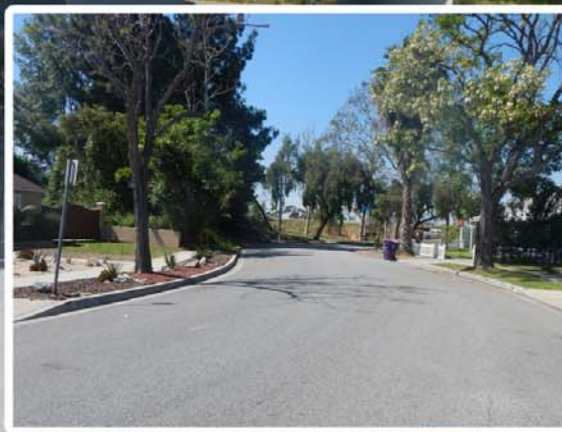
Attachment J

PUBLIC REVIEW DRAFT | JULY 2017

Long Beach Municipal Urban Stormwater Treatment Project

INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION



Submitted by:

Michael Baker INTERNATIONAL

PUBLIC REVIEW DRAFT
INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

Long Beach Municipal Urban Stormwater Treatment (MUST) Project

LEAD AGENCY:

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JN 158703

This document is designed for double-sided printing to conserve natural resources.

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1.0 INTRODUCTION

The proposed Long Beach Municipal Urban Stormwater Treatment (MUST) Project (herein referenced as the "project") involves construction of a MUST facility and conveyance facilities to carry urban runoff to the MUST facility for treatment. The project would be situated along the east and west sides of the Los Angeles (LA) River, in the City of Long Beach, and generally extend a distance of approximately 8 miles from State Route 91 (SR-91) to the north to approximately 0.1-mile south of Ocean Boulevard to the south. Following a review of the proposed project, the City of Long Beach has determined that it is subject to the guidelines and regulations of the California Environmental Quality Act (CEQA). This Initial Study/Mitigated Negative Declaration addresses the direct, indirect, and cumulative environmental effects of the project, as proposed.

1.1 STATUTORY AUTHORITY AND REQUIREMENTS

In accordance with CEQA (Public Resources Code Sections 21000-21177) and pursuant to Section 15063 of Title 14 of the California Code of Regulations (CCR), the City of Long Beach, acting in the capacity of Lead Agency, is required to undertake the preparation of an Initial Study to determine whether the proposed project would have a significant environmental impact. If the Lead Agency finds that there is no evidence that the project, either as proposed or as modified to include the mitigation measures identified in the Initial Study, may cause a significant effect on the environment, the Lead Agency shall find that the proposed project would not have a significant effect on the environment and shall prepare a Negative Declaration (or Mitigated Negative Declaration) for that project. Such determination can be made only if "there is no substantial evidence in light of the whole record before the Lead Agency" that such impacts may occur (Section 21080, Public Resources Code).

The environmental documentation, which is ultimately approved and/or certified by the City of Long Beach in accordance with CEQA, is intended as an informational document undertaken to provide an environmental basis for subsequent discretionary actions upon the project. The resulting documentation is not, however, 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.

1.2 PURPOSE

Section 15063 of the CEQA Guidelines identifies specific disclosure requirements for inclusion in an Initial Study. Pursuant to those requirements, an Initial Study shall include:

- A description of the project, including the location of the project;
- Identification of the environmental setting;
- 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;
- Discussion of ways to mitigate significant effects identified, if any;
- Examination of whether the project is compatible with existing zoning, plans, and other applicable land use controls; and
- The name(s) of the person(s) who prepared or participated in the preparation of the Initial Study.

1.3 CONSULTATION

As soon as the Lead Agency (in this case, the City of Long Beach) has determined that an Initial Study would be required for the project, the Lead Agency is directed to consult informally with all Responsible Agencies and Trustee Agencies that are responsible for resources affected by the project, in order to obtain the recommendations of those agencies on the environmental documentation to be prepared for the project. Following receipt of any written comments from those agencies, the City of Long Beach will consider their recommendations when formulating the preliminary findings. Following completion of this Initial Study, the City of Long Beach will initiate formal consultation with these and other governmental agencies as required under CEQA and its implementing guidelines.

1.4 INCORPORATION BY REFERENCE

The following documents were utilized during preparation of this Initial Study, and are incorporated into this document by reference. The documents are available for review at the City of Long Beach Development Services Department, located at 333 West Ocean Boulevard, Long Beach, California 90802.

- *City of Long Beach General Plan* (Updated October 2013). The purpose of the General Plan is to provide a general, comprehensive, and long-range guide for community decision-making. The *City of Long Beach General Plan* (*General Plan*) consists of the following elements, adopted on various dates: Historic Preservation; Open Space; Housing; Air Quality; Mobility Element; Land Use; Seismic Safety; Local Coastal Program; Noise; Public Safety; Conservation; and Scenic Routes. The individual elements identify goals and policies for existing and future conditions within the City of Long Beach.

- *City of Long Beach Municipal Code (Codified through Ordinance No. ORD-16-0008, enacted May 24, 2016)*. The *City of Long Beach Municipal Code* (*LBMC*) consists of regulatory, penal, and administrative ordinances of the City of Long Beach. It is the method the City uses to implement control of land uses, in accordance with the *General Plan* goals and policies. Volume II (Title 20, *Subdivisions*) and Volume III (Title 21, *Zoning*) of the LBMC identifies land uses permitted and prohibited according to the zoning designation of particular parcels. The purpose of the Zoning Regulations within the *LBMC* is to promote and preserve the public health, safety, comfort, convenience, prosperity, and general welfare of the people of Long Beach.

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

Regionally, the project site is located within the southwestern portion of the City of Long Beach (City), within the County of Los Angeles (County); refer to Exhibit 2-1, *Regional Map*. Locally, the project site is situated along the east and west sides of the Los Angeles (LA) River, and generally extends a distance of approximately 8 miles from State Route 91 (SR-91) to the north to approximately 0.1-mile south of Ocean Boulevard to the south; refer to Exhibit 2-2, *Site Vicinity Map*.

2.2 ENVIRONMENTAL SETTING

REGIONAL SETTING

As noted above, the proposed project site is situated along the east and west sides of the LA River. Facilities along the east side of the river are dispersed along an 8 mile corridor from SR-91 on the north, to just south of Ocean Boulevard. Facilities proposed to the west of the river are limited to smaller areas, with one area immediately north of SR-91, west of Interstate 710 (I-710), and east of Long Beach Boulevard, and another area immediately west of I-710, at and along the Long Beach Boulevard bridge over I-710 and the LA River. Generally, the project site and surrounding areas are heavily urbanized and occupied by a range of different land uses.

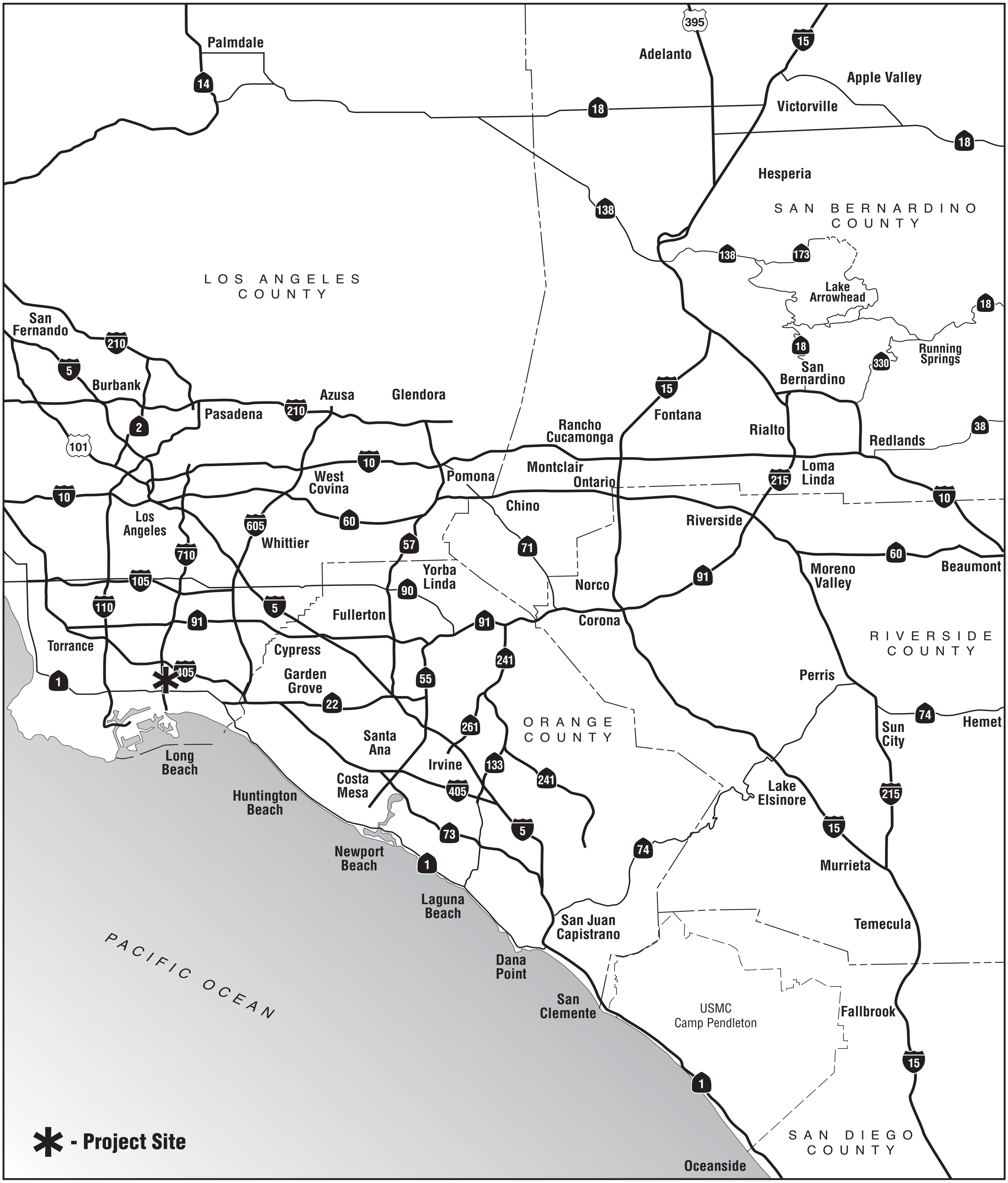
The proposed project includes facilities intended to improve water quality associated with urban runoff in the project area, which ultimately flows into the LA River. The project includes two primary project components: 1) the municipal urban stormwater treatment (MUST) facility; and 2) conveyance facilities/diversion structures to carry urban runoff to the MUST facility for treatment. A detailed description of the proposed project is provided in Section 2.5, *Project Characteristics*; a description of the existing environmental setting associated with these facilities is provided below. A depiction/overview of the proposed MUST and associated conveyance facilities on a regional basis is provided in Exhibit 2-3, *Project Overview*.

MUST FACILITY

The MUST facility would be constructed along the east bank of the LA River. The MUST site would occur both north and south of the existing Shoemaker Bridge, on approximately 11.5 acres of vacant City, State, and Southern Pacific Transportation Company owned land. The site is bounded by the river and associated LA River Bicycle Path to the west, Fairbanks Avenue and Shoreline Drive to the east, Cesar E. Chavez Park to the south, Drake Park to the north, and is situated at and adjacent to an existing City pump station (No. SD-01). Currently, the majority of the project site is vacant land/open space with sparse ornamental/non-native vegetation, utility poles, and an advertising/billboard sign. As noted above, City Pump Station No. SD-01 is located within the central portion of the MUST site. The MUST site has been previously disturbed, graded, and the topography is generally flat; refer to Exhibits 2-4a through 2-4c, *Project Components*, for the MUST facility location.

CONVEYANCE FACILITIES

A range of conveyance facilities, totaling approximately 25,780 feet (approximately 4.88 miles) in length, are proposed to carry urban runoff to the MUST facility. The project would include a combination of the construction of new conveyance facilities (in the form of underground pipelines and open channel facilities), in addition to utilization of existing City pipelines to create the necessary connection between tributary areas in the region and the MUST. Where existing pipelines are incorporated to convey project flows, no improvements, ground disturbance, or other activities would be required (i.e., the existing pipelines would remain in their existing state).



