area for these ceremonies as well as other portions of land managed by the LCWA. No changes to the IS/MND are warranted in response to this comment.

Comment A-4: Tribal Cultural activities in the Los Cerritos Wetlands include the gathering of tules to build a tule boat which was launched and piloted into Steamshovel Slough. For the first time in more than 100 years, a tule boat entered these waters and an Acjachemen woman was rowing it.

Response A-4: The Commenter notes that a tule boat piloted by Acjachemen women entered Steam Shovel Slough for the first time in 100 years. While Steam Shovel Slough falls outside of the Project area, this comment is noted for the record. No changes to the IS/MND are warranted in response to this comment.

Comment A-5: Ceremonies and prayers for the project area are being conducted by many tribal and non-tribal groups and individuals who have no access to this property. As with many other tribal Sacred Sites, hosting tribal cultural and ceremonial activities have not been a priority of the owners of

Responses (con't)

the Project Area. Access to Sacred Sites is not guaranteed to tribal peoples as freedom of religion or as a human right. If it is granted at all, it is considered a favor.

Response A-5: The Commenter notes that access to the Project Site has been a challenge. Access to the Project Site by non-tribal groups and individuals will continue to be controlled in order to ensure that cultural resources are not damaged. Ensuring access to the Project site by Tribes is a goal of the Project and will be governed by results of the tribal consultation Tribal Access Plan per Mitigation Measure CUL-17. No changes to the IS/MND are warranted in response to this comment.

Comments

California State Lands Commission (dated May 10, 2023) – page 1/4

STATE OF CALIFORNIA GAVIN NEWSOM, *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

Established in 1938

JENNIFER LUCCHESI, *Executive Officer*
(916) 574-1800
TTY CA Relay Service: **711** *or Phone* **800.735.2922**
from Voice Phone **800.735.2929**
or for Spanish **800.855.3000**

Contact Phone: **(916) 574-1890**

May 10, 2023

File Ref: SCH #2023040250

Los Cerritos Wetlands Authority
ATTN: Salian Garcia
100 N. Old San Gabriel Canyon Road
Azusa, CA 91702
info@rmc.ca.gov

Subject: Initial Study/Mitigated Negative Declaration for Southern Los Cerritos Wetlands Restoration Project, Orange County

Dear Salian Garcia:

B-1 The California State Lands Commission (Commission) staff has reviewed the Initial Study/Mitigated Negative Declaration (IS/MND) for the Southern Los Cerritos Wetlands Restoration Project (Project), which is being prepared by the Los Cerritos Wetlands Authority (Authority). The Authority, as the public agency proposing to carry out the Project, is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The Commission is a trustee agency for projects that could directly or indirectly affect State sovereign land and their accompanying Public Trust resources or uses. Additionally, because the Project involves work on State sovereign land, the Commission will act as a responsible agency.

Commission Jurisdiction and Public Trust Lands

B-2 The Commission has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The Commission also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6009, subd. (c); 6009.1; 6301; 6306). All tidelands and submerged lands granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the common law Public Trust Doctrine.

Responses

Comment B-1: The Commission is a trustee agency for projects that could directly or indirectly affect State sovereign land and their accompanying Public Trust resources or uses. Additionally, because the Project involves work on State sovereign land, the Commission will act as a responsible agency.

Response B-1: The LCWA concurs and appreciates the California State Lands Commission acting as a responsible agency under CEQA. No changes to the IS/MND are warranted in response to this comment.

Comment B-2: The Commission has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The Commission also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6009, subd. (c); 6009.1; 6301; 6306). All tidelands and submerged lands granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the common law Public Trust Doctrine.

Response B-2: The Commenter states that the CLSC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The Commenter further states that their jurisdiction is subject to the protections of the Public Trust Doctrine. The LCWA understands that the California State Lands Commission has jurisdiction and management authority and will be obtaining a new or amended lease for any activities conducted on California State Lands Commission property. No changes to the IS/MND are warranted in response to this comment.

Comments

California State Lands Commission (dated May 10, 2023) – page 2/4

Los Cerritos Wetlands Authority Page 2 May 10, 2023

B-3 As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the state for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

B-4 Lease 9005, a General Lease – Public Agency Use (Lease), was issued to the Authority by the Commission for use of a parcel of state-owned sovereign land located in the city of Seal Beach, adjacent to Pacific Coast Highway, the San Gabriel River channel, and 1st Street. Under the Lease, the Authority is currently authorized to perform debris clean-up and invasive species abatement, as well as conduct escorted and supervised public education programs, within the parcel.

B-5 The IS/MND proposes to construct interpretive signage, shade, equipment storage, a seating area, and a public trail in the existing lease area. As these uses are not currently authorized and the existing lease does not expire until August 13, 2032, the Authority will need to apply to amend the lease from the Commission for any proposed construction activities and new uses planned for the State Lands parcel. As part of that application, a detailed project description, including construction drawings with site plans, will be required.

Please note that the State Lands parcel is subject to four other leases with authorizations for various uses: Lease PRC 3154, a General Permit – Public Agency Use to the City of Los Angeles Department of Water and Power for a water intake structure; Lease PRC 5283, a General Permit – Public Agency Use to the city of Seal Beach for a bicycle trail and transportation corridor and appurtenant improvements; Lease 5981, a Right-of-Way Easement to the Southern California Edison Company for an overhead transmission line; and Lease PRC 8726, a General Lease – Public Agency Use to the Orange County Flood Control District for access to the Los Alamitos Retention Basin. As part of its lease amendment application, the Authority will be required to obtain letters from each lessee stating whether the Authority's proposed use would interfere with their use.

Project Description

B-6 The Authority proposes to restore wetland, wetland-upland transition zone, and upland habitats to meet the following objectives and needs:

- Restore tidal wetland processes and function to the maximum extent possible.

Responses (con't)

Comment B-3: As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the state for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

Response B-3: The Commenter states that the State of California acquired sovereign ownership of all tidelands and submerged land in 1850 and emphasizes that the boundaries of this ownership may not be readily apparent from present day site inspections. The LCWA understands the California State Lands Commission ownership boundaries and will be obtaining a new or amended lease for any activities conducted on California State Lands Commission parcel. The LCWA will submit a jurisdiction inquiry for submerged lands within the LCWA parcels, if needed. No changes to the IS/MND are warranted in response to this comment.

Comment B-4: Lease 9005, a General Lease – Public Agency Use (Lease), was issued to the Authority by the Commission for use of a parcel of state-owned sovereign land located in the city of Seal Beach, adjacent to Pacific Coast Highway, the San Gabriel River channel, and 1st Street. Under the Lease, the Authority is currently authorized to perform debris clean-up and invasive species abatement, as well as conduct escorted and supervised public education programs, within the parcel.

Response B-4: The Commenter notes that the uses of the State Lands Parcel proposed by the LCWA are currently not authorized by the LCWA's active

Responses (con't)

lease agreement and therefore the LCWA will be required to apply to amend the lease to incorporate the Project's proposed construction activities and news planned uses. The Commenter further states that the application must include a detailed project description including construction drawings with site plans. The LCWA is aware that the lease agreement must be amended for this proposed Project and appreciates clear communication about the requirements of the application process. No changes to the IS/MND are warranted in response to this comment.

Comment B-5: The IS/MND proposes to construct interpretive signage, shade, equipment storage, a seating area, and a public trail in the existing lease area. As these uses are not currently authorized and the existing lease does not expire until August 13, 2032, the Authority will need to apply to amend the lease from the Commission for any proposed construction activities and new uses planned for the State Lands parcel. As part of that application, a detailed project description, including construction drawings with site plans, will be required.

Please note that the State Lands parcel is subject to four other leases with authorizations for various uses: Lease PRC 3154, a General Permit – Public Agency Use to the City of Los Angeles Department of Water and Power for a water intake structure; Lease PRC 5283, a General Permit – Public Agency Use to the city of Seal Beach for a bicycle trail and transportation corridor and appurtenant improvements; Lease 5981, a Right-of-Way Easement to the Southern California Edison Company for an overhead transmission line; and Lease PRC 8726, a General Lease – Public Agency Use to the Orange County Flood Control District for access to the Los Alamitos Retention Basin. As part of its lease amendment application, the Authority will be required to obtain letters from each lessee stating whether the Authority's proposed use would interfere with their use.

Responses (con't)

Response B-5: The Commenter notes that the State Lands Parcel is subject to four other leases for various uses by Los Angeles Department of Water and Power, Southern California Edison, City of Seal Beach, and Orange County Flood Control District. The Commenter further states that as part of the lease application process, the LCWA will be required to obtain letters from each of the other lessees stating whether the LCWA's proposed use would interfere with the other lessee uses. The LCWA is familiar with this process, and no changes to the IS/MND are warranted in response to this comment.

Comment B-6: The Authority proposes to restore wetland, wetland-upland transition zone, and upland habitats to meet the following objectives and needs:

- Restore tidal wetland processes and function to the maximum extent possible.
- Maximize contiguous habitat areas and maximize the buffer between habitat and sources of human disturbance.
- Create a public access and interpretive program that is practical, protective of sensitive habitat and ongoing oil operations, economically feasible, and will ensure a memorable visitor experience.
- Incorporate phasing of implementation as funding becomes available and to accommodate existing and future potential changes in land ownership and usage.
- Strive for long-term restoration success.
- Integrate experimental actions and research, where appropriate, to inform restoration and management actions for this project.

From the Project Description, Commission staff understands that the Project would include a Stewardship Site that includes interpretive signage, shade,

Responses (con't)

equipment storage, and seating on the existing raised building pad as well as a trail connection that have potential to affect State sovereign land.

1. Project Description: The Project Description is not clear whether the trail connection or the interpretive signage proposed on the State Lands Parcel will require any ground disturbing or vegetation removal activities. In addition, it is unclear how the Authority will provide "shade, equipment storage, and seating" within the Stewardship Site. Please describe how the Authority plans to provide these services and if it will require new structures within the State Lands Parcel.

Response B-6: The Commenter acknowledges the LCWA's goals for the Project and states their understanding that the Project is proposing a Stewardship Place on CSLC land that may include interpretive signage, shade, equipment storage, seating, and trail connections. This is an accurate depiction of the improvements proposed by the Project for the State Lands Parcel.

The Commenter asks for more information about these features and whether they will require 1) ground disturbing activities, 2) vegetation removal activities, or 3) installation of new structures within the State Lands Parcel. The Project is proposing to initially use the site as a construction staging area as shown in Figure 1 of Appendix B. This will require ground disturbance and vegetation removal activities. The Project proposes to restore the State Lands Parcel to include native upland, transitional and salt marsh habitats as shown in Figure 2 of Appendix B. The Project also will include the construction of an earthen berm for flood control purposes along the eastern edge of the existing concrete foundation (Figure 3 of Appendix B). Currently the Project designs do not show the exact locations and details of the proposed interpretive signage, shade structures, equipment storage facility, or trails. These will be produced during the next iteration of design and submitted to CSLC as part of the lease agreement. No changes to the IS/MND are warranted in response to this comment.

Comments

California State Lands Commission (dated May 10, 2023) – page 3/4

Los Cerritos Wetlands Authority Page 3 May 10, 2023

B-6

- Maximize contiguous habitat areas and maximize the buffer between habitat and sources of human disturbance.
- Create a public access and interpretive program that is practical, protective of sensitive habitat and ongoing oil operations, economically feasible, and will ensure a memorable visitor experience.
- Incorporate phasing of implementation as funding becomes available and to accommodate existing and future potential changes in land ownership and usage.
- Strive for long-term restoration success.
- Integrate experimental actions and research, where appropriate, to inform restoration and management actions for this project.

From the Project Description, Commission staff understands that the Project would include a Stewardship Site that includes interpretive signage, shade, equipment storage, and seating on the existing raised building pad as well as a trail connection that have potential to affect State sovereign land.

Environmental Review

Commission staff requests that the Authority consider the following comments on the Project's IS/MND, to ensure that impacts to State sovereign land are adequately analyzed for the Commission's use of the IS/MND when considering a future lease application for the Project.

General Comments

B-6

1. Project Description: The Project Description is not clear whether the trail connection or the interpretive signage proposed on the State Lands Parcel will require any ground disturbing or vegetation removal activities. In addition, it is unclear how the Authority will provide "shade, equipment storage, and seating" within the Stewardship Site. Please describe how the Authority plans to provide these services and if it will require new structures within the State Lands Parcel.

Cultural Resources

B-7

2. Title to Resources within Commission Jurisdiction: The IS/MND should state that the title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and under the jurisdiction of the Commission (Pub. Resources Code, § 6313). Commission staff requests that the Authority consult with Staff Attorney Jamie Garrett should any cultural resources on state lands be discovered during construction of the proposed Project.

Responses (con't)

Comment B-7: 2. Title to Resources within Commission Jurisdiction: The IS/MND should state that the title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and under the jurisdiction of the Commission (Pub. Resources Code, § 6313). Commission staff requests that the Authority consult with Staff Attorney Jamie Garrett should any cultural resources on state lands be discovered during construction of the proposed Project.

Staff requests that the following statement be included in the IS/MND Mitigation Monitoring Program: "The final disposition of archaeological, historical, and paleontological resources recovered on State land under the jurisdiction of the California State Lands Commission must be approved by the Commission."

Response B-7: The LCWA assumes that the requirement for approval by the CSLC will be included as part of the CSLC Lease. The requested sentence ("The final disposition of archaeological, historical, and paleontological resources recovered on State land under the jurisdiction of the California State Lands Commission must be approved by the Commission.") has been added to the Final IS/MND on page 69 and Appendix A (as part of CUL-14).