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LONG BEACH MUST PROJECT
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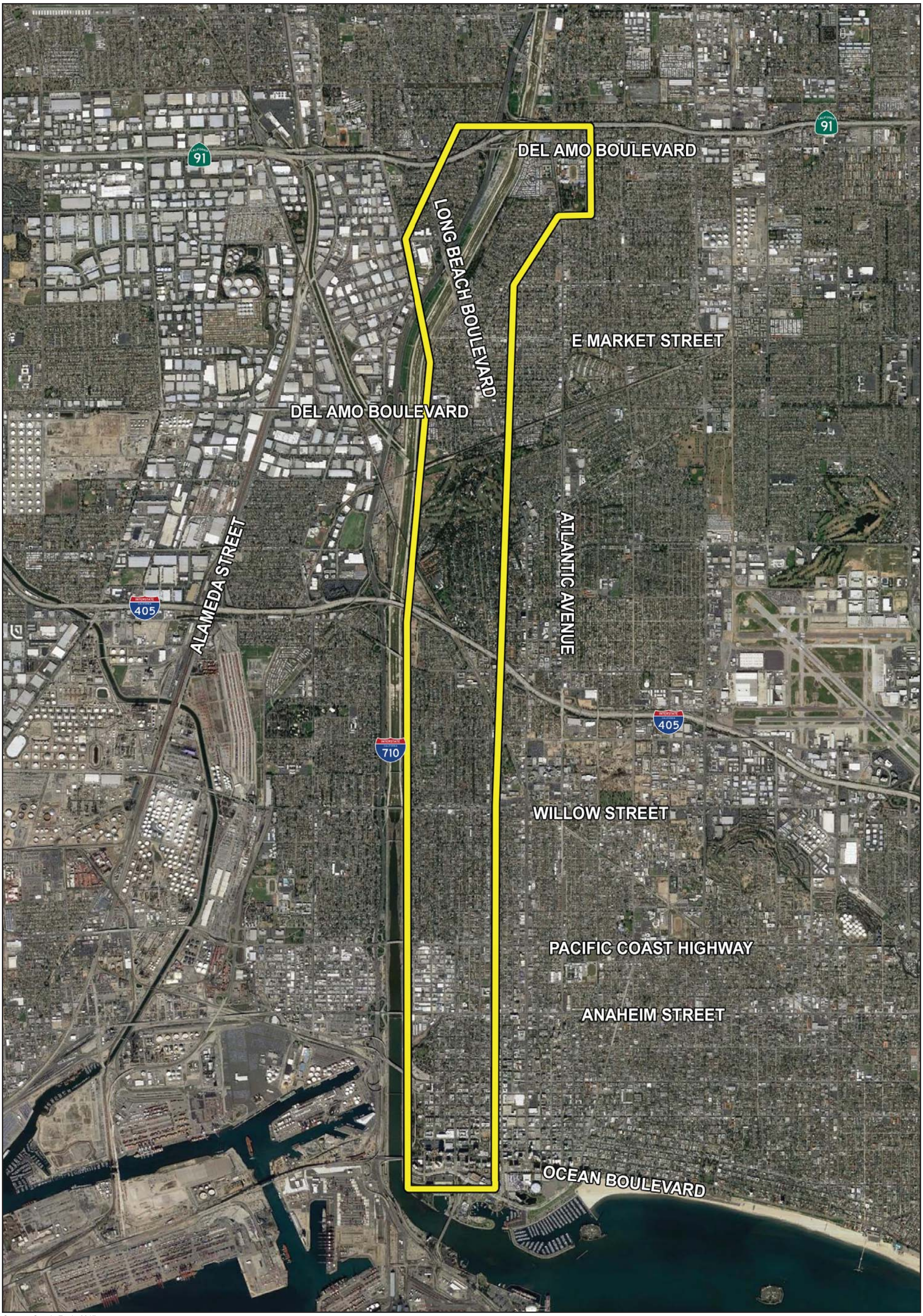
Regional Map

Exhibit 2-1



Source: Google Earth, 2017.

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LONG BEACH MUST PROJECT
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Site Vicinity

Exhibit 2-2

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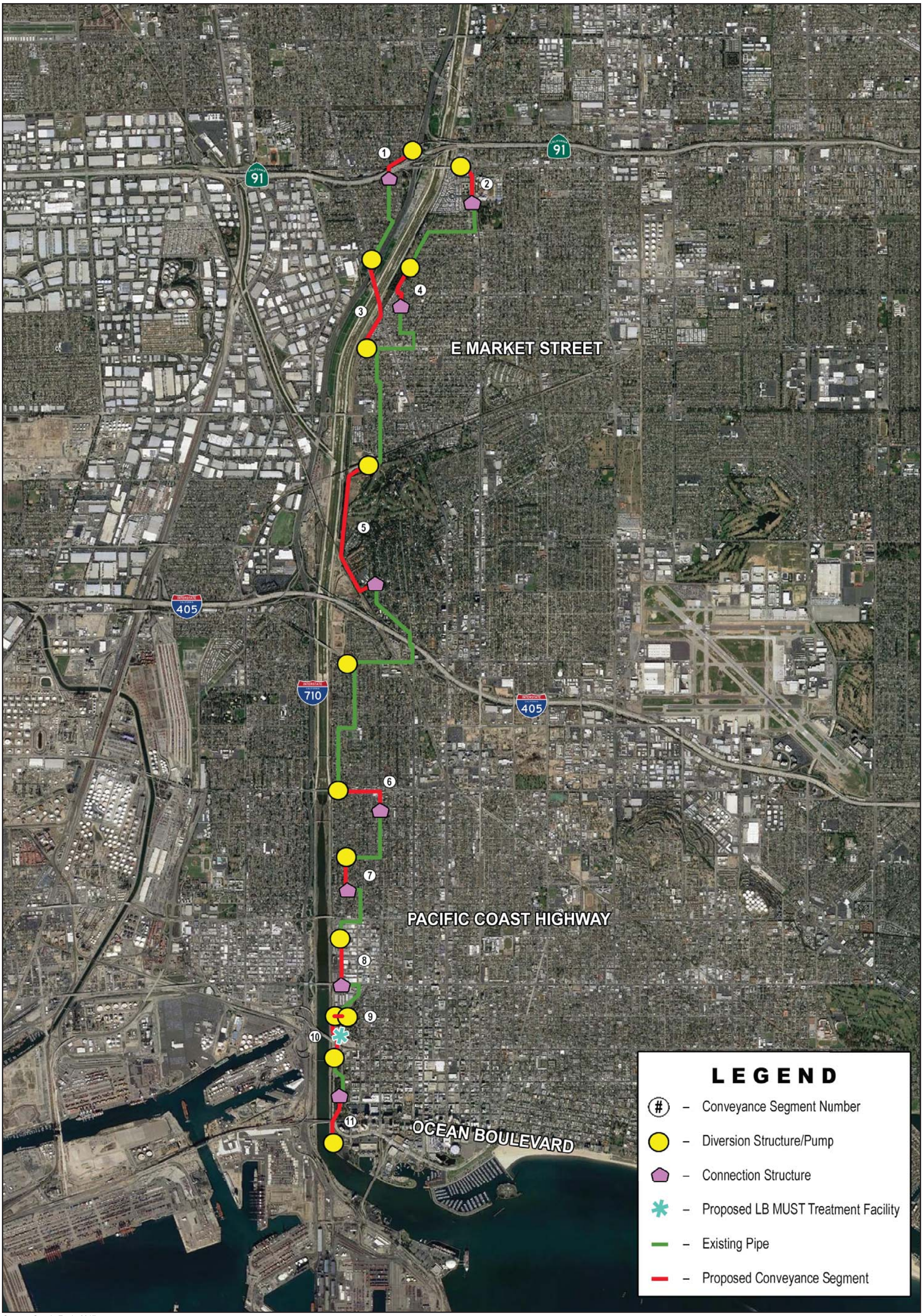

Source: Google Earth, 2017.

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Project Overview

Exhibit 2-3

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Project Components

Exhibit 2-4a

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LONG BEACH MUST PROJECT
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Project Components

Exhibit 2-4b

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LONG BEACH MUST PROJECT
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Project Components

Exhibit 2-4c

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The project includes a total of 11 non-contiguous segments of proposed conveyance improvements. The existing setting for these 11 proposed segments is provided below, and their locations are depicted in Exhibits 2-4a through 2-4c.

- *Segment 1:* Segment 1, the most northerly of the conveyance segments, runs along Coachella Avenue (approximately 150 feet south of East 67th Way) to the north and continues in a southwest direction along East Maker Street, Artesia Lane, and Butler Avenue, terminating at Butler Avenue and East Coolidge Street. Coachella Avenue, East Maker Street, Artesia Lane, and Butler Avenue are two lane roadways with limited striping located within a residential area. This approximately 1,650 foot long conveyance segment would occur entirely within existing City roadway right-of-way (ROW).

- *Segment 2:* At its northerly terminus, Segment 2 begins at the City's No. SD-12 Pump Station facility located north of East Artesia Boulevard. The proposed conveyance segment would head east on East Artesia Boulevard, and then in a southerly direction along Atlantic Avenue, terminating approximately 140 feet south of Aloha Drive. East Artesia Boulevard and Atlantic Avenue are four lane roadways with Class II Bike Lanes and raised center medians. This approximately 1,750 foot long conveyance segment would occur entirely within existing City roadway ROW.

- *Segment 3:* At its northerly terminus, Segment 3 begins at the City's No. SD-11 Pump Station facility (parcel owned by HB LLC), located south of East Gordon Street, and runs approximately 0.5-mile in a southerly direction along Long Beach Boulevard and its associated bridge over I-710 and the LA River. At the southerly terminus of the Long Beach Boulevard bridge, the alignment would proceed in a southwesterly direction within vacant Los Angeles County Flood Control District property and City ROW, until it would turn in an easterly direction along West Market Street, to where it terminates at West Market Street and North Pacific Avenue. Long Beach Boulevard is generally a four lane roadway with a raised center median. West Market Street is a two lane roadway located within a residential area. This segment is approximately 4,500 feet long.

- *Segment 4:* At its northerly terminus, Segment 4 begins approximately 135 feet south of East Osgood Street along De Forest Avenue, heading in a southerly direction until it turns into Chestnut Avenue, and ends at Chestnut Avenue and Jaymills Avenue. De Forest Avenue/Chestnut Avenue are two lane roadways located within a residential area. This approximately 1,660 foot long segment would occur entirely within City roadway ROW.

- *Segment 5:* At its northerly terminus, Segment 5 begins approximately 525 feet west of West 47th Street and extends in a southwesterly direction, parallel to existing railroad ROW and north of the Virginia Country Club (this portion of Segment 5 would be within private property owned by the Virginia Country Club and public ROW including land owned by the City and Los Angeles County Flood Control District). The alignment then proceeds in a southerly direction along the easterly side of the LA River, within existing public ROW (Los Angeles County Flood Control District). This segment would continue south within Los Angeles County Metropolitan Transportation Authority (LACMTA) ROW, parallel to Virginia Vista Court, and within Del Mar Avenue until it turns in a northeast direction within West San Antonio Drive and ends at the intersection of West San Antonio Drive and Country Club Drive. Del Mar Avenue and West San Antonio Drive are two lane roadways located within a residential area. This segment would be approximately 6,440 feet long.

- *Segment 6:* Segment 6 begins at the City's No. SD-06 Pump Station facility located north of West Willow Street and travels east along West Willow Street to Magnolia Avenue. At Magnolia Avenue, Segment 6 extends south and terminates at the intersection of Magnolia Avenue and West 25th Street. West Willow Street is a four lane roadway with street parking and a raised center median. Magnolia Avenue is a two lane roadway with a striped center median. This approximately 2,300 foot long conveyance segment would occur entirely within existing City ROW.

- *Segment 7:* Segment 7 extends along Golden Avenue in a north to south direction from West Hill Street on the north to West 20th Street on the south. Golden Avenue is a two lane roadway located within a residential area. This approximately 1,300 foot long conveyance segment would occur entirely within existing City ROW.

- *Segment 8:* Segment 8 extends along San Francisco Avenue in a north to south direction from West 17th Street on the north to Anaheim Street on the south. San Francisco Avenue is a two lane roadway located within an industrial area. This approximately 1,850 foot long conveyance segment would occur entirely within existing City ROW.

- *Segment 9:* Segment 9 begins at the City's No. LA-2 Pump Station and extends in an easterly direction across City-owned vacant land and ends at Loma Vista Drive. Loma Vista Drive is an unstriped two lane roadway in a residential area. This segment is approximately 480 feet long.

- *Segment 10:* Segment 10 begins at the City's No. LA-2 Pump Station and extends in a southerly direction along Fairbanks Avenue to the MUST facility. Within this approximately 1,800 foot long segment, Fairbanks Avenue is a two lane roadway with no striping. Segment 10 would occur within State, City, Los Angeles County Flood Control District ROW, as well as property owned by Southern Pacific Transportation Company.

- *Segment 11:* Segment 11 represents the most southerly of the conveyance segments. It begins at the southern boundary of the MUST facility project site, approximately 820 feet south of the City's Pump Station No. SD-01. This segment travels in a southerly direction, within the green belt located west of West Shoreline Drive. Segment 11 extends southerly beneath West Ocean Boulevard and parallel to the LA River Bicycle Path and terminates at the City's No. LA-01 Pump Station located at the Golden Shore RV Resort (located at 101 Golden Shore). This segment is approximately 2,655 feet long and occurs within City and Los Angeles County Flood Control District ROW, as well as property owned by South Pacific Transportation Company and Union Pacific Rail Road.

SURROUNDING USES

MUST Facility

Land uses surrounding the proposed MUST site include vacant land/open space to the north, commercial land uses to the east, West Shoreline Drive and Cesar E. Chavez Park to the south, and the LA River and associated bicycle path to the west.

Conveyance Facilities

Land uses surrounding each of the proposed conveyance segments consist of:

- *Segment 1:* Residential, transportation, and open space land uses.
- *Segment 2:* Transportation, commercial, vacant, residential, institutional, and recreational land uses.
- *Segment 3:* Transportation, residential, commercial, open space, and water land uses.
- *Segment 4*: Transportation, residential, open space, and recreational land uses.
- *Segment 5:* Transportation, residential, recreational, institutional, and water land uses.
- *Segment 6:* Transportation, residential, open space, and commercial land uses.
- *Segment 7:* Transportation and residential land uses.
- *Segment 8:* Industrial and commercial land uses.
- *Segment 9:* Open space, recreational, residential, transportation, and industrial land uses.
- *Segment 10:* Open space, vacant, recreational, residential, transportation, industrial, and commercial land uses.
- *Segment 11:* Open space, recreational, transportation, and commercial land uses.

2.3 EXISTING GENERAL PLAN AND ZONING

MUST FACILITY

According to the *City of Long Beach General Plan* (*General Plan*) *Land Use Map*, the project site is designated as "LUD 9R; Restricted Industry," "LUD 11; Open Space/Parks," and "LUD 7; Mixed Use." According to the *General Plan Land Use Element*, the Restricted Industry land use "is intended to attract and maintain businesses which conduct industrial or manufacturing operations primarily indoors, with limited outdoor appurtenant activities." The Open Space land use designation includes parks, plazas, promenades and boardwalks, vacant lots, cemeteries, community gardens, golf courses, beaches, flood control channels and basins, rivers and river levees, utility rights-of-way (e.g. transmission tower areas), oil drilling sites, median strips and back up lots, offshore islands, marinas, inland bodies of water, the ocean, estuaries and lagoons. The Mixed Use land designation is intended to be "a careful blending of different types of land uses (designed to) save time and energy in transportation and communications, simplify and shorten transactions of goods and services, vitalize a site, and give it more importance in the urban structure of the City." According to the *General Plan*, the uses intended by this district are employment centers, such as retail, offices, medical facilities; higher density residences; visitor-serving facilities; personal and professional services; or recreational facilities. Surrounding areas to the project site are designated "LUD 4; High Density Residential," "LUD 7; Mixed Uses," and "LUD 11; Open Space/Parks" by the Land Use Map.

The *City of Long Beach Zoning Map* zones the project site as "IL; Light Industrial," "PD-21, Planned Development, Queensway Bay," and "PD-30, Planned Development, Downtown Long Beach." Based on the *City of Long Beach Municipal Code* (*LBMC*), Light Industrial zoning "allows a wide range of industries whose primary operations occur entirely within enclosed structures and which pose limited potential for environmental impacts on neighboring uses." The Queensway Bay Planned Development Plan provides a flexible planning mechanism that allows mixed-use development to be built incrementally over time that is consistent with the intent of the Legislative grants of tide and submerged lands to the City of Long Beach and with the Port's Master Plan. The Downtown Long Beach Planned Development Plan is based on "form-base code," which changes the focus from traditional regulation characterized by a list of permitted uses to the design and character of the buildings and how they contribute to defining and activating the nearby public realm. The Plan includes the following topics: vision, connectivity and character, development standards, design standards, streetscape and public realm standards, sign standards, historic preservation, and plan administration.

Surrounding areas to the project site are zoned "PD-10; Planned Development, Wilmore City," "PD-21; Planned Development, Queensway Bay," and "PD-30; Planned Development, Downtown Long Beach."

CONVEYANCE FACILITIES

Given the wide geographical area spanned by the conveyance facilities, the proposed conveyance segments traverse a wide range of *General Plan* land use designations and *LBMC* zoning designations. Table 2-1, *Conveyance Facilities – General Plan Land Use and Zoning Designations*, provides a summary of the existing land use designations and zoning for the conveyance facilities.

2.4 PROJECT BACKGROUND

The City of Long Beach is situated at the confluence of the LA River. Currently, substantial quantities of pollutants (metals, bacteria, hydrocarbons, pesticides, and trash) enter the LA River via urban runoff and accumulate in the Long Beach Harbor. Runoff includes water draining from urban uses such as streets, parking lots, driveways, and lawns which flows through the storm drain system. Pollutants from residential, industrial, and other urban activities continue to impair the water quality of the river and the Long Beach Harbor.

Table 2-1
Conveyance Facilities – General Plan Land Use and Zoning Designations

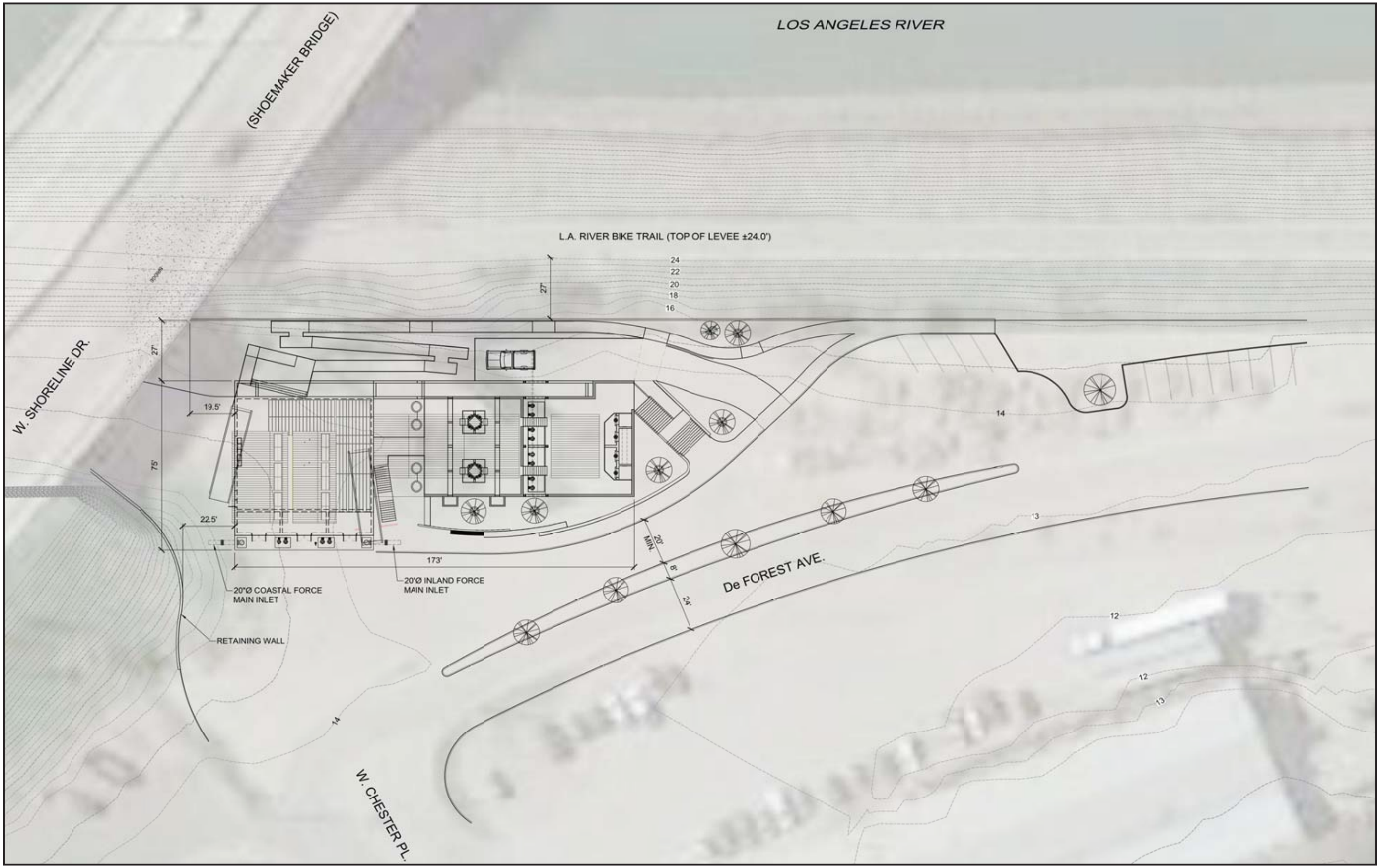
General Plan Land Use		Zoning			
1	Single Family	CCA	Community Commercial Automobile-Oriented	R-2-N	Two-Family Residential, Standard Lot
2	Mixed Style Homes	CNA	Neighborhood Commercial Automobile-Oriented	R-4-N	Medium-Density Multiple Residential
3A	Townhomes	I	Institutional	RM	Mobile Homes, Modular and Manufactured Residential
4	High Density Residential	IG	General Industrial	R-4-R	Moderate-Density Multiple Residential
7	Mixed Use	IL	Light Industrial		
8A	Traditional Retail Strip Commercial	P	Park		
8N	Shopping Nodes	PD-6 (2)	Planned Development, Downtown Shoreline		
9G	General Industry	PD-10	Planned Development, Wilmore City		
9R	Restricted Industry	PD-30	Planned Development, Downtown Long Beach		
10	Institutions/Schools	PR	Public Right-of-Way		
11	Open Space/Parks	R-1-L	Single-Family Residential, Large Lot		
13	Right-of-Way	R-1-N	Single-Family Residential, Standard Lot		

After taking these factors into consideration, the City has proposed the MUST Project. The MUST facility would divert and treat urban runoff from tributary areas in the project area that would otherwise discharge into the LA River. The proposed MUST facility would provide a solution to meeting clean water mandates, as required under the National Pollutant Discharge Elimination System (NPDES) Permits, as well as under the LA River Total Maximum Daily Load (TMDL) requirements, which are overseen by the Los Angeles Regional Water Quality Control Board (RWQCB), State Water Resources Control Board (SWRCB), and the U.S. Environmental Protection Agency (USEPA) under the Clean Water Act. The project would also result in the creation of approximately five acres of wetland/riparian habitat, utilizing grant funding provided by the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC).

2.5 PROJECT CHARACTERISTICS

MUST FACILITY

As noted above, the proposed MUST facility would be constructed along the east bank of the LA River on an approximately 11.5-acre site near the existing Shoemaker Bridge and City Pump Station No. SD-01. The MUST would receive 100 percent of non-stormwater runoff and a portion of "first flush" flows during a storm event. The primary components of the proposed MUST facility would include: 1) pretreatment wetlands; 2) the treatment facility; and 3) a storage/polishing pond. These facilities are described in greater detail below, and a concept plan is depicted in Exhibit 2-5, *MUST Facility Concept Plan*. It is anticipated that two shifts of three operators would be employed Monday through Friday and two shifts of two operators would be employed Saturday and Sunday. It should be noted that the MUST facility and its proposed water features (i.e., pretreatment wetlands and storage pond) may become an integrated component of an expansion/improvement of Cesar E. Chavez Park (a separate project under development by the City's Parks, Recreation, and Marine Department). The City is currently reviewing concepts to integrate existing and potential uses at and surrounding the park, to consolidate and unify different components into a compatible plan.



Source: Koa Consulting; June 9, 2017.

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INITIAL STUDY / MITIGATED NEGATIVE DECLARATION

MUST Facility Concept Plan

Exhibit 2-5

Pretreatment Wetlands

The proposed MUST facility would include a terminal wetland treatment process that would remove nutrients, total suspended solids (TSS), and particulates prior to entering the treatment plant. Pollutants would be removed via natural biological, physical, and chemical means as they travel through the wetland to the treatment plant. Flows would enter the pretreatment wetlands via a distribution outfall into a forebay, travel through wetland vegetation/soils and open water areas, and ultimately be conveyed to the treatment facility. The pretreatment wetlands would also serve as a park/water feature amenity, resulting in an improvement in recreational opportunities and aesthetics in the project area. Direct contact with the pretreatment wetlands (e.g., bathing, swimming, etc.) would be prohibited.

Treatment Facility

From the pretreatment wetlands, the water would be conveyed to a centralized mechanical treatment facility for water treatment that utilizes physical, biological, and chemical principles to remove contaminants from the water to achieve compliance with Total Maximum Daily Loads (TMDLs). The treatment plant would be designed to intake the 2.0 million gallons per day (MGD) or 1,400 gallons per minute (gpm) flows and process them at the treatment facility as follows:

1. Turbidity I – debris removal;
2. Turbidity II – fine suspended solids removal;
3. Oxidation I – trace contaminants removal;
4. Oxidation II = dissolved organics removal;
5. Oxidation III– dissolved nutrients removal;
6. Turbidity III – bio sludge/find removal;
7. Disinfection/Post Oxidation; and
8. Mineral Removal.

By processing the waste water streams through these steps, the project treatment goals will be obtained including clear, clean water with low organics, nutrients, heavy metals, and pathogens. The treatment facility would use a proposed treatment train process with bar racks and chopper pumps within the upstream diversion systems, successive strainers at the upstream end of the treatment facility, ozone/peroxide advanced oxidation, coagulant addition for phosphorus removal if required, biologically activated carbon filtration, and final recycled water storage and chlorine disinfection.

The majority of process equipment associated with the treatment facility would be enclosed within a multi-level, 30-foot high, 10,000 square-foot building. The proposed building and associated facilities would include contemporary architectural features, and would include both landscape and hardscape improvements. Parking would be provided on-site within the northern portion of the facility for employees and visitors, with access to the facility provided via Fairbanks Avenue.

The MUST facility would be open to visitors and for educational tours/opportunities for the public to gain an understanding of the environmental benefits of the project and importance of maintaining water quality within the project area. As such, public viewing/gathering areas, seating, and shade structures would be provided; refer to Exhibit 2-6, *Conceptual MUST Facility Renderings*. In addition, the MUST facility would include restroom facilities that would be open to the public from 8:00 a.m. to 5:00 p.m.

Storage Pond

The MUST facility would include a storage/polishing pond, which would represent the final step in the treatment process prior to discharge into the LA River. The storage pond would include additional pollutant removal via biofiltration, aeration, wetlands, and the addition of aluminum for polishing. The storage pond would also serve as a park/water feature amenity, resulting in an improvement in recreational opportunities and aesthetics in the project area. Direct contact with the storage pond (e.g., bathing, swimming, etc.) would be prohibited.

Aerial view looking south.

Southwesterly view of main stairs.

Southwesterly view of main entry.

Northwesterly view from the Los Angeles River levee.

LONG BEACH MUST PROJECT
INITIAL STUDY / MITIGATED NEGATIVE DECLARATION

Conceptual MUST Facility Renderings

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Exhibit 2-6

As a potential future option associated with the proposed project, treated water from the MUST facility may be utilized as recycled water for non-potable uses. The use of the MUST facility to provide recycled water would fulfill a need for a recycled water source in the western portion of the City. Additional conveyance/distribution facilities would be required for this to occur; any such improvements would occur as part of a separate project analyzed in a stand-alone environmental document, and are not analyzed herein.

CONVEYANCE FACILITIES

The proposed project would include underground conveyance facilities that would divert existing urban runoff from discharge points along the LA River, within the approximately 19-square mile watershed, and convey them to the MUST facility for treatment. Section 2.2, *Environmental Setting*, above provides a description of the location of each of the proposed segments of new conveyance facilities. The conveyance facilities would connect a number of proposed diversion structures/pumps and connection structures that would be required to convey urban runoff to the MUST facility. A description of the conveyance facilities proposed as part of the project is provided below.

Diversion Structures/Pumps

A number of proposed diversion structures/pumps would be required to divert urban runoff from existing outfalls to the LA River, and redirect them to the MUST facility. The proposed diversion structures would be constructed entirely underground. Primary components would include a sump/grit chamber with submersible 10 horsepower pump, presettling/sedimentation storage, manholes, and access facilities such as manhole covers and ladders. The dimensions of each diversion structure/pump facility would approximately 15 feet by 15 feet by 20 feet deep. Refer to Exhibit 2-4a through 2-4c, for a depiction of the location of proposed diversion structures/pumps.