Comments

California State Lands Commission (dated May 10, 2023) – page 4/4

Los Cerritos Wetlands Authority   Page 4   May 10, 2023

B-7 Staff requests that the following statement be included in the IS/MND Mitigation Monitoring Program: "The final disposition of archaeological, historical, and paleontological resources recovered on State land under the jurisdiction of the California State Lands Commission must be approved by the Commission."

B-8 Thank you for the opportunity to comment on the IS/MND for the Project. As a responsible and trustee agency, the Commission will rely on the adopted IS/MND when considering whether to issue an amended lease as specified above (see Section "Commission Jurisdiction and Public Trust Lands"). We request that you consider our comments before adopting the IS/MND.

B-9 Please send electronic copies of the adopted IS/MND, Mitigation Monitoring Program, Notice of Determination, and approving resolution when they become available. Please note that federal and state laws require all government entities to improve accessibility of information technology and content by complying with established accessibility requirements. (29 U.S.C. § 794d; 36 C.F.R. § 1194.1 et seq.; Gov. Code, § 7405.) California State law prohibits State agencies from publishing on their websites content that does not comply with accessibility requirements. (Gov. Code, § 115467.) Therefore, any documents submitted to Commission staff during the processing of a lease or permit, including all CEQA documentation, must meet accessibility requirements for Commission staff to place the application on the Commission agenda.

Refer questions concerning environmental review to Ms. Christine Day, Environmental Scientist, at Christine.Day@slc.ca.gov or (916) 562-0027. For questions concerning archaeological or historic resources under Commission jurisdiction, please contact Ms. Jamie Garrett, Staff Attorney, at Jamie.Garrett@slc.ca.gov or (916) 574-0398. For questions concerning Commission leasing jurisdiction, please contact Mr. Kelly Connor, Public Land Management Specialist, at Kelly.Connor@slc.ca.gov or (916) 574-0343.

Sincerely,

Nicole Dobroski

Nicole Dobroski, Chief
Division of Environmental Science, Planning, and Management

cc: Office of Planning and Research
C. Day, Commission
J. Garrett, Commission
K. Connor, Commission

Responses (con't)

Comment B-8: Thank you for the opportunity to comment on the IS/MND for the Project. As a responsible and trustee agency, the Commission will rely on the adopted IS/MND when considering whether to issue an amended lease as specified above (see Section "Commission Jurisdiction and Public Trust Lands"). We request that you consider our comments before adopting the IS/MND.

Response B-8: The Commenter expresses California State Lands Commission appreciation to provide comments on the LCWA's IS/MND, and that they will be relying on the adopted IS/MND when considering whether to issue an amended lease. The comment does not raise any issues with respect to the content and adequacy of the IS/MND. No changes to the IS/MND are warranted in response to this comment.

Comment B-9: Please send electronic copies of the adopted IS/MND, Mitigation Monitoring Program, Notice of Determination, and approving resolution when they become available. Please note that federal and state laws require all government entities to improve accessibility of information technology and content by complying with established accessibility requirements. (29 U.S.C. § 794d; 36 C.F.R. § 1194.1 et seq.; Gov. Code, § 7405.) California State law prohibits State agencies from publishing on their websites content that does not comply with accessibility requirements. (Gov. Code, § 115467.) Therefore, any documents submitted to Commission staff during the processing of a lease or permit, including all CEQA documentation, must meet accessibility requirements for Commission staff to place the application on the Commission agenda.

Response B-9: The Commenter requests that electronic copies of the adopted Final IS/MND, Mitigation Monitoring and Reporting Program, Notice of Determination, and approving resolution be sent when available and that all documents be accessible consistent with federal and state laws. The comment does not raise any issues with respect to the content and adequacy of the Final IS/MND. No changes to the IS/MND are warranted in response to this comment.

Comments

Department of Toxic Substances Control (dated May 3, 2023) – page 1/3

Department of Toxic Substances Control

Yana Garcia
Secretary for
Environmental Protection

Meredith Williams, Ph.D.
Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Gavin Newsom
Governor

SENT VIA ELECTRONIC MAIL

May 3, 2023

Salian Garcia
Staff Services Manager - Los Cerritos Wetlands Authority
100 N. Old San Gabriel Canyon Road
Azusa, CA 90731
mailto:info@rmc.ca.gov

RE: Draft Initial Study & Mitigated Negative Declaration (IS) for the Southern Los Cerritos Wetlands Restoration Project, dated April 2023 SCH# 2023040250

Dear Salian Garcia:

The Southern Los Cerritos Wetlands Restoration Project (Project), located on the border of Los Angeles and Orange counties, addresses the intent to restore currently degraded salt marsh, seasonal wetlands, and other freshwater wetlands within an approximately 503-acre area. The Southern California Wetlands Recovery Project (WRP), a partnership of 17 state and federal agencies, has identified the acquisition and restoration of the Los Cerritos Wetlands as a high regional priority.

C-1 Based on DTSC review of applicable sections of the Draft IS, DTSC does not have significant concerns with the preparation of the document, or the implementation of the planned design as described.

C-2 DTSC notes that the Project is located in proximity of Naval Weapons Station (NWS) Seal Beach, as well as the Long Beach Ammunition Loading Pier, which is identified as a formerly used defense site (FUDS) and is currently described as part of NWS Seal Beach. Although it is not anticipated, due to the location of the FUDS related to the Project, DTSC has the following general comments:

Responses

Comment C-1: Based on DTSC review of applicable sections of the Draft IS, DTSC does not have significant concerns with the preparation of the document, or the implementation of the planned design as described.

Response C-1: The Commenter states that The DTSC does not have concerns with the IS/MND and the associated design. No changes to the IS/MND are warranted in response to this comment.

Comment C-2: DTSC notes that the Project is located in proximity of Naval Weapons Station (NWS) Seal Beach, as well as the Long Beach Ammunition Loading Pier, which is identified as a formerly used defense site (FUDS) and is currently described as part of NWS Seal Beach. Although it is not anticipated, due to the location of the FUDS related to the Project, DTSC has the following general comments:

Response C-2: The Commenter states that the Project site is located near the Naval Weapons Station Seal Beach and the Long Beach Ammunition Loading Pier, although no impacts are anticipated to these facilities. No changes to the IS/MND are warranted in response to this comment.

Comments

Department of Toxic Substances Control (dated May 3, 2023) – page 2/3

Salim Garcia
May 3, 2023
Page 2

- C-3 In the event that evidence of potential soil or groundwater contamination (such as soil staining, noxious odors, debris or buried storage containers) is encountered during restoration activities, procedures should be followed to notify the environmental professional overseeing project activities. Additional soil or groundwater sampling may become necessary in the event contamination is encountered.
- C-4 Consistent with Mitigation Measure HAZ-2 described in the Draft IS, contractor(s) shall develop and implement a Soil, Landfilled Materials, and Groundwater Management Plan that includes a materials disposal plan specifying how the contractor will remove, handle, transport, and dispose of all excavated material in a safe, appropriate, and lawful manner. Based on the development of these documents, additional soil and/or groundwater sampling may be required, especially in compliance with disposal practices.
- C-5 In the event that any debris are encountered during excavation that could be associated with the FUDS, including but not limited to munitions and explosives of concern (MEC), material potentially presenting an explosive hazard (MPPEH), and munitions constituents (MC), follow the 3Rs of Explosives Safety; Recognize, Retreat and Report: **Recognize**, when you have encountered munitions; **Retreat**, note your location as you are backing away. Do not approach, touch, or disturb a suspect munitions, safely leave the area; and **Report**, immediately what was found to state and or local law enforcement – call 911. Please then notify DTSC.

DTSC appreciates the opportunity to review and comment on the Draft IS. If you have any questions, please contact me at (657) 777-9803 or via email at Alexis.White@dtsc.ca.gov.

Sincerely,

Alexis White,
Environmental Scientist
Site Mitigation and Restoration Program
Department of Toxic Substances Control

Responses (con't)

Comment C-3: ·In the event that evidence of potential soil or groundwater contamination (such as soil staining, noxious odors, debris or buried storage containers) is encountered during restoration activities, procedures should be followed to notify the environmental professional overseeing project activities. Additional soil or groundwater sampling may become necessary in the event contamination is encountered.

Response C-3: The Commenter states that certain procedures (and additional sampling) may be needed if there is potential soil or groundwater contamination. The project design assumes that additional soil or groundwater sampling and analysis may need to occur if contamination is encountered during restoration, and provisions for this possibility will be included in the construction specifications. No changes to the IS/MND are warranted in response to this comment.

Comment C-4: ·Consistent with Mitigation Measure HAZ-2 described in the Draft IS, contractor(s) shall develop and implement a Soil, Landfilled Materials, and Groundwater Management Plan that includes a materials disposal plan specifying how the contractor will remove, handle, transport, and dispose of all excavated material in a safe, appropriate, and lawful manner. Based on the development of these documents, additional soil and/or groundwater sampling may be required, especially in compliance with disposal practices.

Response C-4: The Commenter states that the project design will include provisions for preparation and implementation of a Soil, Landfilled Materials, and Groundwater Management Plan consistent with Mitigation Measure HAZ-2, specifying removal, handling, transport, and disposal of all excavated material in the appropriate manner. Contract documents will include the document in the construction specifications for the contractor to follow. No changes to the IS/MND are warranted in response to this comment.

Responses (con't)

Comment C-5: In the event that any debris are encountered during excavation that could be associated with the FUDS, including but not limited to munitions and explosives of concern (MEC), material potentially presenting an explosive hazard (MPPEH), and munitions constituents (MC), follow the 3Rs of Explosives Safety; Recognize, Retreat and Report: Recognize, when you have encountered munitions; Retreat, note your location as you are backing away. Do not approach, touch, or disturb a suspect munitions, safely leave the area; and Report, immediately what was found to state and or local law enforcement – call 911. Please then notify DTSC.

Response C-5: The Commenter states the process to follow in case debris is encountered associated with FUDS.

The following text ("The Plan will include information to address the following: In the event that any debris are encountered during excavation that could be associated with the FUDS, including but not limited to munitions and explosives of concern (MEC), material potentially presenting an explosive hazard (MPPEH), and munitions constituents (MC), follow the 3Rs of Explosives Safety; Recognize, Retreat and Report: Recognize, when you have encountered munitions; Retreat, note your location as you are backing away. Do not approach, touch, or disturb a suspect munitions, safely leave the area; and Report, immediately what was found to state and or local law enforcement – call 911. Please then notify DTSC.") has been added to the Final IS/MND on page 85 and Appendix A (as part of HAZ-2).

Comments

Department of Toxic Substances Control (dated May 3, 2023) – page 3/3

Salim Garcia
May 3, 2023
Page 3

cc: (via email)

Governor's Office of Planning and Research
State Clearinghouse
State.Clearinghouse@opr.ca.gov

Ms. Tamara Purvis
Associate Environmental Planner
CEQA Unit-Permitting/HWMP
Department of Toxic Substances Control
Tamara.Purvis@dtsc.ca.gov

Mr. Dave Kereazis
Associate Environmental Planner
CEQA Unit-Permitting/HWMP
Department of Toxic Substances Control
Dave.Kereazis@dtsc.ca.gov

Responses (con't)

No comments to address on this page.

Comments

Los Cerritos Wetlands Land Trust (dated May 10, 2023) – page 1/3

Los Cerritos Wetlands Land Trust
for Long Beach and Seal Beach

PO Box 30165
Long Beach, CA 90853

www.lcwlandtrust.org

May 10, 2023

Via email:

lcwa@tidlainfluence.com
Attn: Eric Zahn
Salian Garcia

Comments on the Initial Study/Mitigated Negative Declaration for the Southern Los Cerritos Wetlands Restoration Project.

The Los Cerritos Wetlands Land Trust is pleased with the Los Cerritos Wetlands Authority's (LCWA) thoughtful process to plan for, design, and implement the restoration of the Southern Portion of the Los Cerritos Wetlands. As a grassroots organization dedicated to the protection and preservation of Los Cerritos Wetlands, we very much appreciate the transparency of the planning process and the many opportunities for feedback from stakeholders and for public comment.

Project Description (Pgs 12 – 39 of the Draft Mitigated Negative Declaration)

The goals of the project are to restore the wetland, wetland/upland transition zone, and the upland habitat, maximize contiguous habitat areas, maximize the buffer between habitat and populated areas, and create public access and interpretive programs. These goals will be accomplished in phases, with reference to and thought concerning, future potential changes in land ownership and usage, climate change, flooding, and earthquakes. The plan is also to incorporate research into the project, to inform actions needed in the future, and to strive for long-term restoration success.

We would like to share with you that:

D-1
1. The preparation appeared quite extensive and well-researched, and each potential area of concern was addressed with multiple mitigation plans. The proposed plan is appealing in that it seems it would significantly improve the current wetlands habitat and ecosystem

D-2
2. The two phases make sense in that the restoration of parts of the site could begin fairly soon but with a longer-term view for the creation of a more extensive tidal marsh plain.

Responses

Comment D-1: 1. The preparation appeared quite extensive and well-researched, and each potential area of concern was addressed with multiple mitigation plans. The proposed plan is appealing in that it seems it would significantly improve the current wetlands habitat and ecosystem.

Response D-1: The Commenter states that the Los Cerritos Wetlands Land Trust (LCWLT) is pleased with the preparation of the IS/MND and believes the proposed plan "would significantly improve the current wetlands habitat and ecosystem." The comment does not raise any issues with respect to the content and adequacy of the IS/MND. No changes to the IS/MND are warranted in response to this comment.

Comment D-2: 2. The two phases make sense in that the restoration of parts of the site could begin fairly soon but with a longer-term view for the creation of a more extensive tidal marsh plain.

Response D-2: The Commenter concurs with the Project's phased approach and is noted for the record. No changes to the IS/MND are warranted in response to this comment.

Comments

Los Cerritos Wetlands Land Trust (dated May 10, 2023) – page 2/3

D-3 3. The plan does seem to depend on future access to the Haynes Cooling Channel, but if that were not to occur, there are other options to obtain tidal water flow into the area.

D-4 4. The only thing that was not presented in this section was what was expected to happen to the current animals and plants that use this area today. **Is there to be some effort to retain them and use them to repopulate the area?** The extensive grading and other efforts will completely disturb the area for 18 months. Sections 3.11 to 3.14 (pgs. 91-98) of the MND,

D-5 Sections 3.11 "Land Use Planning," 3.12 "Mineral Resources," and 3.14 "Population and Housing" are categorized as "No Impact" which we agree with. One note on land use planning is that the Hellman Ranch Specific Plan applies to the entire portion of the program area within the City of Seal Beach.

D-6 Section 3.4 Biological Resources – this section has a number of items that are "Less than Significant with Mitigation". There are two items (b & e) on page 55 that caught our attention: the possibility for "a substantial but temporary adverse impact on a sensitive natural community during construction" and the removal of 78 trees, while non-native, these mature trees are likely providing valuable habitat, especially for birds. **Please provide more information about the plan for addressing those impacts.**

D-7 Pg 56 – 57: Given the presence of at least 25 breeding pairs of the Belding's Savannah sparrow, the stated requirement for a qualified biologist to map the suitable habitat and incorporate that into the restoration design seems particularly important.

Part 1 - Sections 2.1 to 2.9, pages 5 to 13
As Lead Agency, the LCWA has determined that the Southern Los Cerritos Wetlands Restoration Process is within the scope of the Program Environmental Impact Report (PEIR). Due in part to the project tiering from the program within a relatively short period of the certification date, there have been no changes in circumstances on-site under which the project is undertaken. Likewise, no new information has been discovered that was not known and could not have been known with the exercise of reasonable diligence at the time the PEIR was certified.

However, two goals stand out to us.

D-8 Goal #3. Create a public access and interpretive program that is practical, protective of sensitive habitat and ongoing oil operations, economically feasible, and will ensure a memorable visitor experience. **We expect and look forward to further details about how to robustly engage in that portion of the planning process.**

D-9 Goal #4. Incorporate phasing of implementation to accommodate existing and future potential changes in land ownership and usage, and as funding becomes available. **We await further details as they become available.**

We look forward to the continuation of the restoration process for the Southern Portion of Los Cerritos Wetlands and will continue to be fully engaged in the process with the LCWA and all other relevant agencies.

Responses (con't)

Comment D-3: 3. The plan does seem to depend on future access to the Haynes Cooling Channel, but if that were not to occur, there are other options to obtain tidal water flow into the area.

Response D-3: The Commenter acknowledges that the Project is designed to connect to the Haynes Cooling Channel in order to improve the tidal connection in Phase 2. The Commenter suggests that there are other options to obtain a connection tidal flow, which is accurate. The Program EIR details several alternatives for making a full tidal connection to the San Gabriel River. These alternatives were not carried forward but could be analyzed further should the Haynes Cooling Channel alternative become infeasible. No changes to the IS/MND are warranted in response to this comment.

Comment D-4: 4. The only thing that was not presented in this section was what was expected to happen to the current animals and plants that use this area today. **Is there to be some effort to retain them and use them to repopulate the area?** The extensive grading and other efforts will completely disturb the area for 18 months. Sections 3.11 to 3.14 (pgs. 91-98) of the MND.

Response D-4: The Commenter states that the IS/MND does not address impacts to animals and plants that are found on site currently and asks if there is a plan to retain their populations. The Commenter further states that the proposed project activities will completely disturb the site for 18 months. The Project includes Mitigation Measures BIO-1, BIO-3, BIO-4, BIO-5, BIO-7, and BIO-8 to assure that impacts to populations of all sensitive species are properly avoided or minimized. Furthermore, Mitigation Measure BIO-2 requires a qualified biologist shall prepare a Worker Environmental Awareness Program (WEAP) that provides a description of potentially occurring special-status species and methods for avoiding inadvertent impacts. BIO-2 also requires that initial grading and vegetation removal activities shall be supervised by a qualified monitoring biologist,

Responses (con't)

who will be present during all construction activities. Additionally, BIO-9 requires that the project revegetate sensitive natural communities that may be impacted by the project. Finally, BIO-11 requires the project to prepare a Monitoring and Adaptive Management Plan (MAMP) that includes provisions for conducting a pre-construction survey to collect baseline data for existing wetland function and that those functions be monitored during and after construction. No changes to the IS/MND are warranted in response to this comment.

Comment D-5: Sections 3.11 "Land Use Planning," 3.12 "Mineral Resources," and 3.14 "Population and Housing" are categorized as "No Impact" which we agree with. One note on land use planning is that the Hellman Ranch Specific Plan applies to the entire portion of the program area within the City of Seal Beach.

Response D-5: The Commenter agrees that the land use planning, mineral resources, and population and housing sections of the IS/MND should be categorized as No Impact, and notes that the Hellman Ranch Specific Plan applies to the entire portion of the program area within the City of Seal Beach. As the IS/MND currently states that the Hellman Ranch Specific Plan applies to the entire portion of the program area (Section 3.11), no changes to the IS/MND are warranted in response to this comment.

Comment D-6: Section 3.4 Biological Resources – this section has a number of items that are "Less than Significant with Mitigation". There are two items (b & e) on page 55 that caught our attention: the possibility for "a substantial but temporary adverse impact on a sensitive natural community during construction" and the removal of 78 trees, which non-native, these mature trees are likely providing valuable habitat, especially for birds. **Please provide more information about the plan for addressing those impacts.**

Responses (con't)

Response D-6: The Commenter notes that Section 3.4 of the IS/MND has numerous findings of "Less than Signification with Mitigation". The Commenter specifically expresses concern for checklist items b and e in Section 3.4. Item "b" of Section 3.4 address the potential for the project to adversely affect riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service. The IS/MND includes 11 Mitigation Measures for Biological Resources that contribute to assuring the Projects impacts to these resources will be reduced to less than significant. Item "e" of Section 3.4 addresses the potential for the project to conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. The IS/MND acknowledges that 78 non-native trees are proposed for removal as part of the project; However, the removal of these trees will be done in accordance with local requirements for tree removal. These trees will be replaced with native vegetation more conducive to support the current plants and animals that the Commenter mentions in comment D-4. No changes to the IS/MND are warranted in response to this comment.

Comment D-7: Pg 56-57: Given the presence of at least 25 breeding pairs of the Belding's Savannah sparrow, the stated requirement for a qualified biologist to map the suitable habitat and incorporate that into the restoration design seems particularly important.

Response D-7: The Commenter emphasizes the importance of the requirement for a qualified biologist to document the suitable habitat for Belding's savannah sparrow and incorporate that into the design. No changes to the IS/MND are warranted in response to this comment.

Responses (con't)

Comment D-8: Goal #3. Create a public access and interpretive program that is practical, protective of sensitive habitat and ongoing oil operations, economically feasible, and will ensure a memorable visitor experience. **We expect and look forward to further details about how to robustly engage in that portion of the planning process.**

Response D-8: The Commenter states that Project's Goal #3 stands out to them and expresses that they anticipate further robust engagement on that public access aspect of the Project. No changes to the IS/MND are warranted in response to this comment.

Comment D-9: Goal #4. Incorporate phasing of implementation to accommodate existing and future potential changes in land ownership and usage, and as funding becomes available. **We await further details as they become available.**

Response D-9: The Commenter states that Project's Goal #4 stands out to them and expresses that they anticipate further details regarding the phasing of the Project. No changes to the IS/MND are warranted in response to this comment.

Comments

Los Cerritos Wetlands Land Trust (dated May 10, 2023) – page 3/3

Sincerely,

Elizabeth J. Lambe

Elizabeth Lambe
Executive Director
Los Cerritos Wetlands Land Trust

Responses (con't)

No comments to address on this page.

Los Cerritos Wetlands Task Force, Angeles Chapter, Sierra Club – page 1/7

Los Cerritos Wetlands Task Force
Angeles Chapter, Sierra Club

To: Los Cerritos Wetlands Authority
Attention: Sally Gee
From: The Sierra Club Los Cerritos Wetlands Task Force
Re: South Los Cerritos Wetlands Restoration Project Draft Study & Mitigation

The Sierra Club Los Cerritos Wetlands Task Force/SCLCWTF finds this latest version of the Restoration Plan is an improvement on the initial Plan. We thank you for removing the Visitor Center, creating new salt pannes, and restricting public access. We still have concerns, which are listed below in bold.

2.8 Project Background Until the late 1800s, the wetlands within and beyond the Program Area, collectively known as the Los Cerritos Wetlands Complex, spanned approximately 2,400 acres, and consisted of a network of tidal channels, vegetated wetlands, and upland areas. Historically, the Los Cerritos Wetlands Complex was almost entirely tidal wetland, with a few natural streams and intertidal flat channels.

E-1 **SCLCWLT disagrees with this description of the Los Cerritos Wetlands as there is no mention of the San Gabriel River. Historically this area was the estuary of the San Gabriel River. Until the river was channelized in the 1950's, much of these wetlands were brackish, not tidal wetlands. After the cutoff of the fresh water from the San Gabriel, with water from the Los Cerritos Channel, the northern portion of the wetlands remained brackish. The remaining portions, including the Southern/Hellman section, are seasonal wetlands, with a small amount of water coming through a pipe from the San Gabriel River.**

2.9 Los Cerritos Wetlands Restoration Plan Goals and Objectives The goals and objectives of the proposed project are presented below and are consistent with the goals and objectives identified in the Final PEIR (LCWA, 2021):
Goal #3. Create a public access and interpretive program that is practical, protective of sensitive habitat and ***ongoing oil operations****, economically feasible, and will ensure a memorable visitor experience.*

E-2 **SCLCWF does not agree with the goal of protecting the ongoing oil operations. As SB1137 and other legislation may require removal of oil operations near residences, this Restoration project goals should be concerned with habitat and visitor access, not roads and berms for oil companies.**

2.10.2 Ecosystem Restoration Restored Habitats The project proposes for approximately 27.71 acres of existing non-native upland and native shrubland to be graded down to intertidal salt marsh elevations with another 7.37 acres of transitional wetlands habitat sloping up to upland elevations along the southern and eastern borders of the project site.

E-3 **SCLCWTF considers even non-native upland as habitat for mammals, birds, reptiles and insects. We believe this is wetlands destruction, not restoration.**

Responses

Comment E-1: SCLCWLT [sic] disagrees with this description of the Los Cerritos Wetlands as there is no mention of the San Gabriel River. Historically this area was the estuary of the San Gabriel River. Until the river was channelized in the 1950's, much of these wetlands were brackish, not tidal wetlands. After the cutoff of the fresh water from the San Gabriel, with water from the Los Cerritos Channel, the northern portion of the wetlands remained brackish. The remaining portions, including the Southern/Hellman section, are seasonal wetlands, with a small amount of water coming through a pipe from the San Gabriel River.

Response E-1: The Commenter states that they disagree with the description of the historic Los Cerritos Wetlands provided in Section 2.8 of the IS/MND. The Commenter further states their opinion that the wetlands were historically brackish and non-tidal and that the Project area is composed of seasonal wetlands. This comment is noted for the record, however, the 2007 publication "Historical Ecology and Landscape Change of the San Gabriel River and Floodplain" by Stein et. al. clearly documents that the site was dominated by tidal wetlands. These finding are further supported by the technical studies that contributed to LCWA's Conceptual Restoration Plan. That Plan's Habitat Assessment Report (Tidal Influence, 2012) found that 88.5% (466.63 acres) of the current Los Cerritos Wetlands Complex historically was tidal wetlands with just 0.5% (2.65 acres) being brackish marsh. No changes to the IS/MND are warranted in response to this comment.

Comment E-2: SCLCWF does not agree with the goal of protecting the ongoing oil operations. As SB1137 and other legislation may require removal of oil operations near residences, this Restoration project goals should be concerned with habitat and visitor access, not roads and berms for oil companies.

Responses (con't)

Response E-2: The Commenter states that they do not agree with the Project's Goal #3 and specifically do not agree with protecting ongoing oil operations. No changes to the IS/MND are warranted in response to this comment.

Comment E-3: SCLCWTF considers even non-native upland as habitat for mammals, birds, reptiles and insects. We believe this is wetlands destruction, not restoration.

Response E-3: The Commenter states that they consider non-native upland as habitat for a variety of wildlife and that they believe this is wetlands destruction and not restoration. No changes to the IS/MND are warranted in response to this comment.

Comments

Los Cerritos Wetlands Task Force, Angeles Chapter, Sierra Club – page 2/7

Mechanical removal is the preferred method of removing invasive species; accordingly, invasive plant species removal would occur using mechanical methods to the maximum extent possible. This method of removal would be used in areas where the associated ground disturbance would not adversely affect sensitive wildlife species.