Conveyance Pipelines/Channels

As noted above, a total of 11 segments of conveyance facilities would be required for the project. The location of all proposed conveyance facilities is shown in Exhibit 2-4a through 2-4c. The majority of conveyance segments would be constructed entirely underground as 4-inch to 12-inch high density polyethylene (HDPE) pipelines within existing City roadway ROW or easements, and installed via open cut trenching. However, a number of segments (or portions thereof) may be constructed as open channel facilities with pocket wetlands/ponds, providing several benefits including biofiltration, pretreatment, and recreational/aesthetic enhancements in the site vicinity. Open channel segments would generally be a vegetated channel with the naturalized appearance of a meandering stream system, with accompanying elements such as rock riffles, pools, and cobbled areas with an irregular cross section.

2.5.1 PHASING AND CONSTRUCTION

Construction of the project is anticipated to occur in two phases, commencing in 2018 and concluding in 2021. The first phase would include construction of the MUST facility and the conveyance facilities south of SR-91. Construction of the first phase would take approximately two years. The second phase would include construction of the conveyance facilities north of SR-91. Construction activities for the second phase are anticipated to take two years to complete.

2.6 PERMITS AND APPROVALS

The proposed project would require permits and approvals from the City of Long Beach and other agencies prior to construction. These permits and approvals are described below, and may change as the project entitlement process proceeds.

City of Long Beach

- California Environmental Quality Act Clearance
- Site Plan Review
- Building Permit
- Local Coastal Development Permit (limited to project components in the Coastal Zone)
- Los Angeles County Flood Control District (approval for connections to existing pump stations)

Los Angeles Regional Water Quality Control Board

- NPDES Construction General Permit

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3.0 INITIAL STUDY CHECKLIST

3.1 BACKGROUND

1.	**Project Title:** Alamitos Generating Station Battery Energy Storage System (BESS) Project
2.	**Lead Agency Name and Address:** City of Long Beach 333 West Ocean Boulevard Long Beach, CA 90802
3.	**Contact Person and Phone Number:** Mr. Craig Chalfant Senior Planner 562.670.6368
4.	**Project Location:** Regionally, the project site is located within the southwestern portion of the City of Long Beach (City), within the County of Los Angeles (County). Locally, the project site is situated along the east and west sides of the Los Angeles (LA) River, and generally extends a distance of approximately 8 miles from State Route 91 (SR-91) to the north to approximately 0.1-mile south of Ocean Boulevard to the south.
5.	**Project Sponsor's Name and Address:** Mr. Alvin Papa City of Long Beach Public Works Department 333 West Ocean Boulevard Long Beach, CA 90802
6.	**General Plan Designation:** According to the *City of Long Beach General Plan* (*General Plan*) *Land Use Map*, the MUST site is designated as "LUD 9R; Restricted Industry," "LUD 11; Open Space/Parks," and "LUD 7; Mixed Use." The *General Plan* Land Use Map (revised October 2012) designates the project site as "LUD No. 7; Mixed Uses". Refer to Table 2-1, *Conveyance Facilities – General Plan Land Use and Zoning Designations*, for land use designations for the conveyance sites.
7.	**Zoning:** The *City of Long Beach Zoning Map* zones the project site as "IL; Light Industrial," "PD-21, Planned Development, Queensway Bay," and "PD-30, Planned Development, Downtown Long Beach." Refer to Table 2-1, *Conveyance Facilities – General Plan Land Use and Zoning Designations*, for zoning designations for the conveyance sites.
8.	**Description of the Project:** The City of Long Beach is situated at the confluence of the LA River. Currently, substantial quantities of pollutants (metals, bacteria, hydrocarbons, pesticides, and trash) enter the LA River via urban runoff and accumulate in the Long Beach Harbor. Runoff includes water draining from urban uses such as streets, parking lots, driveways, and lawns which flows through the storm drain system. Pollutants from residential, industrial, and other urban activities continue to impair the water quality of the river and the Long Beach Harbor. The proposed Long Beach MUST Project (project) would divert and convey dry-weather and "first flush" storm flows to the treatment facility prior to discharge into the LA River, resulting in water quality benefits in the project area. Additional details regarding the project are provided in Section 2.5, *Project Characteristics*.

9.	**Surrounding Land Uses and Setting:** Land uses surrounding the proposed MUST site include vacant land/open space to the north, commercial land uses to the east, West Shoreline Drive and Cesar E. Chavez Park to the south, and the LA River and associated bicycle path to the west. Land uses surrounding each of the proposed conveyance segments consist of: • *Segment 1:* Residential, transportation, and open space land uses. • *Segment 2:* Transportation, commercial, vacant, residential, institutional, and recreational land uses. • *Segment 3:* Transportation, residential, commercial, open space, and water land uses. • *Segment 4:* Transportation, residential, open space, and recreational land uses. • *Segment 5:* Transportation, residential, recreational, institutional, and water land uses. • *Segment 6:* Transportation, residential, open space, and commercial land uses. • *Segment 7:* Transportation and residential land uses. • *Segment 8:* Industrial and commercial land uses. • *Segment 9:* Open space, recreational, residential, transportation, and industrial land uses. • *Segment 10:* Open space, vacant, recreational, residential, transportation, industrial, and commercial land uses. • *Segment 11:* Open space, recreational, transportation, and commercial land uses.
10.	**Other public agencies whose approval is required (e.g., permits, financing approval or participation agreement).** Refer to Section 2.6, *Permits and Approvals*, for a description of the permits and approvals anticipated to be required for the project. Additional approvals may be required as the project entitlement process moves forward.

3.2 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" or "Less Than Significant Impact with Mitigation Incorporated," as indicated by the checklist on the following pages.

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

3.3 LEAD AGENCY DETERMINATION

On the basis of this initial evaluation:

The City of Long Beach finds that the proposed use COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	
The City of Long Beach finds that although the proposal could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described in Section 4.0 have been added. A MITIGATED NEGATIVE DECLARATION will be prepared.	✓
The City of Long Beach finds that the proposal MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	
The City of Long Beach finds that the proposal MAY have a significant effect(s) 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.	

	City of Long Beach
Signature	Agency
Craig Chalfant, Senior Planner	July 28, 2017
Printed Name	Date

3.4 EVALUATION OF ENVIRONMENTAL IMPACTS

This section analyzes the potential environmental impacts associated with the proposed project. The issue areas evaluated in this Initial Study include:

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation/Traffic
- Tribal Cultural Resources
- Utilities and Service Systems

The environmental analysis in this section is patterned after the Initial Study Checklist recommended by the *CEQA Guidelines* and used by the City of Long Beach in its environmental review process. For the preliminary environmental assessment undertaken as part of this Initial Study's preparation, a determination that there is a potential for significant effects indicates the need to more fully analyze the development's impacts and to identify mitigation.

For the evaluation of potential impacts, the questions in the Initial Study Checklist are stated and an answer is provided according to the analysis undertaken as part of the Initial Study. The analysis considers the long-term, direct, indirect, and cumulative impacts of the development. To each question, there are four possible responses:

- *No Impact*. The development will not have any measurable environmental impact on the environment.

- *Less Than Significant Impact*. The development will have the potential for impacting the environment, although this impact will be below established thresholds that are considered to be significant.

- *Less Than Significant Impact With Mitigation Incorporated*. The development will have the potential to generate impacts which may be considered as a significant effect on the environment, although mitigation measures or changes to the development's physical or operational characteristics can reduce these impacts to levels that are less than significant.

- *Potentially Significant Impact*. The development will have impacts which are considered significant, and additional analysis is required to identify mitigation measures that could reduce these impacts to less than significant levels.

Where potential impacts are anticipated to be significant, mitigation measures will be required, so that impacts may be avoided or reduced to insignificant levels.

4.0 ENVIRONMENTAL ANALYSIS

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

4.1 AESTHETICS

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	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 the site and its surroundings?		✓		
d. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?		✓		

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

Less Than Significant Impact. The Scenic Routes Element of the *General Plan* identifies freeways, regional corridors, boulevards, major avenues, minor avenues, neighborhood connectors, local streets, port-related streets, scenic routes including bicycle trails and railroad right-of-way (linkages), and scenic assets. The ocean, port facilities, oil islands, Signal Hill, and the flood control channels are identified as vistas in the City of Long Beach. The project proposes to construct a MUST facility and 11 conveyance facilities along the Los Angeles (LA) River, north of State Route 91 (SR-91) to Golden Shore RV Resort located at 101 Golden Shore. The nearest designated scenic routes to the project site include Ocean Boulevard, Long Beach River Bicycle Path (also known as the Westside Linkage), Pacific Electric Railroad (also known as the Crosstown Linkage), and Union Pacific Railroad (also known as the Central Linkage). The primary scenic resources for vehicles traveling along Ocean Boulevard and bicyclists and pedestrians traveling along the Long Beach River Bicycle Path within the project vicinity generally include the LA River to the north and south, City views to the east, and industrial views to the west. The primary scenic resources for passengers traveling on the Pacific Electric Railroad within the project vicinity include the LA River to the north and south. The primary scenic resources for passengers traveling on the Union Pacific Railroad within the project vicinity include the LA River to the north and south and the Virginia Country Club to the south.

Long-Term Impacts

The Long Beach River Bicycle Path generally travels in a north to south direction. Bicyclists and pedestrians traveling south along the bicycle path within the project vicinity generally have a view of the LA River, City skyline, and industrial views. Bicyclists and pedestrians traveling north along the bicycle path within the project vicinity generally have a view of the LA River as well as the proposed MUST facility. Refer to Table 4.1-1, *Segments within the Vicinity of a Scenic Route*, for a description of project segments, in addition to the MUST facility, that would be present within the vicinity of existing scenic views/vistas.

Table 4.1-1
Segments within the Vicinity of a Scenic Route

Segment	Scenic Route
3	Long Beach River Bicycle Path
4	Long Beach River Bicycle Path
5	Long Beach River Bicycle Path, Pacific Electric Railroad, Union Pacific Railroad
6	Long Beach River Bicycle Path
9	Long Beach River Bicycle Path
10	Long Beach River Bicycle Path
11	Long Beach River Bicycle Path, Ocean Boulevard (also identified as an eligible state scenic highway)

The MUST facility would be constructed on the east bank of the LA River, east of the existing bicycle path, near the existing Shoemaker Bridge. The treatment facility would be constructed on vacant, disturbed land. The primary components of the proposed MUST facility would include pretreatment wetlands, the treatment facility, and a storage/polishing pond. Both the pretreatment wetlands and storage pond would serve as a park/water feature amenity, resulting in an improvement in recreational opportunities and aesthetics in the project area. The treatment facility would be enclosed within a multi-level, 30-foot high, 10,000 square-foot building. The proposed building and associated facilities would include contemporary architectural features, and would include both landscape and hardscape improvements. The MUST facility would also include public viewing/gathering areas, seating, and shade structures for visitors to the project site; refer to Exhibit 2-6.

Although visible from the Long Beach River Bicycle Path, the new 30-foot high MUST facility structure would not obstruct existing views to scenic resources, as the treatment facility would be constructed near the Shoemaker Bridge (which would be higher in elevation than the proposed structure). Further, the 11 conveyance segments would not impact any of the scenic views/vistas in the area, as the new facilities would be constructed underground or via open channel within existing public right-of-way or easements. As such, significant impacts to scenic views/vistas during operation of the project would not result.

Short-Term Impacts

Construction activities would temporarily impact scenic views and vistas within the project vicinity. Construction of the proposed MUST facility would involve site grading and construction. Further, construction of the conveyance segments would involve open trenching and excavation within the vicinity of existing scenic views or vistas; refer to Table 4.1-1. However, based on the location of the proposed MUST facility and its proximity to the Shoemaker Bridge, as well as the nature of proposed conveyance construction equipment (subsurface or low-lying/at-grade facilities), these construction activities would not result in the obstruction of scenic resources, as viewed from nearby scenic views/vistas. These short-term impacts would result in less than significant impacts to scenic views/vistas.

Mitigation Measures: No mitigation is required.

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

Less Than Significant Impact. There are no officially-designated State scenic highways within proximity to the project site.[1] The nearest Eligible State Scenic Highway (not officially designated) is Pacific Coast Highway (Ocean

[1] California Department of Transportation website, http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm, accessed April 17, 2017.

Boulevard), which traverses Segment 11. As described in Response 4.1(a), the proposed project would not affect scenic resources along this eligible highway. Further, as the project proposes conveyance facilities, view blockage of ocean views would not result. Therefore, project implementation would not damage any scenic resource (i.e., trees, rock outcroppings, or historic buildings) within the viewshed of a state scenic highway or block scenic views to beach areas or open ocean views. Impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

***Less Than Significant Impact With Mitigation Incorporated*.**

Long-Term Impacts

A project is generally considered to have a significant visual/aesthetic impact if it substantially changes the character of the project site such that it becomes visually incompatible or visually unexpected when viewed in the context of its surroundings, resulting in degradation of the existing visual character or quality of the site and its surroundings. Implementation of the proposed project would result in construction of the MUST facility and 11 conveyance facilities. Currently, the majority of the MUST site is vacant land/open space with sparse ornamental/non-native vegetation, utility poles, and an advertising/billboard sign. Additionally, City Pump Station No. SD-01 is located within the central portion of the MUST site. The MUST facility would include pretreatment wetlands, the treatment facility, and a storage/polishing pond. The majority of conveyance segments would be constructed underground. However, numerous segments may be constructed as open channel facilities with pocket wetlands/ponds, providing several benefits including recreational/aesthetic enhancements in the site vicinity.