E-4 **How can removing plants, invasive or not, not affect wildlife? These plants are used by birds, insects, mammals and reptiles for food and shelter.**

If mechanical or hand removal methods are tried and found to be ineffective after two years of repeated treatment, or the problem is too widespread for hand removal to be practical, then chemical controls would be implemented as described below. For some species, particularly woody species, or large-biomass species (e.g., pampas grass), mowers, chainsaws, or other handheld equipment may be used if the eradication method would not adversely affect sensitive wildlife species.

E-5 **How is this to be accomplished?**

Herbicides would be used in accordance with manufacturers' application guidelines by a licensed applicator for specific species when manual and mechanical removal methods are not effective and may be used in conjunction with physical removal methods for species that are known to be difficult to control. The program's restoration contractor would prepare an herbicide treatment plan for each treated invasive species, including such information as the type of herbicide to be used, application rates, and timing of treatment. Herbicides would be applied using a localized spot-treatment method and applied in a manner that would eliminate or reduce drift onto native plants. Herbicides would be applied to cut stumps for larger plants or large clumps of herbaceous non-native species that cannot effectively be removed. In all such cases, they would be used only to the extent necessary to support native plant establishment and limit adverse impacts to sensitive species and habitats. For sites within 100 feet of a wetland or stream, herbicides approved by USEPA for use near wetlands and streams, such as the glyphosate-based Rodeo® or the imazapyr-based Habitat® would be used.

E-6 **We are opposed to any herbicide use in the wetlands. The Rodeo site states:**
This item has been discontinued by the manufacturer. **It is very possible that Habitat has the same adverse affects on human health and the environment as glyphosate-based Rodeo and Roundup. Please remove herbicide use from this plan. Use volunteers or the CA Conservation Corps to remove non-natives by hand.**

Trails and Overlooks The southern portion of the site will preserve an existing trail during Phase 1. A new trail will be constructed through the restored upland habitat on the former landfill site on the South LCWA site in Phase 2. The trail would connect Gum Grove Park to the existing San Gabriel River Trail, fishing area, and trails on the Isthmus area. Initially, this trail would be restricted to docent-led tours until habitat areas are established and a management plan is approved. A viewpoint would be constructed overlooking the marsh.
A new restricted trail will be constructed along the top of the new perimeter berm, connecting 1st Street in the west and Heron Point Cultural Trail in the east. A viewpoint would be constructed along the new berm. This trail will be restricted to docent-led tours and maintenance access.

Responses (con't)

Comment E-4: How can removing plants, invasive or not, not affect wildlife? These plants are used by birds, insects, mammals and reptiles for food and shelter.

Response E-4: The Commenter asks how can removing invasive plants not affect wildlife and states that these plants are used by a variety of wildlife for food and shelter. This IS/MND analyzed the project's potential impacts on sensitive species and natural communities. It is clearly stated that the goals and objectives of this habitat restoration project to improve the ecological conditions in order to better support existing sensitive plants and animals and attract those that have been extirpated from the site. This will be achieved by restoring biodiverse native plant communities that support the functions necessary for these species' populations to become established. No changes to the IS/MND are warranted in response to this comment.

Comment E-5: How is this to be accomplished?

Response E-5: The Commenter is asking how the control of invasive non-native plant species will be accomplished. Further details for these methods are provided in the Los Cerritos Wetlands Habitat Restoration Plan (Coastal Restoration Consultants, May 2021). No changes to the IS/MND are warranted in response to this comment.

Comment E-6: This item has been discontinued by the manufacturer. It is very possible that Habitat has the same adverse effects on human health and the environment as glyphosate-based Rodeo and Roundup. Please remove herbicide use from this plan. Use volunteers or the CA Conservation Corps to remove non-natives by hand.

Response E-6: The Commenter states that they are opposed to the use of herbicide in the wetlands and that Rodeo has been discontinued. The Commenter requests that the use of herbicide be removed and that volunteers should be used instead. The LCWA intends to adhere to all policies, procedures, and permits as it pertains to the proper methodology

Responses (con't)

for controlling non-native invasive plant populations. Due to the intensity of noxious weed infestations at this Project site, the LCWA will keep all potential options available to overcome these widely established infestations that currently impact native habitat. No changes to the IS/MND are warranted in response to this comment.

Comments

Los Cerritos Wetlands Task Force, Angeles Chapter, Sierra Club – page 3/7

E-7 **We can find no map of the trails. We ask that this be provided in the Final Plan. We urge that trials should be kept to the perimeter of the wetlands. We are opposed to berms and roads in the wetlands. We assume that the currant fences will remain. We agree that public access should be monitored to prevent dogs, bikes and off-trail behavior.**

A biological resources report was prepared to analyze biological resources within the project site, including project-level focused biological surveys as required by the PEIR (Tidal Influence, 2021a; Appendix D). Surveys were performed for special status flora and fauna, nesting birds and raptors, Belding's savannah sparrow, burrowing owl, bats, and sensitive plant communities. Furthermore, a jurisdictional wetlands delineation was performed to identify areas under the jurisdiction of several regulatory agencies (Tidal Influence, 2021b; Appendix E). The surveys found a total of three special status plant species [California boxthorn (Lycium californicum), Lewis' evening primrose (Camissoniopsis lewisii), and southern tarplant (Centromadia parryi ssp. Australis)]. Two individual California boxthorns were found on site by focused surveys and will be replaced at a 7:1 ratio. Two main occurrences of Lewis' evening primrose totaling 3.76 acres were also found on site. The project has been designed to entirely avoid one of these occurrences and to minimize impacts on the second occurrence. However, any impacted individual Lewis' evening primrose plants will be replaced at a 3:1 ratio. Likewise numerous occurrences of southern tarplant totaling 1.06 acres were found on site and any impacted southern tarplant individuals will be replaced at a 3:1 ratio. Seven special Draft Initial Study / Mitigated Negative Declaration Southern Los Cerritos Wetlands Restoration Project 49 April 2023 status animal (all avian) species [American peregrine falcon (Falco peregrinus anatum), Belding's Savannah Sparrow (Passerculus sandwichensis beldingi), California brown pelican (Pelecanus occidentalis californicus), loggerhead shrike (Lanius ludovicianus), California least tern (Sternula antillarum browni), osprey (Pandion haliaetus), and yellow-breasted chat (Icteria virens)] were present at the project site. Of note, 25 breeding pairs of Belding's savannah sparrow (BSS) were documented. Five years of survey data was used to identify core Belding's savannah sparrow breeding habitat and overall habitat extent. This project will not permanently impact this species' habitat and instead will increase it from 21.10 acres to approximately 55.54 acres. Table 8 and Table 9 identify the plant and faunal species, respectively, identified in the PEIR as having a moderate-high potential for occurrence or present within the Project Area.

E-8 **SCLCWTF urges that all birds, mammals, insects and plants be treated as a precious commodity, regardless of whether it is a species of special concern. As is stated, this project will not permanently impact the Belding Savannah Sparrow breeding habitat, but we are also concerned about the temporary impacts on not only their breeding habitat, but their foraging and resident habitat. We can find no mention of Pickle Weed in this plan. Beldings need lots of Pickle Weed for nesting, shelter and even food. With already recovering population in the present habitat, we are concerned that grading, plant removal and herbicide use in areas near present breeding habitat will disrupt the birds and can cause them to leave.**

E-9 **It is stated that there is a possibility of the Western Beech Tiger Beetle occurring on the unvegetated flats found throughout the Project Area. It is concerning that the plan is to flood the salt pannes currently in place.**

Responses (con't)

Comment E-7: We can find no map of the trails. We ask that this be provided in the Final Plan. We urge that trials should be kept to the perimeter of the wetlands. We are opposed to berms and roads in the wetlands. We assume that the currant [sic] fences will remain. We agree that public access should be monitored to prevent dogs, bikes and off-trail behavior.

Response E-7: The Commenter states that they could not find any maps of the Project's proposed trails and they request that a map be provided in the "Final Plan". The Commenter further starts that they 1) are opposed to berms and roads in the wetlands, 2) assume current fences will remain, and 3) agree that public access should be monitored to prevent dogs, bikes and off trail activities. The IS/MND identifies the trail preservation and construction through the various phases of the Project site. The alignment of the proposed trail system is shown in the Project's 65% design drawings that are included in the IS/MND appendices. An additional map graphic has been included in the body of the Final IS/MND to indicate the locations of all the Project's potential trails. The comments about opposition to berms and roads, assumptions about fences, and agreement regarding non-beneficial uses are noted for the record. No changes to the IS/MND are warranted in response to this comment.

Comment E-8: SCLCWTF urges that all birds, mammals, insects and plants be treated as a precious commodity, regardless of whether it is a species of special concern. As is stated, this project will not permanently impact the Belding Savannah Sparrow breeding habitat, but we are also concerned about the temporary impacts on not only their breeding habitat, but their foraging and resident habitat. We can find no mention of Pickle Weed in this plan. Beldings [sic] need lots of Pickle Weed for nesting, shelter and even food. With already recovering population in the present habitat, we are concerned that grading, plant removal and herbicide use in areas near present breeding habitat will disrupt the birds and can cause them to leave.

Responses (con't)

Response E-8: The Commenter expresses their belief that all wildlife is a resource that should be protected regardless of its status as a species of special concern. The Commenter further expresses concern for the potential impacts from the Project to Belding's savannah sparrow breeding, foraging, and resident habitat. Specifically, the Commenter is concerned with impact to pickleweed and how grading and herbicide use will disrupt the birds. The IS/MND includes 11 Mitigation Measures for Biological Resources that contribute to assuring the Project's impacts to biological resources will be reduced to less than significant. These mitigation measures are focused on sensitive species and habitats based on the requirements of CEQA, however, their implementation will also avoid and minimize impacts to all existing native habitat. Mitigation Measure BIO-2 requires a qualified biologist shall prepare a Worker Environmental Awareness Program (WEAP) that provides a description of potentially occurring special-status species and methods for avoiding inadvertent impacts. BIO-2 also requires that initial grading and vegetation removal activities shall be supervised by a qualified monitoring biologist, who will be present during all construction activities. Additionally, BIO-9 requires that the project to revegetate sensitive natural communities that may be impacted by the project. Finally, BIO-11 requires the project to prepare a Monitoring and Adaptive Management Plan (MAMP) that includes provisions for conducting a pre-construction survey to collect baseline data for existing wetland function and that those functions be monitored during and after construction. Lastly, BIO-3 requires that a Mitigation, Maintenance and Monitoring Program shall be prepared and approved by CDFW prior to implementation. The proposed program shall be implemented by a qualified restoration ecologist, and at a minimum, shall include success criteria and performance standards for measuring the establishment of Belding's savannah sparrow breeding habitat, responsible parties, maintenance techniques and schedule, 5-year monitoring and reporting schedule, adaptive management strategies, and contingencies. No changes to the IS/MND are warranted in response to this comment.

Responses (con't)

Comment E-9: It is stated that there is a possibility of the Western Beech Tiger Beetle occurring on the unvegetated flats found throughout the Project Area. It is concerning that the plan is to flood the salt pannes currently in place.

Response E-9: The Commenter states concern for the Project to flood the salt pannes as it may impact the potentially occurring Western Beach Tiger Beetle. Numerous surveys over the past 12 years have not documented the presence of any tiger beetle species within the project area. Tiger beetles are not known to inhabit degraded or disturbed habitat like what currently exists within the Project area. While numerous tiger beetle species have potential to occur, they will not become established until the intertidal habitat is properly restored. It should be clarified that many of the species of tiger beetles with potential to occur in the region (namely mudflat tiger beetle, salt marsh tiger beetle, and western tidal-flat tiger beetle) are intertidal species that exist only in functioning tidal habitats. Creating the proposed intertidal salt panne habitat will create potential tiger beetle habitat. No changes to the IS/MND are warranted in response to this comment.

Comments

Los Cerritos Wetlands Task Force, Angeles Chapter, Sierra Club – page 4/7

E-10 **The EIR also states that Monarch Butterflies have a moderate potential to occur due to presence of non-native Eucalyptus trees within and adjacent to the Project Area. It is well-known that Monarchs winter in Eucalyptus trees, yet it is stated in the plan the these non-natives will be removed during the 'restoration'. If a non-native is being used by any animal, it should remain.**

a) Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service? Less than Significant Impact with Mitigation. Three special status plant species and seven special status fauna species were found to be present on the project site. The Belding's Savannah Sparrow is the only species that uses the project area for breeding, the other species use the site for foraging only.

E-11 **Without foraging habitat, all species will disappear.**

b) n Significant Impact with Mitigation. While it is possible that there will be a substantial but temporary adverse impact on a sensitive natural community during construction, multiple mitigation measures are already in place from the PEIR that would bring these effects down to a less than significant level (LCWA, 2021).