Upon construction of the project, the new buildings associated with the MUST facility would be visible from public right-of-way. However, the treatment facility would be similar in character to the surrounding industrial and recreational uses. All new structures would be constructed north of the Shoemaker Bridge. Thus, the proposed building height (30 feet) would also be consistent with the character of the surrounding developed area. Further, the proposed MUST treatment facility would be subject to City's site plan review process, which would ensure consistency with City standards for site design, architectural treatments, and landscaping. Both the pretreatment wetlands and storage pond would serve as a park/water feature amenity, consistent with the recreational uses located south/southeast of the MUST facility. The conveyance segments constructed underground would not change the visual character/quality of the site. The potential open channel conveyance facilities would be consistent with surrounding uses, and would result in a beneficial aesthetic impact by providing areas of vegetated open space. With adherence to existing City standards for design and site plan review requirements, impacts in this regard would be less than significant.

Short-Term Impacts

Construction activities would be completed over the course of approximately four years (from 2018 through 2021). During this time, project construction activities would temporarily disrupt views within the project area. The project would include demolition and grading/trenching activities. Although these activities would be temporary in nature and would cease upon completion of construction, these activities and associated equipment would be exposed to surrounding motorists, pedestrians, and bicyclists. Mitigation Measure AES-1 would require that construction staging areas be sited as far away from nearby sensitive viewers (e.g., resident, pedestrians/bicyclists, and motorists) as feasible, and that opaque screening material be used to shield public views toward the site throughout the construction process. With implementation of the recommended Mitigation Measure AES-1, the visual character/quality of the site and surroundings would not be substantially degraded during short-term project construction and impacts in this regard would be reduced to less than significant levels.

<u>Mitigation Measures</u>:

AES-1 Construction equipment staging areas shall be located, to the greatest extent feasible, away from nearby existing sensitive viewers (e.g., resident, pedestrians/bicyclists, and motorists), and shall utilize appropriate screening (i.e., temporary fencing with opaque material) to shield public views of construction equipment and material. Prior to issuance of a grading permit, the City of Long Beach City Engineer shall verify that staging locations are identified on final grading/development plans and that appropriate perimeter screening is included as a construction specification.

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

<u>Less Than Significant Impact With Mitigation Incorporated</u>. There are two primary sources of light: light emanating from building interiors that pass through windows and light from exterior sources (i.e., street lighting, parking lot lighting, building illumination, security lighting, and landscape lighting). Depending upon the location of the light source and its proximity to adjacent light sensitive uses, light introduction can be a nuisance, affecting adjacent areas and diminishing the view of the clear night sky.

The proposed project is located within a developed area of the City of Long Beach. Areas surrounding the project site are urbanized and contain various sources of light and glare. Specifically, light and glare in the area is generated from the light emanating from building interiors and light from exterior sources (i.e., building illumination, parking lot lighting, and security lighting) associated with adjacent industrial uses. Within the vicinity of the proposed MUST treatment facility, light and glare caused by car headlights and street lighting associated with the Shoemaker Bridge, Fairbanks Avenue, Shoreline Drive, and 6th Street further influence lighting in the project area.

Pursuant to the *LBMC*, all construction activities may only occur between the hours of 7:00 AM and 7:00 PM, Monday through Friday, and between the hours of 9:00 AM and 6:00 PM on Saturday. Construction activities are prohibited on Sundays. Thus, as required by the *LBMC*, no nighttime construction activities would occur. The conveyance facilities would not require nighttime lighting. During operation of the MUST facility, similar nighttime security lighting would result compared to the surrounding uses. Compliance with Mitigation Measure AES-2 would minimize the project's lighting impacts through the use of lighting design, shielding, direction, and siting techniques to minimize spillover onto adjacent properties. All lighting would be required to utilize directional lighting techniques (without compromising site safety or security) that direct light downwards and minimize light spillover onto adjacent light sensitive receptors. Implementation of Mitigation Measure AES-2 would ensure that long-term (operational) light and glare impacts as a result of the project would be reduced to less than significant levels.

<u>Mitigation Measures</u>:

AES-2 The City of Long Beach shall ensure that any exterior lighting does not spill over onto adjacent uses. Prior to issuance of any building permit, an Outdoor Lighting Plan shall be prepared and submitted to the City of Long Beach Development Services Department, for review and approval, that includes a footcandle map illustrating the amount of light from the proposed project at adjacent light sensitive receptors. All exterior light fixtures shall be shielded or directed away from adjoining uses.

4.2 AGRICULTURE AND FORESTRY 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 Impact With Mitigation Incorporated	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 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) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The proposed project would include construction of the MUST facility and associated conveyance facilities along the Los Angeles River, from State Route 91 (SR-91) to the Golden Shore RV Resort. The project site has been previously disturbed by development and does not contain any farmland. According to Figure 9.5, *Agricultural Resource Areas Policy Map* of the *General Plan*, no farmland exists within the site vicinity. Thus, no impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

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

No Impact. As shown in Table 4.10-2, *Zoning Designations*, no zoning for agricultural use currently applies to the project site and surrounding areas. Additionally, the project site is not a part of a Williamson Act contract. Thus, no impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

c) ***Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?***

No Impact. Refer to Responses 4.2(a) and 4.2(b). No zoning for forest land or timberland exists within the project site, and no impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

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

No Impact. Refer to Responses 4.2(b) and 4.2(c). No impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

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

No Impact. As stated above in Responses 4.2(a) through 4.2(c), the project site occurs within an urbanized area and is void of agricultural or forest resources. Thus, there is no potential for the conversion of these resources and no impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

4.3 AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?			✓	
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		✓		
c. 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?		✓		
d. Expose sensitive receptors to substantial pollutant concentrations?		✓		
e. Create objectionable odors affecting a substantial number of people?			✓	

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

Less Than Significant Impact. The proposed project is located within the South Coast Air Basin (Basin), which is governed by the South Coast Air Quality Management District (SCAQMD). Consistency with the SCAQMD *2016 Air Quality Management Plan for the South Coast Air Basin* (*2016 AQMP*) means that a project is consistent with the goals, objectives, and assumptions set forth in the *2016 AQMP* that are designed to achieve Federal and State air quality standards. According to the SCAQMD CEQA Air Quality Handbook, in order to determine consistency with the *2016 AQMP*, two main criteria must be addressed:

Criterion 1:

With respect to the first criterion, SCAQMD methodologies require that an air quality analysis for a project include forecasts of project emissions in relation to contributing to air quality violations and delay of attainment.

a) Would the project result in an increase in the frequency or severity of existing air quality violations?

Since the consistency criteria identified under the first criterion pertains to pollutant concentrations, rather than to total regional emissions, an analysis of the project's pollutant emissions relative to localized pollutant concentrations is used as the basis for evaluating project consistency. As discussed in Response 4.3(d), below, localized concentrations of carbon monoxide (CO), nitrogen oxides (NO_X), and particulate matter (PM_{10} and $PM_{2.5}$) would be less than significant. Therefore, the proposed project would not result in an increase in the frequency or severity of existing air quality violations. Because reactive organic gasses (ROGs) are not a criteria pollutant, there is no ambient standard or localized threshold for ROGs. Due to the role ROGs plays in ozone formation, it is classified as a precursor pollutant and only a regional emissions threshold has been established.

b) Would the project cause or contribute to new air quality violations?

As discussed below in Response 4.3(b), the proposed project would result in emissions that would be below the SCAQMD thresholds. Therefore, the proposed project would not have the potential to cause or affect a violation of the ambient air quality standards.

c) *Would the project delay timely attainment of air quality standards or the interim emissions reductions specified in the AQMP?*

The proposed project would result in less than significant impacts with regard to localized concentrations during project construction. As such, the proposed project would not delay the timely attainment of air quality standards or 2016 AQMP emissions reductions.

Criterion 2:

With respect to the second criterion for determining consistency with SCAQMD and Southern California Association of Governments (SCAG) air quality policies, it is important to recognize that air quality planning within the Basin focuses on attainment of ambient air quality standards at the earliest feasible date. Projections for achieving air quality goals are based on assumptions regarding population, housing, and growth trends. Thus, the SCAQMD's second criterion for determining project consistency focuses on whether or not the proposed project exceeds the assumptions utilized in preparing the forecasts presented in the 2016 AQMP. Determining whether or not a project exceeds the assumptions reflected in the 2016 AQMP involves the evaluation of the three criteria outlined below. The following discussion provides an analysis of each of these criteria.

a) *Would the project be consistent with the population, housing, and employment growth projections utilized in the preparation of the AQMP?*

A project is consistent with the AQMP in part if it is consistent with the population, housing, and employment assumptions that were used in the development of the AQMP. In the case of the *2016 AQMP*, three sources of data form the basis for the projections of air pollutant emissions: the *City of Long Beach General Plan* (*General Plan*), SCAG's *Growth Management* Chapter of the *Regional Comprehensive Plan and Guide* (*RCPG*), and SCAG's *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (*RTP/SCS*). The *RTP/SCS* also provides socioeconomic forecast projections of regional population growth.

The project proposes the construction of the MUST facility and associated conveyance facilities to divert and treat urban runoff from tributary areas in the project area in an effort to improve water quality within the LA River and Long Beach Harbor. As discussed in Section 4.13, *Population and Housing*, the project would not have the capacity to result in significant population growth as the estimated population growth associated with the project would be at most up to 10 employees; two shifts of three operators Monday through Friday, two shifts of two operators Saturday and Sunday, and the facility would be open to the public on a limited basis. Therefore, the proposed project is considered consistent with the *General Plan*, and is consistent with the types, intensity, and patterns of land use envisioned for the site vicinity in the RCPG. The population, housing, and employment forecasts, which are adopted by SCAG's Regional Council, are based on the local plans and policies applicable to the City. Additionally, as the SCAQMD has incorporated these same projections into the *2016 AQMP*, it can be concluded that the proposed project would be consistent with the projections.

b) *Would the project implement all feasible air quality mitigation measures?*

The proposed project would result in less than significant air quality impacts. Compliance with emission reduction measures identified by the SCAQMD would be required as identified below in Response 4.3(b). As such, the proposed project meets this AQMP consistency criterion.

c) *Would the project be consistent with the land use planning strategies set forth in the AQMP?*

The proposed project would serve to implement various policies set forth by the City and SCAG. The proposed project is located within a developed portion of the City and would provide a solution to meeting clean water mandates within the City. The proposed MUST facility would be located on vacant land and the conveyance facilities would be located within existing public right-of-way. The project site is in the vicinity of a mix of uses including industrial, residential, recreational, and institutional.

In conclusion, the determination of AQMP consistency is primarily concerned with the long-term influence of a project on air quality in the Basin. The proposed project would not result in a long-term impact on the region's ability to meet State and Federal air quality standards. As discussed above, the proposed project's long-term influence would also be consistent with the goals and policies of the AQMP and is, therefore, considered consistent with the SCAQMD's *2016 AQMP*.

Mitigation Measures: No mitigation is required.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

***Less Than Significant Impact With Mitigation Incorporated*.**

Short-Term (Construction) Emissions

Construction Emissions

Future construction of the project site would generate short-term air quality impacts. Construction equipment would include excavators, concrete/industrial saws, excavators, rubber tired dozers, tractors, loaders, and backhoes. Exhaust emission factors for typical diesel-powered heavy equipment are based on the California Emissions Estimator Model (CalEEMod) program defaults. Variables factored into estimating the total construction emissions include the level of activity, length of construction period, number of pieces and types of equipment in use, site characteristics, weather conditions, number of construction personnel, and the amount of materials to be transported on- or off-site. The analysis of daily construction emissions has been prepared utilizing CalEEMod. Table 4.3-1, *Construction Air Emissions*, presents the anticipated daily short-term construction emissions.

Fugitive Dust Emissions

Construction activities are a source of fugitive dust emissions that may have a substantial, temporary impact on local air quality. In addition, fugitive dust may be a nuisance to those living and working in the project area. Fugitive dust emissions are associated with land clearing, ground excavation, cut-and-fill, and truck travel on unpaved roadways (including demolition as well as construction activities). Fugitive dust emissions vary substantially from day to day, depending on the level of activity, specific operations, and weather conditions. Fugitive dust from grading, excavation, and construction is expected to be short-term and would cease upon project completion. Additionally, most of this material is inert silicates, rather than the complex organic particulates released from combustion sources, which are more harmful to health.

Dust (larger than 10 microns) generated by such activities usually becomes more of a local nuisance than a serious health problem. Of particular health concern is the amount of PM_{10} (particulate matter smaller than 10 microns) generated as a part of fugitive dust emissions. PM_{10} poses a serious health hazard alone or in combination with other pollutants. $PM_{2.5}$ is mostly produced by mechanical processes. These include automobile tire wear, industrial processes such as cutting and grinding, and re-suspension of particles from the ground or road surfaces by wind and human activities such as construction or agriculture. $PM_{2.5}$ is mostly derived from combustion sources, such as automobiles, trucks, and other vehicle exhaust, as well as from stationary sources. These particles are either directly emitted or are formed in the atmosphere from the combustion of gases such as NO_X and sulfur oxides (SO_X) combining with ammonia. $PM_{2.5}$ components from material in the earth's crust, such as dust, are also present, with the amount varying in different locations.

Table 4.3-1
Construction Air Emissions

Construction Emissions Source	Pollutant (pounds/day)[1]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Year 1						
Unmitigated Emissions	3.82	38.68	23.05	0.04	2.33	1.89
Mitigated Emissions[2]	3.82	38.68	23.05	0.04	2.22	1.87
SCAQMD Thresholds	75	100	550	150	150	55
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
Year 2						
Unmitigated Emissions	3.60	36.11	22.73	0.04	2.19	1.75
Mitigated Emissions[2]	3.60	36.11	22.73	0.04	2.08	1.74
SCAQMD Thresholds	75	100	550	150	150	55
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
Year 3						
Unmitigated Emissions	4.55	50.32	32.71	0.06	8.45	5.38
Mitigated Emissions[2]	4.55	50.32	32.71	0.06	4.99	3.48
SCAQMD Thresholds	75	100	550	150	150	55
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
Year 4						
Unmitigated Emissions	4.28	46.51	31.57	0.06	8.26	5.20
Mitigated Emissions[2]	4.28	46.51	31.57	0.06	4.80	3.31
SCAQMD Thresholds	75	100	550	150	150	55
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter up to 10 microns; $PM_{2.5}$ = particulate matter up to 2.5 microns

Notes:
1. Emissions were calculated using the California Emissions Estimator Model, as recommended by the SCAQMD.
2. As depicted in this table, the recommended mitigation measures would be required to ensure compliance with SCAQMD Rules and Regulations, which would be verified and enforced through the City's development review process. The reduction/credits for construction emission mitigations are based on mitigation included in CalEEMod and as typically required by the SCAQMD. The mitigation includes the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stock piles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour.
3. Refer to Appendix A, *Air Quality/Greenhouse Gas Data*, for assumptions used in this analysis.