E-12 **We disagrees with the statement that mitigation measures already in place will not impact these birds. Where is the proof that noise, many workers, and loss of habitat will be mitigated for all wetland species.**

e) Would the Project conflict with any local policies or ordinance protecting biological resources, such as a tree preservation policy or ordinance? No Impact. The project will not conflict with any local policies or ordinances protecting biological resources, and specifically there are no impacts to any city-protected trees on the project site. Any trees needing to be trimmed or removed, will require permits from the City of Seal Beach Public Works Department.
Approximately 78 non-native trees will be removed: sixty-five (65) Mexican Fan Palm (10-15 inch diameter breast height (dbh)), three (3) Shamal Ash (3, 8 and 16 in. dbh), three (3) Blue Gum (4, 30 and 40 in. dbh), three (3) Brazilian Pepper (4,4, and 14 in. dbh), one (1) Italian Stone Pine (34 in. dbh), one (1) Chinese Elm (14 in. dbh), one (1) 1 Red River Gum (15 in. dbh), and one (1) Italian Cypress (16 in. dbh)

E-13 **Non-native trees provide nesting, roosting and hunting sites for many birds and bats, and shelter for insects, especially Monarch Butterflies. We find no plan to replant the removed trees. Please list the number and species of replacement trees. We URGE that no tree be removed until a native replacement tree is large enough to provide needed habitat.**

Mitigation Measure BIO-1: Avoidance of Special-Status Plants.
). If special-status plants cannot be avoided, they shall be incorporated into the proposed program's restoration design at a minimum ratio of 1:1 (one plant planted for every one plant removed, or 1 square foot of absolute cover planted for every 1 square foot of absolute cover removed). For special-status plant species with small population numbers (less than 50 individuals), higher mitigation ratios up to 7:1 will be incorporated, where on-site seed sources are available.

Responses (con't)

Comment E-10: The EIR also states that Monarch Butterflies have a moderate potential to occur due to presence of non-native Eucalyptus trees within and adjacent to the Project Area. It is well-known that Monarchs winter in Eucalyptus trees, yet it is stated in the plan the these [sic] non-natives will be removed during the 'restoration'. If a non-native is being used by any animal, it should remain.

Response E-10: The Commenter states the Program EIR indicates that Monarch Butterflies have a moderate potential to occur and that it is well known for Monarchs to winter in Eucalyptus trees. The Commenter further states that a non-native used by any animal should be protected. The Monarch Butterfly has not been observed roosting within the project area. Two mature Eucalyptus trees exist within the project area. They will be monitored for use by Monarchs in advance of their potential removal as would be the case for any special status species with potential to use these trees. No changes to the IS/MND are warranted in response to this comment.

Comment E-11: Without foraging habitat, all species will disappear.

Response E-11: The Commenter states that without foraging habitat all species will disappear. No changes to the IS/MND are warranted in response to this comment.

Comment E-12: We disagrees [sic] with the statement that mitigation measures already in place will not impact these birds. Where is the proof that noise, many workers, and loss of habitat will be mitigated for all wetland species.

Response E-12: The Commenter states disagreement that with the implementation of the Project's mitigation measures will reduce impacts to "these birds" and asks for proof that noise, worker activity and loss of habitat will be mitigated for all wetlands species. This comment has been

Responses (con't)

noted for the record, however the 11 mitigation measures for biological resources will effectively avoid and minimize this Project's impacts to this resource. No changes to the IS/MND are warranted in response to this comment.

Comment E-13: Non-native trees provide nesting, roosting and hunting sites for many birds and bats, and shelter for insects, especially Monarch Butterflies. We find no plan to replant the removed trees. Please list the number and species of replacement trees. We URGE that no tree be removed until a native replacement tree is large enough to provide needed habitat.

Response E-13: The Commenter states the ecological value of non-native trees and requests that the number and species of replacement trees be provided. The Commenter further urges that no tree be removed until a native replacement tree is larger enough to provide needed habitat. CEQA does not require the protection of non-native trees unless they are providing habitat for special status species. Since the non-native trees within the Project site have not been documented to provide habitat for special status species they are proposed to be removed without mitigation or replacement. Mitigation Measures BIO-4 and BIO-7 will require surveys of trees for use by nesting birds, raptors and bats. If pre-construction surveys document use of trees for these purposes, then the detailed procedures of those respective Mitigation Measures will be adhered to in order to protect those resources. No changes to the IS/MND are warranted in response to this comment.

Comments

Los Cerritos Wetlands Task Force, Angeles Chapter, Sierra Club – page 5/7

E-14 **Special Species plants should not be replaced 1:1, but by the CA Coastal Commission standard of 3:1.**

Mitigation Measure BIO-3: Belding's Savannah Sparrow Breeding Habitat. Prior to LCWA's approval of project plans or publication of subsequent CEQA documents, a qualified biologist shall map suitable Belding's savannah sparrow habitat as the location and amount of suitable habitat is anticipated to change over time. The results of habitat mapping will be incorporated into restoration design plans. E-15 ***Project activities shall be limited to July 16 through February 14*** *within suitable costal marsh habitat to avoid impacts to breeding Draft Initial Study / Mitigated Negative Declaration Southern Los Cerritos Wetlands Restoration Project 57 April 2023 Belding's savannah sparrow. Suitable Belding's savannah sparrow breeding habitat that will be impacted by the proposed program shall be created within the program area at a minimum ratio of 1:1 (area created:area impacted). Restored breeding habitat shall consist of a minimum 60 percent absolute cover of salt marsh vegetation, and shall consist of a hydrologic regime similar to that currently present in the North Area or South Area, respectively. Other unique conditions within coastal salt marsh communities shall exist as well, such as, similar slope, aspect, elevation, soil, and salinity. A Mitigation, Maintenance and Monitoring Program shall be prepared and approved by CDFW prior to implementation. The proposed program shall be implemented by a qualified restoration ecologist, and at a minimum, shall include success criteria and performance standards for measuring the establishment of Belding's savannah sparrow breeding habitat, responsible parties, maintenance techniques and schedule, 5-year monitoring and reporting schedule, adaptive management strategies, and contingencies. Moreover, in accordance the CESA, an Incidental Take Permit (or other mitigation options identified in accordance with Fish & Game Code, §§ 2080.1, 2081, subds. (b) and (c)) shall be obtained from CDFW if any Belding's savannah sparrow may be impacted during construction or operations of the program. The amount of potential take shall be determined prior to design approval of each restoration area based on consultation with CDFW. Lastly, take authorization shall be obtained prior to commencement of any ground disturbing activities. Mitigation Measure BIO-4: Nesting Bird and Raptor Avoidance. A qualified biologist shall identify areas where nesting habitat for birds and raptors is present prior to LCWA's approval of project plans or publication of subsequent CEQA documents. To ensure the avoidance of impacts to nesting avian species, the following measures shall be implemented: •* E-16 ***Construction and maintenance activities shall be limited to the non-breeding season (September 1 through December 31)*** *to the extent feasible. If construction or maintenance activities will occur during the avian nesting season (January 1 through August 31), a qualified biologist shall conduct preconstruction nesting avian surveys within no more than 5 days prior to the initiation of construction activities to identify any active nests. If a lapse in work of 5 days or longer occurs, another survey shall be conducted to verify if any new nests have been constructed prior to work being reinitiated. • If active nests are observed, an avoidance buffer shall be demarcated by a qualified biologist with exclusion fencing and shall be maintained until the biologist determines that the young have fledged and the nest is no longer active.*

E-17 **There should be no construction activity during the breeding season for all wetland birds, not just the Beldings Savannah Sparrow, which would be January 1 through August 31. Even with the mitigation supposedly protecting the Beldings during their breeding season, the LCWA asked for and received permission to drill 18 boring holes in June, 2022, right in**

Responses (con't)

Comment E-14: Special Species plants should not be replaced 1:1, but by the CA Coastal Commission standard of 3:1.

Response E-14: The Commenter states that special status plant should be replaced at a 3:1 ratio instead of the proposed 1:1 ratio. Mitigation Measure BIO-1 clearly addresses this concern as it states that the 1:1 ratio is the minimum and specifies that for special-status plant species with small population numbers (less than 50 individuals), higher mitigation ratios up to 7:1 will be incorporated, where on-site seed sources are available. Higher mitigation ratios of up to 3:1 will be incorporated where suitable habitat area can support populations of large individual numbers. No changes to the IS/MND are warranted in response to this comment.

Comment E-15: Project activities shall be limited to July 16 through February 14

Response E-15: The Commenter emphasizes in bold text the IS/MND language that states "Project activities will be limited to July 16 through February 14". No comment to be addressed, and no changes to the IS/MND are warranted in response to this comment.

Comment E-16: Construction and maintenance activities shall be limited to the non-breeding season (September 1 through December 31)

Response E-16: The Commenter emphasizes in bold text the IS/MND language that states "Construction and maintenance activities shall be limited to non-breeding season (September 1 through December 31". No comment to be addressed, and no changes to the IS/MND are warranted in response to this comment.

Comment E-17: There should be no construction activity during the breeding season for all wetland birds, not just the Beldings [sic] Savannah Sparrow,

Responses (con't)

which would be January 1 through August 31. Even with the mitigation supposedly protecting the Beldings [sic] during their breeding season, the LCWA asked for and received permission to drill 18 boring holes in June, 2022, right in the middle of the nesting season. What good are these Mitigations if permits can be obtained that ignore them?

Response E-17: The Commenter states that no construction activity should take place during breeding season for all wetland birds and suggests a timeframe of January 1 through August 31. The Commenter expresses concern for permitted activities happening during nesting season. No changes to the IS/MND are warranted in response to this comment.

Comments

Los Cerritos Wetlands Task Force, Angeles Chapter, Sierra Club – page 6/7

E-17 **the middle of the nesting season. What good are these Mitigations if permits can be obtained that ignore them?**

Mitigation Measure BIO-6: Minimization of Light Spillage. A Program Lighting Plan shall be designed to minimize light trespass and glare into adjacent habitat areas prior to the commencement of activities within the program area. Nighttime lighting associated with the visitor center, parking lot, and trails shall be shielded downward and/or directed away from habitat areas to minimize impacts to nocturnal species, including breeding birds.

E-18 **There is no need for lighting in the wetlands, especially as there is now to be no visitor center. If docent-led night walks are offered, flashlights can be used.**

Mitigation Measure BIO-7: Pre-Construction Bat Surveys. A qualified biologist shall conduct a preconstruction bat survey of each restoration area prior to final approval of the area's restoration plan. If suitable bat roosting habitat is determined to be present, a presence/absence survey shall be conducted prior to Draft Initial Study / Mitigated Negative Declaration Southern Los Cerritos Wetlands Restoration Project 58 April 2023 commencement of construction activities. A qualified biologist shall conduct the preconstruction clearance survey of suitable bat roosting habitat, such as mature palm trees. If bats are determined to be roosting, the biologist will determine whether it is a day roost (non-breeding) or maternity roost (lactating females and dependent young). If a day roost is determined, the biologist shall ensure that direct mortality to roosting individuals will not occur by requiring that trees with roosts are not directly impacted (e.g., removed) until after the roosting period.

E-19 **Bats roost in trees. This is another reason not to remove trees until replacement trees are grown.**

NOISE

a) *Would the Project result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? Less than Significant Impact with Mitigation. Construction noise is temporary and will not exceed the Noise Ordinance for Seal Beach. There are, however, noise reduction measures that can be utilized when close to sensitive receptors, such as neighborhoods within half a mile from the project site. Typical construction equipment noise levels are shown in Table 10. During operation, noise is negligible. Table 10:Construction Equipment Noise Levels Construction Equipment Type Noise Levels (dBa) at 50 feet Backhoes 73-92 Compactors 73-76 Compressors 75-86 Concrete Mixers 72-87 Concrete Pumps 81-83 Front Loaders 73-84 Generators 71-83 Pavers 85-87 Saws 71-82 Scrapers, Graders 78-92 Tractors 75-95 Trucks 81-94 Vibrators 68-82 Source: U.S. Department of Transportation (20*

E-20 **The construction noise may not exceed the Noise Ordinance for Seal Beach, but it can and will disturb wildlife and especially nesting birds. Any possible noise reduction measures should be used at all times, not just within a half mile from neighborhoods.**

3.21 Mandatory Findings of Significance

a) *Does the Project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife*

Responses (con't)

Comment E-18: There is no need for lighting in the wetlands, especially as there is now to be no visitor center. If docent-led night walks are offered, flashlights can be used.

Response E-18: The Commenter states that no lighting should be needed in the wetlands. It should be noted that this Mitigation Measure has been adopted from the Program EIR which included a variety of potential features throughout the Program Area that could necessitate minimization of light spillage. No changes to the IS/MND are warranted in response to this comment.

Comment E-19: Bats roost in trees. This is another reason not to remove trees until replacement trees are grown.

Response E-19: The Commenter states that bats roost in trees and asserts that this is another reason to not remove trees. Bats have not been documented roosting within the Project site. Mitigation Measures BIO-4 and BIO-7 will require surveys of trees for use by nesting birds, raptors and bats. If pre-construction surveys document use of trees for these purposes, then the detailed procedures of those respective Mitigation Measures will be adhered to in order to protect those resources. No changes to the IS/MND are warranted in response to this comment.

Comment E-20: The construction noise may not exceed the Noise Ordinance for Seal Beach, but it can and will disturb wildlife and especially nesting birds. Any possible noise reduction measures should be used at all times, not just within a half mile from neighborhoods.

Response E-20: The Commenter states that even if noise does not exceed municipal requirements that can disturb wildlife and nesting birds. The Commenter requests that noise reduction measures should be used at all times. No changes to the IS/MND are warranted in response to this comment.

Comments

Los Cerritos Wetlands Task Force, Angeles Chapter, Sierra Club – page 7/7

population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? Less than Significant Impact. The project is to restore currently degraded wetlands, which will increase habitat and communities, help increase various fish and wildlife populations, and should not eliminate important examples 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)? Less Than Significant Impact with Mitigation. The project will restore the Los Cerritos Wetlands and will have beneficial impacts to the flora and fauna. ***No adverse cumulative impacts are anticipated regarding past, current, or future projects.***

E-21 **Restoring wetlands is a very difficult task. Many attempts have failed. Currently, there is life in the Los Cerritos Wetlands, in spite of the degradation by oil production and years of trash and toxic dumping. Methods of addressing sea level rise are changing rapidly. Is creating a larger tidal entrance into the wetlands really a good solution? We urge the LCWA to postpone any destruction of current wetlands habitat until all the oil production is removed and a scientific study of the effects os sea level rise is done.**

Ann Cantrell, co-chair

Responses (con't)

Comment E-21: Restoring wetlands is a very difficult task. Many attempts have failed. Currently, there is life in the Los Cerritos Wetlands, in spite of the degradation by oil production and years of trash and toxic dumping. Methods of addressing sea level rise are changing rapidly. Is creating a larger tidal entrance into the wetlands really a good solution? We urge the LCWA to postpone any destruction of current wetlands habitat until all the oil production is removed and a scientific study of the effects os [sic] sea level rise is done.

Response E-21: The Commenter expresses an opinion that wetlands restoration is challenging and is not always successful. The Commenter urges that the LCWA postpone the Project until oil production is removed and a scientific study on the effects of sea level rise is completed. The LCWA acknowledges the challenges of overcoming decades of habitat destruction and degradation. The IS/MND includes a Hydraulic and Hydrology Modeling Report in Appendix H that models sea level rise. Furthermore, the IS/MND adopts the results of similar modeling that was completed for the Program EIR. Additionally, no active oil production exists within the Project site so there is no need to postpone the project. No changes to the IS/MND are warranted in response to this comment.

Comments

Anna Christensen, Co-chair, LAWTF (Sierra Club) – page 1/7

To LCWA
RE Mitigated Negative Declaration Southern Los Cerritos Wetlands Restoration Project
From Anna Christensen, Co-chair, LCWTF (Sierra Club)

NOTE: Text of LCWTF comments in RED and in regular text

Text of MND and other LCWA documents in BLACK and in Italics

F-1 **The Los Cerritos Wetlands Task Force has commented multiple times in writing and has participated in all public hearings regarding the Los Cerritos Wetlands Restoration PEIR and the Southern Los Cerritos Wetlands Project. While there appears to be less ground disturbance, flooding, and construction, the negative impacts on these wetlands and on tribal culture remain unacceptable. We submit our prior statements along with additional comments sent in by Co-chairs and members. Deny this MLD.**

Mitigated Negative Declaration Southern Los Cerritos Wetlands Restoration Project

This IS/MND has determined that the proposed Project would not result in any additional potentially significant environmental impacts that were not identified in the PEIR. While no new mitigation measures are proposed in this document, those that are provided in the PEIR Mitigation Monitoring and Reporting Program (MMRP) will be adhered to and will reduce any potentially significant impact to less than significant levels. As such, an IS/MND is deemed as the appropriate document to provide the necessary environmental evaluations and clearance.
According to Section 15070(a) of the CEQA Guidelines, a MND is deemed appropriate if the IS shows that there is no substantial evidence, in light of the whole record before the Lead Agency, that the project may have a significant effect on the environment.

2.5 Project Location

F-2 **Does not reference site/project area as Traditional Tribal Cultural Landscape, or as part of the Sacred Site of Puvungna (as registered with the NAHC).**

2.8 Project Background

F-3 **Does not include history of site/project area before late 1800's. No reference to tribal occupation or use of LC Wetlands/project area, past or present. Does not refer to seasonal, historic alterations of site due to river flows and rainfall.**

Until the late 1800s, the wetlands within and beyond the Program Area, collectively known as the Los Cerritos Wetlands Complex, spanned approximately 2,400 acres, and consisted of a network of tidal channels, vegetated wetlands, and upland areas. Historically, the Los Cerritos Wetlands Complex was almost entirely tidal wetland, with a few natural streams and intertidal flat channels….Beginning in the late 1800s, the Los Cerritos Wetlands Complex began to undergo significant alterations due to cattle and beet farming, the demands of a growing population, and oil extraction.

2.8.1 Conceptual Restoration Plan, Program Environmental Impact Report and Habitat Restoration Plan

F-4 **Section should include the Los Cerritos Wetlands Restoration and Oil Consolidation Project as it is a joint project with the LCWA and is now part of the PEIR.**

Responses

Comment F-1: The Los Cerritos Wetlands Task Force has commented multiple times in writing and has participated in all public hearings regarding the Los Cerritos Wetlands Restoration PEIR and the Southern Los Cerritos Wetlands Project. While there appears to be less ground disturbance, flooding, and construction, the negative impacts on these wetlands and on tribal culture remain unacceptable. We submit our prior statements along with additional comments sent in by Co-chairs and members. Deny this MLD [sic].

Response F-1: The Commenter states that the Los Cerritos Wetlands Task Force has participated in writing and at all public hearings regarding the PEIR and this proposed Project. The Commenter raises concern that the negative impacts on the wetlands and tribal cultural remain unacceptable, and that the IS/MND should be denied. The comment is noted, and no changes to the IS/MND are warranted in response to this comment.

Comment F-2: Does not reference site/project area as Traditional Tribal Cultural Landscape, or as part of the Sacred Site of Puvungna (as registered with the NAHC).

Response F-2: The Commenter states that the Site/Project area is not referenced as Traditional Tribal Cultural Landscape. By policy, the NAHC does not comment on information provided to it by Tribes to other entities beyond presence/absence of registered resources. In this case the Gabrieleno/Tongva Band of Mission Indians provided a letter from NAHC to the Tribe that included the boundaries of Puvunga as registered in the NAHC's Sacred Lands file. These boundaries do not currently extend into the Project site. The cultural resources assessment report includes a Traditional Cultural Landscape study which recommends the Puvungna Traditional Cultural Landscape as eligible for listing on the California Register of Historical Places. The Puvungna Traditional Cultural Landscape's boundaries includes all lands with a five-mile radius around the Los Cerritos Wetland Complex and includes the villages of Puvungna and Motuuchevgna. No changes to the IS/MND are warranted in response to this comment.

Responses (con't)

Comment F-3: Does not include history of site/project area before late 1800's. No reference to tribal occupation or use of LC Wetlands/project area, past or present. Does not refer to seasonal, historic alterations of site due to river flows and rainfall.

Response F-3: The Commenter states that there is not a history of the site/project area prior to the late 1800's, or a reference to the tribal occupation or use of the Wetlands. Discussion of the Pre-1800s occupation of the Project Area and surrounding vicinity is located on page 20 of the "Ethnography" section and within the Traditional Cultural Landscape study in the cultural resources assessment report (Appendix F). The excavation of drainage ditches is discussed in the Hellman Ranch section on Page 28, and that two retention ponds were created between 1928 and 1938 is discussed in the Project Area History section on Page 29 of the same report (Appendix F). No changes to the IS/MND are warranted in response to this comment.

Comment F-4: Section should include the Los Cerritos Wetlands Restoration and Oil Consolidation Project as it is a joint project with the LCWA and is now part of the PEIR.

Response F-4: The Commenter states that the Los Cerritos Wetlands Restoration and Oil Consolidation Project (LCWROCP) should be included in the IS/MND's analysis since it is part of the Program EIR. The PEIR was incorporated by reference in this IS/MND. Furthermore, the LCWROCP is located outside of this Project's proposed boundary and therefore is not analyzed. No changes to the IS/MND are warranted in response to this comment.

Comments

Anna Christensen, Co-chair, LAWTF (Sierra Club) – page 2/7

2.9 Los Cerritos Wetlands Restoration Plan Goals and Objectives (5)

F-5 **Plan/Project has No goals referencing tribal cultural preservation or referencing site/project area as Traditional Tribal Cultural Landscape**

Goal #3. Create a public access and interpretive program that is practical, protective of sensitive habitat and ongoing oil operations, economically feasible, and will ensure a memorable visitor experience.

F-6 **There should be no public access allowed within 3200 ft of active oil and/or gas wells as it will subject visitors to unhealthy and potentially deadly amounts of toxic emissions. (See CA SB 1137).**

2.10 Project Description

F-7 **Does not reference site/project area as Traditional Tribal Cultural Landscape, or as part of the Sacred Site of Puvungna (as registered with the NAHC). Does not include rationale for Project with respect to tribal peoples or tribal culture.**

The project would restore wetland, wetland-upland transition zone, and upland habitats throughout the project area. This would involve addressing any contaminated soil and groundwater, grading, revegetation, construction of new public access opportunities (including trails, a Stewardship Site, and viewpoints), construction of flood management facilities (including earthen berms), and modification of existing infrastructure and utilities (Figure 4).

2.8.2 Southern Los Cerritos Wetlands Restoration Project
Since the LCWA finds that no new significant effects or substantially more severe environmental effects would occur due to the implementation of the SLCWRP, pursuant to CEQA Guidelines Section 15162, the LCWA finds it appropriate to document this finding by preparing a Mitigated Negative Declaration (Appendix A). PEIR certified in 2021

F-8
F-9
F-10
New info since 2021: 1. Climate change - greater intensity and faster sea level rise, 2. harm from oil and gas operations to those living near extraction sites, 3. tribal co-management of CA public lands and/or return of CA public lands to tribal control.

The Hellman Retained site is an active oil field with substantial oil operation infrastructure (pipelines, pumps, tanks, and roadways) located north of the project site. There are 43 active oil wells and 11 idle oil wells on site.

2.10.1 Phasing

Grading of site to support habitat restoration
The project proposes for approximately 27.71 acres of existing non-native upland and native shrubland to be graded down to intertidal salt marsh elevations
A total of 17.07 acres of new full tidal salt marsh habitat will be excavated in the Phase 2 area.
Fill material placed in the stockpile areas could eventually be used as material for thin layer sediment augmentation or for use in future projects that tier from this program.

Perimeter Berm

The earthen berm will be constructed with a top width of 6 feet and side slopes of 3:1 horizontal to vertical (H:V) down to the marsh and Hellman Retained site. 32' wide at bottom.

Responses (con't)

Comment F-5: Plan/Project has No goals referencing tribal cultural preservation or referencing site/project area as Traditional Tribal Cultural Landscape.

Response F-5: The Commenter states that the Plan/Project does not have goals referencing tribal cultural preservation. The cultural resources assessment report includes the Traditional Cultural Landscape study. Ongoing tribal consultation is included as the mechanism for protecting tribal cultural resources. No changes to the IS/MND are warranted in response to this comment.

Comment F-6: There should be no public access allowed within 3200 ft of active oil and/or gas wells as it will subject visitors to unhealthy and potentially deadly amounts of toxic emissions. (See CA SB 1137).

Response F-6: The Commenter states that there should not be public access allowed within 3,200-ft of active oil and/or gas wells. The project would not be accessible to any of the public under the distance limitation referred to in the comment because the 3,200-ft distance would put the safety zone outside of the project area and any access points or trails. The project will not be drilling new oil wells, so SB 1137 is not applicable. No changes to the IS/MND are warranted in response to this comment.

Comment F-7: Does not reference site/project area as Traditional Tribal Cultural Landscape, or as part of the Sacred Site of Puvungna (as registered with the NAHC). Does not include rationale for Project with respect to tribal peoples or tribal culture.

Response F-7: The Commenter states that there is not a reference to the site/project area as a Traditional Tribal Cultural Landscape. Much of this comment is previously addressed in Response F-2. Page 2 of the cultural resources assessment states that, "… the Los Cerritos Wetlands Complex is significant to the Gabrielino (Gabrieleño; Tongva; Kizh) and

Responses (con't)

Acjachemen (Juaneño) tribes. Tribal representatives described the Los Cerritos Wetlands and its surroundings as sacred lands that encompass a larger area of connected tribal sites. The Los Cerritos Wetlands are located in between the villages of *Puvungna* and *Motuucheyngna* and are thus considered by tribes to be part of a larger cultural landscape. This landscape will be identified as the *Puvungna* Traditional Cultural Landscape in this study."

The cultural resources assessment report includes a Traditional Cultural Landscape study which recommends the Puvungna Traditional Cultural Landscape as eligible for listing on the California Register of Historical Places. The Puvungna Traditional Cultural Landscape's boundaries includes all lands within a five-mile radius around the Los Cerritos Wetland Complex and includes the villages of Puvungna and Motuuchevgna.

Project Proponents are committed to continued government to government tribal consultation for future management of the Project site. No changes to the IS/MND are warranted in response to this comment.

Comment F-8: New info since 2021: 1. Climate change - greater intensity and faster sea level rise

Response F-8: The Commenter states that there has been new information since 2021 regarding Climate Change. The State of California will release revised sea level rise guidance in the near future but that information is not available yet. The most recent guidance that the project considers is from 2018. The comment refers to "faster sea level rise" which is not necessarily reflected in recent new federal guidance from NOAA, nor is anticipated in new State guidance. This factor will not result in a new significant effect or substantially more severe environmental effects to occur due to implementation of the SLCWRP. No changes to the IS/MND are warranted in response to this comment.

Responses (con't)

Comment F-9: [New info since 2021:] 2. harm from oil and gas operations to those living near extraction sites.

Response F-9: The Commenter states that there would be harm from oil and gas operations to those living near extraction sites. This project does not include any new oil and/or gas operations. Therefore, implementation of this project will not result in a new significant effect or substantially more severe environmental effects. The comment has been noted for the record, and no changes to the IS/MND are warranted in response to this comment.

Comment F-10: [New info since 2021:] 3. tribal co-management of CA public lands and/or return of CA public lands to tribal control.

Response F-10: The Commenter states that the tribal co-management of California public lands should be returned to tribal control. This comment was previously addressed in Response A-5. The comment has been noted for the record, and no changes to the IS/MND are warranted in response to this comment.