Mitigation Measure AQ-1 would implement dust control techniques (i.e., daily watering), limitations on construction hours, and adherence to SCAQMD Rules 402 and 403 (which require watering of inactive and perimeter areas, track out requirements, etc.), to reduce PM_{10} and $PM_{2.5}$ concentrations. As depicted in Table 4.3-1, total PM_{10} and $PM_{2.5}$ emissions would not exceed the SCAQMD thresholds during construction. Therefore, impacts would be less than significant.

Construction Equipment and Worker Vehicle Exhaust

Exhaust emissions from construction activities include emissions associated with the transport of machinery and supplies to and from the project site, employee commutes to the project site, emissions produced on-site as the equipment is used, and emissions from trucks transporting materials to/from the site. As presented in Table 4.3-1, construction equipment and worker vehicle exhaust emissions would not exceed the established SCAQMD threshold for all criteria pollutants. Therefore, impacts in this regard would be less than significant.

ROG Emissions

In addition to gaseous and particulate emissions, the application of asphalt and surface coatings creates ROG emissions, which are O_3 precursors. In accordance with the methodology prescribed by the SCAQMD, the ROG emissions associated with paving have been quantified with CalEEMod. Based on Table 4.3-1, the proposed project would not result in an exceedance of ROG emissions and impacts would be considered less than significant.

Naturally Occurring Asbestos

Asbestos is a term used for several types of naturally occurring fibrous minerals that are a human health hazard when airborne. The most common type of asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Asbestos is classified as a known human carcinogen by State, Federal, and international agencies and was identified as a toxic air contaminant by the California Air Resources Board in 1986.

Asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed. According to the Department of Conservation Division of Mines and Geology, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report* (August 2000), serpentinite and ultramafic rocks are not known to occur within the project area. Thus, there would be no impact in this regard.

Total Daily Construction Emissions

In accordance with the SCAQMD Guidelines, CalEEMod was utilized to model construction emissions for ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. CalEEMod allows the user to input mitigation measures such as watering the construction area to limit fugitive dust. Mitigation measures that were input into CalEEMod allow for certain reduction credits and result in a decrease of pollutant emissions. Reduction credits are based upon studies developed by CARB, SCAQMD, and other air quality management districts throughout California, and were programmed within CalEEMod. As indicated in Table 4.3-1, CalEEMod calculates the reduction associated with recommended mitigation measures.

As indicated in Table 4.3-1, impacts would be less than significant for all criteria pollutants during construction. In accordance with SCAQMD Rules 402 and 403, the project would be required to implement Mitigation Measure AQ-1 to reduce PM_{10} and $PM_{2.5}$ emissions resulting from fugitive dust. Thus, construction related air emissions would be less than significant with mitigation incorporated.

Long-Term (Operational) Emissions

Long-term air quality impacts would consist of mobile source emissions generated from project-related trips. The project proposes a MUST facility, which would divert and treat urban runoff from tributary areas in the project area in an effort to improve water quality within the LA River and Long Beach Harbor. The project would only require two shifts of three operators Monday through Friday, two shifts of two operators Saturday and Sunday, and limited public educational tours. Additionally, the proposed MUST facility equipment would be electrical and would not generate any stationary source emissions. However, the proposed project would include the use of two 500 kilowatt (kW) emergency diesel generators, allowing the pump station to run on backup power for operational redundancy. As the backup generator would be installed on-site, the City would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain the national and California ambient air quality standards in the Basin. Backup generators would be used only in emergency situations and for routine testing and maintenance purposes, and would not contribute substantial emissions capable of exceeding SCAQMD thresholds. Therefore, impacts in this regard would be less than significant.

Mitigation Measures:

AQ-1 Prior to issuance of any Grading Permit, the City of Long Beach City Engineer shall confirm that the Grading Plan and specifications stipulate that, in compliance with SCAQMD Rule 403, excessive fugitive dust emissions shall be controlled by regular watering or other dust prevention measures, as specified in the SCAQMD's Rules and Regulations. In addition, SCAQMD Rule 402 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off-site. Implementation of the following measures would reduce short-term fugitive dust impacts on nearby sensitive receptors:

- All active portions of the construction site shall be watered every three hours during daily construction activities and when dust is observed migrating from the project site to prevent excessive amounts of dust;
- Pave or apply water every three hours during daily construction activities or apply non-toxic soil stabilizers on all parking areas and staging areas. More frequent watering shall occur if dust is observed migrating from the site during site disturbance;
- Any on-site stockpiles of debris, dirt, or other dusty material shall be enclosed, covered, or watered three times daily, or non-toxic soil binders shall be applied;
- All grading and excavation operations shall be suspended when wind speeds exceed 25 miles per hour;
- Disturbed areas shall be replaced with ground cover or paved immediately after construction is completed in the affected area;
- Track-out devices such as gravel bed track-out aprons (3 inches deep, 25 feet long, 12 feet wide per lane and edged by rock berm or row of stakes) shall be installed to reduce mud/dirt trackout from unpaved truck exit routes;
- On-site vehicle speed shall be limited to 15 miles per hour;
- Visible dust beyond the property line which emanates from the project shall be prevented to the maximum extent feasible;
- All material transported off-site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust prior to departing the job site; and
- Trucks associated with soil-hauling activities shall avoid residential streets and utilize City-designated truck routes to the extent feasible.

c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less Than Significant Impact With Mitigation Incorporated.

Cumulative Construction Impacts

With respect to the proposed project's construction-period air quality emissions and cumulative Basin-wide conditions, the SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the *2016 AQMP* pursuant to Federal Clean Air Act (FCAA) mandates. As such, the proposed project would comply with SCAQMD Rule 403 requirements, and implement all feasible mitigation measures (Mitigation Measure AQ-1). Rule 403 requires that fugitive dust be controlled with the best available control measures in order to reduce dust so that it does not remain visible in the atmosphere beyond the property line of the proposed project. In addition, the proposed project would comply with the adopted *2016 AQMP* emissions control measures. Per SCAQMD rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., Rule 403 compliance, the implementation of all feasible mitigation measures, and compliance with adopted *2016 AQMP* emissions control measures) would also be imposed on construction projects throughout the Basin, which would include related projects.

Cumulative Long-Term Impacts

As discussed previously, the proposed project would not result in long-term air quality impacts, as emissions would not exceed the SCAQMD adopted operational thresholds. Additionally, adherence to SCAQMD rules and regulations would alleviate potential impacts related to cumulative conditions on a project-by-project basis. Emission reduction technology, strategies, and plans are constantly being developed. As a result, the proposed project would not contribute a cumulatively considerable net increase of any nonattainment criteria pollutant. Therefore, cumulative operational impacts associated with implementation of the proposed project would be less than significant.

Mitigation Measures: Refer to Mitigation Measure AQ-1.

d) Expose sensitive receptors to substantial pollutant concentrations?

***Less Than Significant Impact With Mitigation Incorporated*.** Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. The California Air Resources Board (CARB) has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

Sensitive uses surrounding the project site include residential and institutional uses. Residential uses adjoin conveyance segments 1-7, 9, and 10 and are located approximately 280 feet east of the proposed MUST facility. Jordan High School, located at 6500 Atlantic Avenue, adjoins conveyance segment 2. Los Cerritos Elementary School, located at 515 West San Antonio Drive, adjoins conveyance segment 5. Lafayette Elementary School, located at 2445 Chestnut Avenue, is approximately 330 feet east of conveyance segment 6. Edison Elementary School, located at 625 Maine Avenue, is located approximately 245 feet east of the proposed MUST facility. In order to identify impacts to sensitive receptors, the SCAQMD recommends addressing localized significance thresholds (LSTs) for construction and operations impacts (area sources only). The CO hotspot analysis following the LST analysis addresses localized mobile source impacts.

Localized Significance Thresholds (LST)

LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (dated June 2003 [revised 2008]) for guidance. The LST methodology assists lead agencies in analyzing localized air quality impacts. The SCAQMD provides the LST lookup tables for one, two, and five acre projects emitting CO, NO_X, $PM_{2.5}$, or PM_{10}. The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways. The SCAQMD notes that any project over five acres may need to perform air quality dispersion modeling to assess impacts to nearby sensitive receptors. The project is located within Sensitive Receptor Area (SRA) 4, South Los Angeles County Coastal.

Construction

Based on the SCAQMD guidance on applying LSTs, project construction would occur on the approximately 11.5 acre site. Based on the CalEEMod equipment modeled and SCAQMD methodology, approximately 4 acres per day would be disturbed. As the SCAQMD LST guidance only has thresholds for 1, 2, and 5 acres, the 2 acre threshold was conservatively used. The nearest sensitive receptor (residential uses) would not be directly affected or disturbed as part of the project, but construction would occur in proximity to the school on other portions of the project site. Given the proximity to the existing residences, the lowest available LST values for 25 meters were used per the LST guidance. Table 4.3-2, *Localized Significance of Construction Emissions*, shows the localized unmitigated construction-related emissions. It is noted that the localized emissions presented in Table 4.3-2 are less than those in Table 4.3-1 because localized emissions include only on-site emissions (i.e., from construction equipment and fugitive dust), and do not include off-site emissions (i.e., from hauling activities). As seen in Table 4.3-2, mitigated on-site emissions would not exceed the LSTs for SRA 4.

Table 4.3-2
Localized Significance of Construction Emissions

Source	Pollutant (pounds/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Construction				
Year 1				
Total Unmitigated On-Site Emissions[1]	38.32	22.30	2.14	1.83
Total Mitigated On-Site Emissions[1]	38.32	22.30	2.02	1.82
Localized Significance Threshold[5]	66	827	7	5
Thresholds Exceeded?	***No***	***No***	***No***	***No***
Year 2				
Total Unmitigated On-Site Emissions[2]	35.78	22.06	1.99	1.70
Total Mitigated On-Site Emissions[2]	35.78	22.06	1.88	1.68
Localized Significance Threshold[5]	66	827	7	5
Thresholds Exceeded?	***No***	***No***	***No***	***No***
Year 3				
Total Unmitigated On-Site Emissions[3]	50.20	31.96	8.22	5.31
Total Mitigated On-Site Emissions[3]	50.20	31.96	4.76	3.42
Localized Significance Threshold[5]	66	827	7	5
Thresholds Exceeded?	***No***	***No***	***No***	***No***
Year 4				
Total Unmitigated On-Site Emissions[4]	46.40	30.88	8.03	5.14
Total Mitigated On-Site Emissions[4]	46.40	30.88	4.57	3.24
Localized Significance Threshold[5]	66	827	7	5
Thresholds Exceeded?	***No***	***No***	***No***	***No***

Notes:
1. For construction Year 1, the demolition phase emissions are presented as the worst case scenario.
2. For construction Year 2, the demolition phase emissions are presented as the worst case scenarios.
3. For construction Year 3, the grading phase emissions are presented as the worst case scenarios.
4. For construction Year 4, the grading phase emissions are presented as the worst case scenarios.
5. The Localized Significance Threshold was determined using Appendix C of the SCAQMD *Final Localized Significant Threshold Methodology* guidance document for pollutants NO_X, CO, PM_{10}, and $PM_{2.5}$. The Localized Significance Threshold was based on the anticipated daily acreage disturbance for construction (approximately 4 acres; therefore the 2-acre threshold was conservatively used), the distance to sensitive receptors, and the source receptor area (SRA 4).

Carbon Monoxide Hotspots

CO emissions are a function of vehicle idling time, meteorological conditions, and traffic flow. Under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels (i.e., adversely affecting residents, school children, hospital patients, the elderly, etc.). The SCAQMD requires a quantified assessment of CO hotspots when a project increases the volume-to-capacity ratio (also called the intersection capacity utilization [ICU]) by 0.02 (two percent) for any intersection with an existing level of service LOS D or worse. Because traffic congestion is highest at intersections where vehicles queue and are subject to reduced speeds, these hot spots are typically produced at intersections.

As noted previously, the project involves the construction of the MUST facility and associated conveyance facilities. Operational vehicle trips would be nominal since the project would require two shifts of three operators Monday through Friday, two shifts of two operators Saturday and Sunday, and the facility would be open to the public on a limited basis. As traffic generation associated with the proposed MUST facilities would be nominal, it would not be of sufficient volume to increase the ICU of nearby intersections to warrant a CO hotspot analysis.

Mitigation Measures: Refer to Mitigation Measure AQ-1.

e) Create objectionable odors affecting a substantial number of people?

Less Than Significant Impact. According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed project does not include any uses identified by the SCAQMD as being associated with odors capable of affecting a substantial number of people.

Construction activities associated with the project may generate detectable odors from heavy-duty equipment exhaust. Construction-related odors would be short-term in nature and cease upon project completion. Any impacts to existing adjacent land uses would be short-term and are less than significant.

Mitigation Measures: No mitigation is required.

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4.4 BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	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, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		✓		
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (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?				✓

This section is based on the *Long Beach Municipal Urban Stormwater Treatment (MUST) Facility Project Biological Resources Report* (Biological Report) prepared by Michael Baker International, Inc., dated April 2017 (refer to Appendix B, *Biological Report*).

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?

***Less Than Significant Impact With Mitigation Incorporated*.** The proposed project would include construction of the MUST facility and associated conveyance facilities along the Los Angeles River, a channelized flood control waterway, from State Route 91 (SR-91) to the Golden Shore RV Resort. The project site has been previously disturbed and is located within an urbanized area. According to the Biological Report, the project site includes developed and disturbed habitat, as well as disturbed and restored coastal sage scrub. The disturbed and restored coastal sage scrub is limited to portions of Segment 5 of the conveyance facilities, refer to Exhibit 2-3.