Comments

Anna Christensen, Co-chair, LAWTF (Sierra Club) – page 3/7

The berm will be constructed by over- excavating the soils under the berm footprint and backfilling the excavated area.

F-11 **This Berm should not be built on existing or potential wetlands within the Southern Los Cerritos Wetlands. Hellman may choose to construct a berm on its property. If there is a possibility of pollution entering the Los Cerritos Wetlands from Helman's oil and gas operations they should be required to do so. The project should not introduce additional flooding onto the project site to the extent that Hellman could claim damage to its existing property in the future.**

Raised Road

An additional berm would be constructed to raise the existing 1st Street. Raising 1st Street will keep flood waters contained within the marsh plain and adjacent habitat areas and will maintain the existing access easement for the Hellman Retained site. The road berm would be constructed with a top width of 30 feet and side slopes of 3:1 H:V down to the marsh on either side.

F-12 **Road should not be raised; it should be removed. Hellman does not need access through the Los Cerritos Wetlands to maintain its operations and this road should not continue to be used for this purpose. The road should not be raised as doing so will reduce the amount of existing and/or potential wetlands acreage. A raised road is a more significant barrier to wildlife.**

Berm Maintenance

The two perimeter berms would require limited maintenance, such as inspections annually and after significant storm events (i.e., 10-year event or greater) and earthquakes. The berms would also require periodic re-surfacing of the access road and trail with decomposed granite, replacement or repair of installed fencing, replacement or repair of any overlook or educational equipment placed along the walking trail, trash collection and graffiti removal, and any other vandalism repair.

F-13 **Maintaining private roads should not be the responsibility of the LCWA and should not be included in or funded by wetlands restoration projects.**

Trails and Overlooks

F-14 **These trails should not be built.**

A new trail will be constructed through the restored upland habitat on the former landfill site on the South LCWA site in Phase 2. The trail would connect Gum Grove Park to the existing San Gabriel River Trail…

Phase 1 will create a trail connection from the San Gabriel River in the west through the State Lands Parcel and South LCWA site ending just short of Avalon Drive near Gum Grove Park.

F-15 **These trails will have a negative impact on birds and wildlife. The Southern Los Cerritos Wetlands is currently functioning as a wildlife/bird refuge and should remain so.**

A new restricted trail will be constructed along the top of the new perimeter berm, connecting 1st Street in the west and Heron Point Cultural Trail in the east. A viewpoint would be constructed along the new berm.

F-16 **This trail would be within 3200 ft of active oil and gas wells and will expose the public to toxic emissions.**

2.10.3 Implementation and Restoration Process

Responses (con't)

Comment F-11: This Berm should not be built on existing or potential wetlands within the Southern Los Cerritos Wetlands. Hellman may choose to construct a berm on its property. If there is a possibility of pollution entering the Los Cerritos Wetlands from Helman's [sic] oil and gas operations they should be required to do so. The project should not introduce additional flooding onto the project site to the extent that Hellman could claim damage to its existing property in the future.

Response F-11: The Commenter states that the flood control berm should not be built on existing or potential wetlands and implies that the neighboring property owner should take responsibility for constructing the berm. This IS/MND focuses on impacts to the environment as a result of the project. Per CEQA Guideline 15126.4, a mitigation measure must be consistent with all applicable constitutional requirements and must be "roughly proportional" to the impacts of the project. As all impacts are caused by the Project, all mitigation must burden the Project, not an adjacent landowner. However, should a neighboring landowner have interest in building an element of the Project that is related to a mitigation measure, then the LCWA would enter into a special agreement with that party in order for the effort to move forward.

The Commenter further states that the project should not introduce additional flooding that could flood neighboring properties. Modeling indicates that even under current conditions that site has potential to flood neighboring properties. The overarching purpose of this project is to restore tidal wetlands; therefore, the Project is proposing to maximize the site's tidal prism and has analyzed the potential impacts associated with higher tides. It has been determined that an earthen berm can contain the flooding on the LCWA's property and that minimal jurisdictional wetlands will be impacted by the footprint of the new flood control facilities. These impacts are mitigated by the creation of new wetlands as part of the Project. No changes to the IS/MND are warranted in response to this comment.

Responses (con't)

Comment F-12: Road should not be raised; it should be removed. Hellman does not need access through the Los Cerritos Wetlands to maintain its operations and this road should not continue to be used for this purpose. The road should not be raised as doing so will reduce the amount of existing and/or potential wetlands acreage. A raised road is a more significant barrier to wildlife.

Response F-12: The Commenter states that the road running through the site should not be raised and instead should be removed as it reduces the amount of potentially restorable habitat, and its existence fragments the contiguous habitat. The LCWA supports the eventual removal of this road, however, there are three active easements over or parallel to this piece of infrastructure. Therefore, the road cannot be removed unless all easement holders relinquish their legal claim to their easement. No changes to the IS/MND are warranted in response to this comment.

Comment F-13: Maintaining private roads should not be the responsibility of the LCWA and should not be included in or funded by wetlands restoration projects.

Response F-13: The Commenter states that maintaining private roads should not be the responsibility of the LCWA and should not be included in the project. The portion of road on LCWA is owned by the LCWA and is not privately owned, however, as stated in Response F-12, several entities (both public and private) hold easements on or parallel to this roadway. Maintaining this roadway will have benefits for public access (especially ADA compliant access) and for the maintenance of the restoration project. No changes to the IS/MND are warranted in response to this comment.

Comment F-14*:* These trails should not be built.

Response F-14: The Commenter states that the trails should not be built. Responsibly improving public access to Los Cerritos Wetlands is a major goal

Responses (con't)

of this project. New trails will be built along the new flood control infrastructure while some existing trails will be improved and made more accessible to the public. The comment has been noted for the record, and no changes to the IS/MND are warranted in response to this comment.

Comment F-15: These trails will have a negative impact on birds and wildlife. The Southern Los Cerritos Wetlands is currently functioning as a wildlife/bird refuge and should remain so.

Response F-15: The Commenter states an opinion that the proposed trails will have a negative impact on birds and wildlife. Responsibly improving public access to Los Cerritos Wetlands is a major goal of the LCWA and its partner agencies. No changes to the IS/MND are warranted in response to this comment.

Comment F-16: This trail would be within 3200 ft of active oil and gas wells and will expose the public to toxic emissions.

Response F-16: The Commenter states that the trails would be within 3,200-ft of active oil and gas wells, exposing the public to toxic emissions. This comment referencing CA SB 1137 was previously addressed in Response F-6. No changes to the IS/MND are warranted in response to this comment.

Comments

Anna Christensen, Co-chair, LAWTF (Sierra Club) – page 4/7

Implementation would include clearing and grubbing, grading and soil transport across and off- site, soil remediation, berm and breaching, revegetation, irrigation, construction of flood risk and stormwater management facilities, access roads/trails, the Stewardship Site, and utility modifications.

Soil transport would be accomplished using scrapers and loaders, haul and dump trucks, track excavators and dozers, trucks, or other low ground pressure equipment, or by hydraulic dredge

Clearing and Grubbing

Vegetation would be biologically monitored, cleared, and grubbed prior to grading.

Non-native Plant Material Treatment

After grading, non-native plants would be removed prior to and concurrent with revegetation to ensure native habitat enhancement. The goal is to remove all invasive non-native plant species.

Herbicides would be used in accordance with manufacturers' application guidelines by a licensed applicator for specific species when manual and mechanical removal methods are not effective and may be used in conjunction with physical removal methods for species that are known to be difficult to control.

F-17 F-18 F-19 F-20

As previously stated , the Los Cerritos Wetlands Task Force opposes this project due to the degree to which existing habitat and tribal culture will be impacted by moving and removing massive amounts of soil and plant life. Excavating, grading and depositing of soils and construction materials Doing so will bury and/or unearth significant tribal cultural evidence on this Sacred Site and Tribal Traditional Cultural Property/Landscape. The use of heavy equipment is known to damage archaeological and paleontological resources. Clearing all vegetation prior to grading eliminates both foraging and sheltering areas and yet no alternative is proposed for species relying on these existing habitat areas, nor can there be given that the site is surrounded by development on all sides. Herbicides are not appropriate or necessary. No mention of traditional tribal ecological practices or of outreach to tribal ethnobotanists regarding alternatives to wholesale removal and poisoning of plants.

Tribal Cultural Resources

F-21

Damage to and erasure of Sacred Site of Puvungna, Tribal Traditional Property, Motuucheyngna

Evidence of tribal occupation cannot be accurately mapped without impacting tribal resources. The terms "mapped archaeological and tribal cultural deposit areas" and "known archaeological deposits and tribal resources" deny the likelihood that areas occupied by tribal people for thousands of years will hold evidence of their presence. This language also distorts the meaning of tribal culture. Tribal cultural and spiritual connections to place are not limited to observed physical evidence of prior habitation but are an ongoing relationship with ancestors, and present and future generations of living beings, including rocks, soils, and water. Previously disturbed soils are still sacred to tribes. Because any disturbance of soils and removal of vegetation within the Los Cerritos Wetlands will alter this relationship, it must be kept to a minimum. Plans and projects involving extensive grading, flooding, and depositing of soils erase tribal cultural evidence.

Location of Project Area and Los Cerritos Wetlands incorrect, description of archaeological sites incomplete

Native American archaeological sites are known to be located at California State University Long Beach, Rancho Los Alamitos Historic Ranch, and Heron Pointe

Responses (con't)

Comment F-17: As previously stated, the Los Cerritos Wetlands Task Force opposes this project due to the degree to which existing habitat and tribal culture will be impacted by moving and removing massive amounts of soil and plant life.

Response F-17: The Commenter states that the LCWTF (Los Cerritos Wetlands Task Force) opposes the project due to existing habitat and tribal culture impact. The project has been fully analyzed under CEQA and determined to not result in a new significant effect or substantially more severe environmental effect due to implementation of the SLCWRP from that identified in the PEIR. No changes to the IS/MND are warranted in response to this comment.

Comment F-18: Excavating, grading and depositing of soils and construction materials Doing so will bury and/or unearth significant tribal cultural evidence on this Sacred Site and Tribal Traditional Cultural Property/Landscape. The use of heavy equipment is known to damage archaeological and paleontological resources.

Response F-18: The Commenter states that excavating, grading, and depositing of soils and materials will bury and/or unearth significant tribal cultural evidence on Sacred land. Members the TAG and consulting Tribes have been generally supportive of the Project as it will restore native plant habitat that has been degraded by modern land use. The traditional cultural landscape study conducted for this project recognizes that the land many be significant separate from the traces of human occupation. Known resources have been identified for avoidance and archaeological/paleontological and Native American monitors will be on site during grading as they have been during previous site testing, geotechnical boring, and other work. Should resources that are culturally important to the Tribes or scientifically significant be unearthed, they will be avoided or otherwise handled in consultation with the Tribes and appropriate state agencies. No changes to the IS/MND are warranted in response to this comment.

Responses (con't)

Comment F-19: Clearing all vegetation prior to grading eliminates both foraging and sheltering areas and yet no alternative is proposed for species relying on these existing habitat areas, nor can there be given that the site is surrounded by development on all sides.

Response F-19: (GRADING HABITAT) The Commenter states concern for grading of existing habitat areas. The IS/MND includes 11 Mitigation Measures for Biological Resources that contribute to assuring the Project's impacts to biological resources will be reduced to less than significant. These mitigation measures are focused on sensitive species and habitats based on the requirements of CEQA, however, their implementation will also avoid and minimize impacts to all existing native habitat. Mitigation Measure BIO-2 requires a qualified biologist shall prepare a Worker Environmental Awareness Program (WEAP) that provides a description of potentially occurring special-status species and methods for avoiding inadvertent impacts. BIO-2 also requires that initial grading and vegetation removal activities shall be supervised by a qualified monitoring biologist, who will be present during all construction activities. Additionally, BIO-9 requires that the project to revegetate sensitive natural communities that may be impacted by the project. Finally, BIO-11 requires the project to prepare a Monitoring and Adaptive Management Plan (MAMP) that includes provisions for conducting a pre-construction survey to collect baseline data for existing wetland function and that those functions be monitored during and after construction. Lastly, BIO-3 requires that a Mitigation, Maintenance and Monitoring Program shall be prepared and approved by CDFW prior to implementation. The proposed program shall be implemented by a qualified restoration ecologist, and at a minimum, shall include success criteria and performance standards for measuring the establishment of Belding's savannah sparrow breeding habitat, responsible parties, maintenance techniques and schedule, 5-year monitoring and reporting schedule, adaptive management strategies, and contingencies. The comment is noted for the

Responses (con't)

record, and no changes to the IS/MND are warranted in response to this comment.

Comment F-20: Herbicides are not appropriate or necessary. No mention of traditional tribal ecological practices or of outreach to tribal ethnobotanists regarding alternatives to wholesale removal and poisoning of plants.

Response F-20: (HERBICIDES) The Commenter states that the use of herbicides is not appropriate or necessary. This comment is addressed previously by Response E-6. The LCWA intends to adhere to all policies, procedures, and permits as it pertains to the proper methodology for controlling non-native invasive plant populations. Due to the intensity of noxious weed infestations at this Project site, the LCWA will keep all potential options available to overcome these widely established infestations that currently impact native habitat. No changes to the IS/MND are warranted in response to this comment.