Based on the literature/records search performed as part of the Biological Report, 15 special-status plant species and 20 special-status wildlife species are known to occur within a five-mile radius of the project site. Each of these species were documented by the literature/records search as having a low potential or are not expected to occur within the survey area. Based on the field review performed as part of the Biological Report, no special-status plant or wildlife species were observed within the study area.

No endangered, rare, threatened, or special status plant species (or associated habitats) or wildlife species are known to occur within the boundaries of the project site. Project implementation would not result in a substantial adverse effect, either directly or through habitat modifications, on any sensitive species. The restored coastal sage scrub located within the survey area for Segment 5 is not expected to be affected by the proposed project. While a minor amount of disturbed habitat and ornamental landscaping may be affected, impacts to sensitive biological resources are not anticipated given the disturbed nature of the project site.

Since the proposed project may result in the removal of disturbed habitat and ornamental vegetation in various locations of the project site, the proposed project could result in potential impacts to nesting birds protected by the Migratory Bird Treaty Act (MBTA). The MBTA prohibits activities that result in the direct take (defined as killing or possession) of a migratory bird. The proposed project has the potential to impact nesting birds if construction activities occur during the nesting season. However, Mitigation Measure BIO-1 has been provided to reduce impacts in this regard to less than significant levels.

Mitigation Measures:

BIO-1 If ground-disturbing activities or removal of any trees, shrubs, or any other potential nesting habitat are scheduled within the avian nesting season (nesting season generally extend from January 1 - August 31), a pre-construction clearance survey for nesting birds shall be conducted twice per week during the three weeks prior to the scheduled vegetation clearance.

The biologist conducting the clearance survey shall document the negative results if no active bird nests are observed on the project site or within the vicinity during the clearance survey with a brief letter report indicating that no impacts to active bird nests would occur before construction can proceed. If an active avian nest is discovered during the pre-construction clearance survey, construction activities shall stay outside of a 300-foot buffer around the active nest. For raptor species, this buffer shall be 500 feet. A biological monitor shall be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Results of the pre-construction survey and any subsequent monitoring shall be provided to the California Department of Fish and Wildlife (CDFW) and other appropriate agencies.

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

***Less Than Significant Impact With Mitigation Incorporated*.** No known riparian habitats are present on-site. Restored coastal sage scrub occurs along conveyance segment 5, and disturbed coastal sage scrub occurs in adjacent disturbed areas along segment 5. Based on the biological report, neither the restored nor disturbed coastal sage scrub would be affected by the project. However, there is a potential for impacts to migratory birds within existing vegetation that may be affected by the project and in the immediate area during project construction; refer to Response 4.4(a). Mitigation Measure BIO-1 has been included to ensure that any potential impacts to species in riparian habitat are less than significant.

Mitigation Measures: Refer to Mitigation Measure BIO-1.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less Than Significant Impact With Mitigation Incorporated. There are no federally protected wetlands present on the project site, since the project site includes developed and disturbed habitat. However, there is a jurisdictional feature within the survey area consisting of a concrete-lined flood channel located within the northeastern portion of conveyance segment 5, in addition to the termini of numerous conveyance segments connecting to existing flood control facilities within the project area. These features are likely subject to the jurisdiction of the U.S. Army Corps of Engineers (Corps) pursuant to Section 404 of the Federal Clean Water Act, the CDFW pursuant to Section 1600 of the California Fish and Game Code, and Regional Water Quality Control Board (RWQCB) pursuant to CWA Section 401. As such, Mitigation Measure BIO-2 would be implemented to require preparation of a Jurisdictional Delineation during the final design phase to quantify impacts and also require the acquisition of regulatory permits from the Corps, CDFW, and RWQCB. Impacts to jurisdictional waters of the U.S. and State would be mitigated according to existing agency requirements, at a minimum 1:1 ratio to ensure adequate minimization of impacts. With implementation of Mitigation Measure BIO-2, impacts in this regard would be less than significant.

Mitigation Measures:

BIO-2 Prior to any construction activities affecting jurisdictional waters of the U.S. or State, the City of Long Beach shall conduct a jurisdictional delineation (JD) for the proposed project to quantify impacts to jurisdictional features, pursuant to Section 404 of the Federal Clean Water Act (CWA), Section 1600 of the California Fish and Game Code, and Section 401 of the CWA. Based on the results of the JD, the City of Long Beach shall consult with the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and Regional Water Quality Control Board to obtain regulatory permits, as necessary based on project impacts. In consultation with the regulatory agencies, compensatory mitigation for jurisdictional impacts shall be provided at a minimum 1:1 ratio, or as directed in accordance with existing agency requirements.

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?

Less Than Significant Impact With Mitigation Incorporated. The proposed MUST facility and associated conveyance facilities would be constructed on previously disturbed and developed areas that primarily consist of disturbed habitat and ornamental landscaped features. The project site is surrounded by urban uses; therefore, the site does not function as a wildlife movement corridor. Therefore, impacts to wildlife corridors or linkages are anticipated to be less than significant. However, vegetation within and adjacent to the project site has the potential to provide favorable conditions for avian nesting. Mitigation Measure BIO-1 has been included to ensure that any potential impacts to wildlife species (i.e., nesting migratory birds) are less than significant.

Mitigation Measures: Refer to Mitigation Measure BIO-1.

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

Less Than Significant Impact. Vegetation removal associated with the proposed project is anticipated to be limited primarily to removal of ornamental trees and landscaping on-site for the purpose of constructing the MUST and associated conveyance facilities. Chapter 14.28 of the *LBMC* contains regulations on tree and shrub planting, removal, and maintenance, including the protection of all trees located along the street, alley, court, or other public place during construction activities. Any removal of trees or shrubs within City streets as required for project construction would be performed consistent with the LBMC. Thus, with implementation of Chapter 14.28 of the *LBMC* impacts to local policies protecting biological resources would be less than significant.

Mitigation Measures: No mitigation is required.

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

No Impact. According to the U.S. Fish and Wildlife Service's *HCP/NCCP Planning Areas in Southern California Map*[1] and *California Regional Conservation Plans Map*[2] the proposed project site is neither located within Natural Community Conservation Plan (NCCP) nor Habitat Conservation Plan (HCP). As such, there would be no impact in this regard.

Mitigation Measures: No mitigation is required.

[1] U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, *HCP/NCCP Planning Areas in Southern California*, October 2008.

[2] California Department of Fish and Wildlife, *California Regional Conservation Plans Map*, August 2015.

4.5 CULTURAL RESOURCES

Would the project:	**Potentially Significant Impact**	**Less Than Significant Impact With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5?		✓		
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5?		✓		
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		✓		
d. Disturb any human remains, including those interred outside of dedicated cemeteries?			✓	

This section is based on the following documents (refer to Appendix C, *Cultural Report and Paleontological Assessment*):

- *Cultural Resources Survey Report for the Long Beach Municipal Urban Stormwater Treatment (MUST) Project, City of Long Beach, Los Angeles County, California* (Cultural Report), prepared by Cogstone, dated April 2017.

- *Paleontological Resources Assessment for the Long Beach Municipal Urban Stormwater Treatment Project, City of Long Beach, Los Angeles County, California* (Paleontological Assessment), prepared by Cogstone, dated April 2017.

a) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5?

Less Than Significant Impact With Mitigation Incorporated. According to the literature/records search performed as part of the Cultural Report, a total of 16 prior cultural studies have been performed that included portions of the project area. All 16 of these prior studies were negative for cultural resources within the project impact area. A total of 57 cultural resources have been previously documented outside of project boundaries but within a half-mile of project boundaries. These consist of three prehistoric sites, one multicomponent site, one historic archaeological site and 52 historic built environment resources.

The Cultural Report included an intensive pedestrian survey of the project site. Based on the survey, one built environment historical resource was encountered within the project area consisting of two segments of the Pacific Electric Railway, Long Beach Line, designated as the Pacific Electric Railway Freight Line (PERY Freight Line). The railroad segments recorded are thought to be at least 75 years old, possibly several years older. They are historic in age. Although the PERY Freight Line is eligible for listing under Criterion 1 of the California Register of Historic Resources (CRHR) criteria for significance for its association with World War II, it lacks sufficient integrity and, therefore, is recommended as not eligible for CRHR listing.

Based on Figure 12, *City of Long Beach Designated Landmarks* of the Historic Preservation Element of the *General Plan*, the closest historical resource to the project site is the Bembridge House, built in 1906 and located approximately 180 feet east of Segment 9 at 953 Park Circle. Further, Segment 9 is adjacent to the western boundary of the Drake Park/Wilmore City Historic District, as shown on Figure 13, *City of Long Beach Designated Historic Districts* of the Historic Preservation Element of the *General Plan*. The project would not result in any impacts to either the Bembridge House or Drake Park/Wilmore City Historic District, since these resources are outside of project boundaries.

Although impacts related to historic resources were determined to be less than significant, due to poor ground visibility in portions of the project area during the pedestrian survey, it is possible that historic resources may be discovered during vegetation clearing and ground disturbing activities during project construction. As such, Mitigation Measure CUL-1 has been incorporated, which would require that construction activities cease in the area of a find, and that a qualified archaeologist is retained to analyze the resource and develop an avoidance/mitigation plan. As such, impacts in this regard would be less than significant.

Mitigation Measures:

CUL-1 If evidence of cultural resources is found during excavation, vegetation clearance, and other ground disturbing activities, activity in that area shall cease and the construction contractor shall contact the City of Long Beach Development Services Department. With direction from the Development Services Department, an archaeologist certified by the County of Los Angeles shall be retained to evaluate the discovery prior to resuming grading in the immediate vicinity of the find. If warranted, the archaeologist shall develop a plan of mitigation which may include, but shall not be limited, to, salvage excavation, laboratory analysis and processing, research, curation of the find in a local museum or repository, and preparation of a report summarizing the find.

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

Less Than Significant Impact With Mitigation Incorporated. As noted in Response 4.5(a), above, one historic archaeological site has been documented within a half-mile search radius. However, no known archaeological resources exist within the boundaries of the site. Although it is not expected that archaeological resources would be encountered during construction due to previous disturbance at the site, the project would require excavation during construction activities. As such, Mitigation Measure CUL-1 is provided in the unlikely event such resources are discovered during the grading, vegetation clearing, and excavation process. Upon implementation of the recommended mitigation measure, impacts would be reduced to a less than significant level. Impacts related to tribal cultural resources are discussed in Section 4.17, *Tribal Cultural Resources*.

Mitigation Measures: Refer to Mitigation Measure CUL-1.

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

Less Than Significant Impact With Mitigation Incorporated. According to the Paleontological Assessment, the project is mapped as modern artificial fill, Holocene and late Pleistocene alluvium and alluvial fans, and late to middle Pleistocene non-marine and nearshore marine deposits. At the eastern edges of the project is an outcrop of the old marine to non-marine deposits. In the area of the Palos Verdes Hills, both the late to middle Pleistocene Palos Verdes Sand and the early Pleistocene San Pedro Formation are present adjacent to and beneath the old marine to non-marine deposits. Although no previous fossil localities have been recorded within the project boundaries, three of the 11 project segments would affect sedimentary rocks known to produce fossils including Pleistocene alluvium, Palos Verdes Sand and San Pedro Formation. Based on the Paleontological Assessment, the linear project alignment is paleontologically sensitive for all excavations more than five feet in depth and planned excavations range from 15 to 30 feet below the current surface. As such, Mitigation Measure CUL-2 would require a Paleontological Resources Management Plan providing paleontological resources awareness training, framework for evaluating fossils recovered for significance under CEQA, and curation agreement with an accredited museum. Upon implementation of the recommended mitigation measure, impacts would be less than significant.

Mitigation Measures:

CUL-2 Prior to construction, a Paleontological Resources Management Plan shall be prepared for the proposed project. The Paleontological Resources Management Plan shall include paleontological resources awareness training for earthmoving personnel, provide a rationale for spot-checking to determine when sediments suitable for fossil preservation have been reached in each location and implement monitoring at that point. The plan shall also provide a framework for evaluating fossils recovered for significance under CEQA. Fossils meeting significance criteria shall be prepared, identified by a paleontologist certified by the County of Los Angeles and submitted for curation at an accredited museum such as the Natural History Museum of Los Angeles County. The City of Long Beach Development Services Department shall ensure that the requirement for preparation of the Paleontological Resources Management Plan is identified on project plans and specifications.

d) Disturb any human remains, including those interred outside of dedicated cemeteries?

Less Than Significant Impact. No conditions exist that suggest human remains are likely to be found on the project site. Due to the level of past disturbance on-site, it is not anticipated that human remains, including those interred outside of dedicated cemeteries, would be encountered during earth removal or disturbance activities. If human remains are found, those remains would require proper treatment, in accordance with applicable laws. State of California Public Resources Health and Safety Code Section 7050.5-7055 describe the general provisions for human remains. Specifically, Health and Safety Code Section 7050.5 describes the requirements if any human remains are accidentally discovered during excavation of a site. As required by State law, the requirements and procedures set forth in Section 5097.98 of the California Public Resources Code would be implemented, including notification of the County Coroner, notification of the Native American Heritage Commission and consultation with the individual identified by the Native American Heritage Commission to be the "most likely descendant." If human remains are found during excavation, excavation must stop in the vicinity of the find and any area that is reasonably suspected to overlay adjacent remains until the County coroner has been called out, and the remains have been investigated and appropriate recommendations have been made for the treatment and disposition of the remains. Following compliance with existing State regulations, which detail the appropriate actions necessary in the event human remains are encountered, impacts in this regard would be considered less than significant.

Mitigation Measures: No mitigation is required.