Comment F-21: Damage to and erasure of Sacred Site of Puvungna, Tribal Traditional Property, Motuucheyngna

Evidence of tribal occupation cannot be accurately mapped without impacting tribal resources. The terms "mapped archaeological and tribal cultural deposit areas" and "known archaeological deposits and tribal resources" deny the likelihood that areas occupied by tribal people for thousands of years will hold evidence of their presence. This language also distorts the meaning of tribal culture. Tribal cultural and spiritual connections to place are not limited to observed physical evidence of prior habitation but are an ongoing relationship with ancestors, and present and future generations of living beings, including rocks, soils, and water. Previously disturbed soils are still sacred to tribes. Because any disturbance of soils and removal of vegetation within the Los Cerritos Wetlands will alter this relationship, it must be kept to a minimum. Plans and projects involving

Responses (con't)

extensive grading, flooding, and depositing of soils erase tribal cultural evidence.

Location of Project Area and Los Cerritos Wetlands incorrect, description of archaeological sites incomplete.

Response F-21: The Commenter states that damage to and erasure of the Sacred Site of Puvungna and Motuucheyngna Tribal Traditional Property will occur with any disturbance of soils and vegetation. The cultural resources assessment uses an indigenous archaeology methodology. As described on page 72 of the cultural resources report, this approach recognizes, "The areas used by Native peoples may have had visible and invisible boundaries with tangible and intangible cultural remains. Thus, what is most important for this study is to transcend traditional interpretations of site type, placement and significance, in order to align more squarely with the Native American understandings of how "everything is connected" (Martinez et al. 2012)." As a result of this approach, the Traditional Cultural Landscape study which recommends the Puvungna Traditional Cultural Landscape as eligible for listing on the California Register of Historical Places. The Puvungna Traditional Cultural Landscape's boundaries includes all lands within a five-mile radius around the Los Cerritos Wetland Complex and includes the villages of Puvungna and Motuuchevgna. No changes to the IS/MND are warranted in response to this comment.

Comments

Anna Christensen, Co-chair, LAWTF (Sierra Club) – page 5/7

The Los Cerritos Wetlands Complex is located in between the archaeological manifestations of the Puvungna and Motuucheyngna village sites

F-22 **Project Area is not located between Puvungna and Motuucheyngna. It is at Motuucheyngna, within the larger ceremonial center of Puvungna. Nor is Motuucheyngna located at Heron Pointe, a small gated community on a section of Landing Hill. Distancing Project Area from significant tribal community sites already impacted by the removal of multiple burials and other destructive activities is an attempt to minimize the project impacts on tribal peoples and cultural sites.**

The project is unlikely to disturb human remains, as most of the soil that will be moved for the restoration has already been disturbed by previous land use activities.

F-22 **Tribal burials are known to remain in "soils that have been disturbed by previous land use activities," including multiple burials at Heron Pointe, in the Ballona Wetlands, and in local oil refineries.**

Preservation in place may be accomplished by, but is not limited to, avoidance, incorporating the resource into open space, capping, or deeding the site into a permanent conservation easement. If avoidance is determined by the LCWA to be infeasible in light of factors such as the nature of the find, proposed project design, costs, and other considerations, then that resource shall be subject to Mitigation Measure CUL-8: Phase III Archaeological Resources Data Recovery and Treatment Plan.

F-23 **For more than forty years tribal preservationists have fought against development in and around the Los Cerritos Wetlands. "Preservation in place," the preferred treatment of Sacred Sites by the NAHC, and was sought to protect the now destroyed tribal cemetery at Heron Pointe. To be of real value this term must be applied to entire sites, to Traditional Tribal Properties and Landscapes as a whole. To allow an archaeologist to decide if something tribal is worth leaving in place, given that the project's design may have to be altered and costs may increase, is customary, legal, racist, and unforgivable.**

Cultural Resources Assessment for the Los Cerritos Wetlands Restoration Project

F-24 **Chief Anthony Morales has previously commented that this study is inadequate and we agree. Interviews with TAG members do not appear to involve a full explanation of the Project's potential impacts on the current ecosystem or on tribal cultural/burial sites. Nor are the concerns formerly expressed by tribal groups and individuals other than TAG members included in this report.**

Responses (con't)

Comment F-22: Project Area is not located between Puvungna and Motuucheyngna. It is at Motuucheyngna, within the larger ceremonial center of Puvungna. Nor is Motuucheyngna located at Heron Pointe, a small gated community on a section of Landing Hill. Distancing Project Area from significant tribal community sites already impacted by the removal of multiple burials and other destructive activities is an attempt to minimize the project impacts on tribal peoples and cultural sites.

Tribal burials are known to remain in "soils that have been disturbed by previous land use activities," including multiple burials at Heron Pointe, in the Ballona Wetlands, and in local oil refineries.

Response F-22: The Commenter states that Tribal burials are known to remain in soils that have been disturbed by previous land use activities. Avoidance and preservation in place of burials is the optimal goal. If avoidance is not possible, proper reburials are in the process of being designated with input from the TAG. No changes to the IS/MND are warranted in response to this comment.

Comment F-23: For more than forty years tribal preservationists have fought against development in and around the Los Cerritos Wetlands. "Preservation in place," the preferred treatment of Sacred Sites by the NAHC, and was sought to protect the now destroyed tribal cemetery at Heron Pointe. To be of real value this term must be applied to entire sites, to Traditional Tribal Properties and Landscapes as a whole. To allow an archaeologist to decide if something tribal is worth leaving in place, given that the project's design may have to be altered and costs may increase, is customary, legal, racist, and unforgivable.

Response F-23: The Commenter states that Tribal preservationists have fought against development in and around the Los Cerritos Wetlands for forty years. The Project site will be subject to archaeological and tribal monitoring as required by mitigation measures CUL-11 and CUL-12. Avoiding the disturbance of tribal cultural resources is the preferred option as detailed in

Responses (con't)

mitigation measure CUL -7. The LCWA, will determine the proper mitigation measures for the resources, in consultation with the expert opinion of the consulting tribes and the archaeologist. No changes to the IS/MND are warranted in response to this comment.

Comment F-24: Chief Anthony Morales has previously commented that this study is inadequate and we agree. Interviews with TAG members do not appear to involve a full explanation of the Project's potential impacts on the current ecosystem or on tribal cultural/burial sites. Nor are the concerns formerly expressed by tribal groups and individuals other than TAG members included in this report.

Response F-24: The Commenter states that they are in agreement with Chief Anthony Morales' opinion that the study is inadequate. LCWA shared the initial draft of the cultural resources assessment report in spring of 2022. During Tribal consultation in March 2022, Chairman Morales commented that even though the isolated cultural resources were recommended as not significant using the CRHR criteria, they are still significant to the tribe and there may be below surface components. As a result, an Extended Phase I was conducted to understand the extant and possible depth of the isolates identified. There were no subsurface components. The updated draft based on these results was sent to the Tribes in February 2023 and to date, no additional comments have been received. The results and additional analysis were incorporated into the updated draft of the cultural resources assessment dated March 2023 which is included as an appendix of the IS/MND.

TAG meetings with LCWA have been as transparent as possible and TAG members were provided with all of the information regarding the project and project impacts were discussed during those meetings. As stated on page 35 of the cultural resources assessment, interviews were conducted "To better understand the Gabrielino's (Gabrieleño; Tongva; Kizh) and Juaneño's

Responses (con't)

(Acjachemen) relationship to the Los Cerritos Wetlands, saltwater marshes, and the greater cultural landscape encompassing the Los Cerritos Wetlands, including the villages of *Puvungna* and *Motuucheyngna*. Interviewees were not asked to discuss the specifically about project impacts as these were discussed during TAG meetings. The comment has been noted for the record, and no changes to the IS/MND are warranted in response to this comment.

Comments

Anna Christensen, Co-chair, LAWTF (Sierra Club) – page 6/7

Conclusion

F-25 **This is not "restoration" but "habitat creation," part of the LCWA's plan to erase existing wetlands and wildlife habitat and bulldoze, flood or bury tribal cultural resources across the entire 500 acre Los Cerritos Wetlands. The project includes elevating a road cutting across the wetlands from PCH to Hellman's oil and gas operations and building a berm on public property to protect private industry. This sacrifices wetlands habitat in order to ensure that fossil fuel operations on the wetlands continue in perpetuity, protected from flood events and sea level rise.**

F-26 **Tribal leaders repeated demands that there be no bulldozing, trenching, flooding or construction of berms, raised roads, and/or harm to wildlife on the wetlands have been dismissed out of hand. Staff's statement that, *"In general, tribal representatives expressed support for overall restoration goals"* disregards Tongva and Acjachemen tribal leaders who oppose this project and have consistently advocated for the preservation of the existing ecosystem on this traditional tribal property and sacred site (Puvungna East/Motuuchengna). The California Native American Heritage Commission' s position that preservation in place is the preferred alternative is not even considered.**

F-27 **The LCWA's project preferences public recreation over wetlands and wildlife protection. The Southern Los Cerritos Wetlands is currently a wildlife refuge. Increasing human access will result in wildlife fleeing or simply dying off. The local community has the right to protect the Los Cerritos Wetlands and our own safety. Three state agencies (the LCWA, the Rivers and Mountains Conservancy, and the Coastal Conservancy) have designed, funded and promoted a radical and invasive plan that dredges, bulldozes, and buries a seasonal freshwater wetland. This project exposes residents to air and water pollution and hastens sea level rise, eliminating the opportunity to capture stormwater/replenish local groundwater.**

Responses (con't)

Comment F-25: This is not "restoration" but "habitat creation," part of the LCWA's plan to erase existing wetlands and wildlife habitat and bulldoze, flood or bury tribal cultural resources across the entire 500 acre Los Cerritos Wetlands. The project includes elevating a road cutting across the wetlands from PCH to Hellman's oil and gas operations and building a berm on public property to protect private industry. This sacrifices wetlands habitat in order to ensure that fossil fuel operations on the wetlands continue in perpetuity, protected from flood events and sea level rise.

Response F-25: The Commenter states an opinion that the Project is habitat creation and not true restoration. The Commenter further reiterates previous concerns they expressed about the proposed grading plan, the road, the berm, and sea level rise. This Comment is previously addressed by responses E-1, F-11, F-12, F-13, and F-19. No changes to the IS/MND are warranted in response to this comment.

Comment F-26: Tribal leaders repeated demands that there be no bulldozing, trenching, flooding or construction of berms, raised roads, and/or harm to wildlife on the wetlands have been dismissed out of hand. Staff's statement that, "In general, tribal representatives expressed support for overall restoration goals" disregards Tongva and Acjachemen tribal leaders who oppose this project and have consistently advocated for the preservation of the existing ecosystem on this traditional tribal property and sacred site (Puvungna East/Motuuchengna). The California Native American Heritage Commission' s position that preservation in place is the preferred alternative is not even considered.

Response F-26: The Commenter states that there have been repeated demands from Tribal leaders that there be no bulldozing, trenching, flooding, or construction of berms, raised roads and/or harm to wildlife. LCWA has not received comments from TAG members or Tribal leaders during CEQA consultations that "no bulldozing, trenching, flooding or construction of berms, raised roads, and/or harm to wildlife on the

Responses (con't)

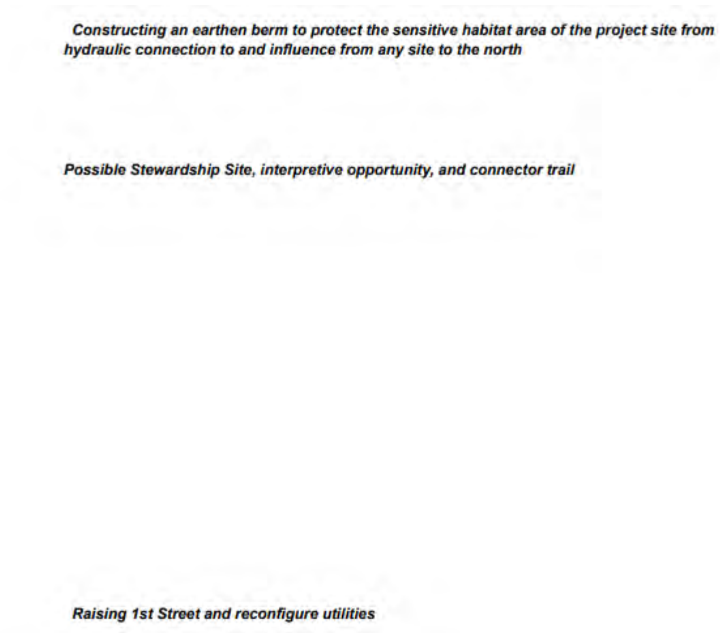
wetland". No changes to the IS/MND are warranted in response to this comment.

Comment F-27: The LCWA's project preferences public recreation over wetlands and wildlife protection. The Southern Los Cerritos Wetlands is currently a wildlife refuge. Increasing human access will result in wildlife fleeing or simply dying off. The local community has the right to protect the Los Cerritos Wetlands and our own safety. Three state agencies (the LCWA, the Rivers and Mountains Conservancy, and the Coastal Conservancy) have designed, funded and promoted a radical and invasive plan that dredges, bulldozes, and buries a seasonal freshwater wetland. This project exposes residents to air and water pollution and hastens sea level rise, eliminating the opportunity to capture stormwater/replenish local groundwater.

Response F-27: The Commenter shares their perspective on the LCWA's goals and states that increased human access will result in impacts to existing habitat function. No changes to the IS/MND are warranted in response to this comment.

Comments

Anna Christensen, Co-chair, LAWTF (Sierra Club) – page 7/7



Responses (con't)

No comments to address on this page.