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4.6 GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
1) 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.			✓	
2) Strong seismic ground shaking?			✓	
3) Seismic-related ground failure, including liquefaction?			✓	
4) Landslides?			✓	
b. Result in substantial soil erosion or the loss of topsoil?			✓	
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			✓	
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			✓	
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				✓

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

1) 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. Southern California, including the project area, is subject to the effects of seismic activity due to the active faults that traverse the area. Active faults are defined as those that have experienced surface displacement within Holocene time (approximately the last 11,000 years) and/or are in a State-designated Alquist-Priolo Earthquake Fault Zone. The Alquist-Priolo Earthquake Fault Zoning Act, enacted in 1973 and amended several times since, address the hazard of surface faulting to structures for human occupancy. Local agencies must enforce the Alquist–Priolo Earthquake Fault Zoning Act in the development permit process by requiring a geologic investigation prepared by a licensed geologist to demonstrate that buildings will not be constructed across active faults.

Based on the *2010 Fault Activity Map of California*[1] and Figure 2*, Fault Map with Special Study Zones*, of the *Seismic Safety Element* of the *General Plan*, the northwestern portion of the Newport-Inglewood fault zone (Alquist-Priolo Special Study Zone) traverses Segment 5 of the conveyance facilities. However, the Alquist-Priolo Earthquake Fault

1 State of California Department of Conservation, *2010 Fault Activity Map of California*, http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html, accessed on May 11, 2017.

Zoning Act is intended to prohibit the construction of developments and other structures for human occupancy across active faults. Segment 5 is a proposed conveyance facility that would be designed to carry urban runoff to the MUST facility, and there would be no structures for human occupancy within this segment. In addition, this conveyance facility would convey minor amounts of dry weather urban runoff, and would not involve acutely hazardous materials (such as a petroleum or natural gas pipeline). The project would be required to comply with California Building Code (CBC) standards in order to minimize the potential for damage and major injury during a seismic event. Moreover, design and construction of the proposed project shall comply with existing City standards, including Chapter 18.68 (Earthquake Hazard Regulations) of Title 18 (Buildings and Construction), of the *LBMC*. Through compliance with CBC standards and *LBMC* regulations, impacts associated with fault rupture would be less than significant.

Mitigation Measures: No mitigation is required.

2) Strong seismic ground shaking?

Less Than Significant Impact. Southern California has numerous active seismic faults subjecting residents to potential earthquake and seismic-related hazards. Seismic activity poses two types of potential hazards for residents and structures, categorized either as primary or secondary hazards. Primary hazards include ground rupture, ground shaking, ground displacement, subsidence, and uplift from earth movement. Primary hazards can also induce secondary hazards such as ground failure (lurch cracking, lateral spreading, and slope failure), liquefaction, water waves (seiches), movement on nearby faults (sympathetic fault movement), dam failure, and fires. Both primary and secondary hazards pose a threat to the community as a result of the project's proximity to active regional faults.

The region surrounding the Long Beach area is characterized by a relatively high seismic activity. The greatest damage from earthquakes results from ground shaking. Ground shaking is generally most severe near quake epicenters and generally become weaker further out from the epicenter. Based on *2010 Fault Activity Map of California*[2], and Figure 2, *Fault Map with Special Study Zones*, of the *General Plan*, a number of active faults occur within the region, including the Newport-Inglewood fault which transects Segment 5 of the project. As such, the project site would be subject to strong seismic shaking during a seismic event, as is the case with the vast majority of areas throughout southern California.

Implementation of the proposed project would install a MUST facility and associated conveyance facilities. Due to the location of the project site, which is within seismically-active region, there is potential for seismic ground shaking. However, the project would be required to comply with CBC standards and Chapter 18.68 of the *LBMC* in order to minimize the potential for damage and major injury during a seismic event. The CBC includes design requirements for construction practices, foundation design, structural seismic resistance, and site classifications to minimize hazards during a seismic event. Through compliance with CBC standards and *LBMC* regulations, impacts associated with strong seismic ground shaking would be less than significant.

Mitigation Measures: No mitigation is required.

3) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Liquefaction of cohesionless soils can be caused by strong vibratory motion due to earthquakes. Liquefaction is characterized by a loss of shear strength in the affected soil layers, thereby causing the soils to behave as a viscous liquid. Susceptibility to liquefaction is based on geologic and geotechnical data. River channels and floodplains are considered most susceptible to liquefaction, while alluvial fans have a lower susceptibility. Depth to groundwater is another important element in the susceptibility to liquefaction. Groundwater shallower than 30 feet results in high to very high susceptibility to liquefaction, while deeper water results in low and very low susceptibility.

2 State of California Department of Conservation, *2010 Fault Activity Map of California*, http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html, accessed on May 11, 2017.

Based on the *Earthquake Zones of Required Investigation Long Beach Quadrangle* prepared by the State of California Department of Conservation, the project site is subject to the potential for liquefaction.[3] According to Figure 7, *Liquefaction Potential Area*, of the *Seismic Safety Element* of the *General Plan*, the northern portion of the project site is located within "liquefaction potential minimal" area, the central portion of the project site ranges is located within "liquefaction potential moderate" area, and the southern portion of the project site is located within "liquefaction potential significant" area. Based on the *General Plan*, the consequences for liquefaction in areas designates as having a significant potential for liquefaction includes possible horizontal failure by lateral spreading and instability of containment dikes where they are present, the occurrence of sand boils and differential settlements of the order of several inches to a foot or more. In areas where liquefaction is rated as moderate, the consequences would likely be more subtly characterized by settlement of a few inches and possible sand boils. Notwithstanding, the State Division of Mines and Geology has designated all areas within the City within a liquefaction hazard zone, which requires geotechnical reports for construction projects to mitigate the potential undermining of structural integrity during earthquakes. As stated above, compliance with the CBC and *LBMC* would minimize risks related to liquefaction to a less than significant level.

Mitigation Measures: No mitigation is required.

4) Landslides?

Less Than Significant Impact. Landslides are a geologic hazard, with some moving slowly and causing damage gradually, and others moving rapidly and causing unexpected damage. Gravity is the force driving landslide movement. Factors that commonly allow the force of gravity to overcome the resistance of earth material to landslide movement include saturation by water, steepening of slopes by erosion or construction, alternate freezing or thawing, and seismic shaking.

Based on the State of California Department of Conservation, *Earthquake Zones of Required Investigation Long Beach Quadrangle*, the project site is not subject to potential for ground displacement and landslide. Additionally, according to the *General Plan*, slope stability in Long Beach is not a major problem as slopes generally are neither high nor steep. While slope instability is not a major consideration in overall land planning, it is a factor in designing individual sites.

In addition, there are no landforms in the project vicinity capable of producing a significant landslide event. Consequently, there is a low potential for landslides to occur on or near the proposed project site as a result of the proposed project. Therefore, there would be a less than significant impact associated with the exposure of people or structures to potential substantial adverse effects involving landslides.

Mitigation Measures: No mitigation is required.

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

Less Than Significant Impact. The primary concern in regards to soil erosion or loss of topsoil would be during the construction phase of the project. Grading and earthwork activities associated with project construction activities would expose soils to potential short-term erosion by wind and water. All demolition and construction activities would be subject to compliance with the CBC. Further, the project would be subject to compliance with the requirements set forth in the National Pollutant Discharge Elimination System (NPDES) Storm Water General Construction Permit for construction activities; refer to Response 4.9(a). The NPDES Storm Water General Construction Permit requires preparation of a Storm Water Pollution Prevention Plan (SWPPP), which would identify specific erosion and sediment control Best Management Practices (BMPs) that would be implemented to protect storm water runoff during

[3] State of California Department of Conservation, *Earthquake Zones of Required Investigation Long Beach Quadrangle*, http://gmw.conservation.ca.gov/SHP/EZRIM/Maps/LONG_BEACH_EZRIM.pdf, accessed on May 3, 2017.

construction activities. Following compliance with the CBC and NPDES requirements, project implementation would result in a less than significant impact regarding soil erosion.

Mitigation Measures: No mitigation is required.

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

Less Than Significant Impact. The project site is located within a seismically-active area. As stated within Response 4.6(a)(3), impacts related to liquefaction would be less than significant and, as demonstrated in Response 4.6(a)(4), the project site would not be subject to earthquake-induced landslides.

As stated in Response 4.6(a)(4), according to the *Public Safety Element* of the *General Plan*, slope stability in the City of Long Beach is not a major problem as slopes generally are neither high nor steep. Project improvements would conform to the requirements of the CBC and *LBMC* in order to minimize the potential for hazards due to unstable soils, which would reduce impacts in this regard to less than significant levels.

Mitigation Measures: No mitigation is required.

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

Less Than Significant Impact. Expansive soils are defined as soils possessing clay particles that react to moisture changes by shrinking (when dry) or swelling (when wet). According to Figure 3, *Soil Profiles*, of the *Seismic Safety Element* of the *General Plan*, the project site is underlain by fill and alluvial deposits. The fill material is predominantly man-made fill, which is generally composed of fine sand and silt. The Los Angeles Channel filling sediments are composed of a basal sand and gravel aquifer (Gaspur Aquifer) overlain by less permeable flood plain and tidal marsh deposits of fine-grained soils. These near surface soils (upper 50 feet) are characterized as consisting of alternating layers of cohesionless and cohesive soils. The cohesionless soils consist generally of silty sand and sandy silt and are typically loose to medium dense. The cohesive soil layers are generally clayey silts and silty clays of soft to stiff consistency. Clayey soil could be subject to settlement and/or instability. However, the proposed project would comply with the CBC and *LBMC* to minimize the potential for hazards related to expansive soil, reducing impacts to less than significant levels.

Mitigation Measures: No mitigation is required.

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

No Impact. No septic tanks or alternative wastewater disposal systems would be constructed as part of the project, and no impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

4.7 GREENHOUSE GASES

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	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?			✓	

Global Climate Change

California is a substantial contributor of global greenhouse gases (GHGs), emitting over 370 million tons of carbon dioxide (CO_2) in 2014.[1] Climate studies indicate that California is likely to see an increase of three to four degrees Fahrenheit (ºF) over the next century. Methane (CH_4) is also an important GHG that potentially contributes to global climate change. GHGs are global in their effect, which is to increase the earth's ability to absorb heat in the atmosphere. As primary GHGs have a long lifetime in the atmosphere, accumulate over time, and are generally well-mixed, their impact on the atmosphere is mostly independent of the point of emission.

The impact of anthropogenic activities on global climate change is apparent in the observational record. Air trapped by ice has been extracted from core samples taken from polar ice sheets to determine the global atmospheric variation of CO_2, CH_4, and nitrous oxide (N_2O) from before the start of industrialization (approximately 1750), to over 650,000 years ago. For that period, it was found that CO_2 concentrations ranged from 180 parts per million (ppm) to 300 ppm. For the period from approximately 1750 to the present, global CO_2 concentrations increased from a pre-industrialization period concentration of 280 to 379 parts per million (ppm) in 2005, with the 2005 value far exceeding the upper end of the pre-industrial period range.

Regulations and Significance Criteria

The Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. It concluded that a stabilization of GHGs at 400 to 450 ppm, carbon dioxide equivalent (CO_2eq)[2] concentration, is required to keep global mean warming below 2 degrees Celsius (ºC), which in turn is assumed to be necessary to avoid significant levels of climate change.

Executive Order S-3-05 was issued in June 2005, which established the following GHG emission reduction targets:

- 2010: Reduce GHG emissions to 2000 levels;
- 2020: Reduce GHG emissions to 1990 levels; and
- 2050: Reduce GHG emissions to 80 percent below 1990 levels.

Issued in April 2015, Executive Order B-30-15 requires statewide GHG emissions to be reduced 40 percent below 1990 levels by 2030. Assembly Bill 32 (AB 32) requires that the California Air Resources Board (CARB) determine what the statewide GHG emissions level was in 1990, and approve a statewide GHG emissions limit that is equivalent to that level, to be achieved by 2020. CARB has approved a 2020 emissions limit of 431 million metric tons (MT) of CO_2eq ($MTCO_2eq$). Effective September 8, 2016, Senate Bill 32 (SB 32) requires the State to reduce GHG emissions to 40 percent below 1990 levels by 2030 and Assembly Bill 197 (AB 197) creates a legislative committee to oversee regulators.

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[1] California Environmental Protection Agency, *California Greenhouse Gas Emission Inventory - 2016 Edition*, http://www.arb.ca.gov/cc/inventory/data/data.htm, accessed May 23, 2017.

[2] Carbon Dioxide Equivalent (CO_2eq) – A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

Due to the nature of global climate change, it is not anticipated that any single development project would have a substantial effect on global climate change. In actuality, GHG emissions from the proposed project would combine with emissions emitted across California, the United States, and the world to cumulatively contribute to global climate change.

In June 2008, the California Governor's Office of Planning and Research (OPR) published a Technical Advisory, which provides informal guidance for public agencies as they address the issue of climate change in California Environmental Quality Act (*CEQA*) documents.[3] This is assessed by determining whether a proposed project is consistent with or obstructs the 39 Recommended Actions identified by CARB in its *Climate Change Scoping Plan* which includes nine Early Action Measures (qualitative approach). The Attorney General's Mitigation Measures identify areas where GHG emissions reductions can be achieved in order to achieve the goals of AB 32. As set forth in the OPR Technical Advisory and in the proposed amendments to the *CEQA Guidelines* Section 15064.4, this analysis examines whether the project's GHG emissions are significant based on a qualitative and performance based standard (*CEQA Guidelines* Section 15064.4(a)(1) and (2)).

SCAQMD Thresholds

On December 5, 2008, the South Coast Air Quality Management District (SCAQMD) adopted GHG significance thresholds for Stationary Sources, Rules, and Plans where the SCAQMD is lead agency. The threshold uses a tiered approach. A proposed project is compared with the requirements of each tier sequentially and would not result in a significant impact if it complies with any tier. Tier 1 excludes projects that are specifically exempt from Senate Bill (SB) 97 from resulting in a significant impact. Tier 2 excludes projects that are consistent with a GHG reduction plan that has a certified final CEQA document and complies with AB 32 GHG reduction goals. Tier 3 excludes projects with annual emissions lower than a screening threshold. For industrial stationary source projects, the SCAQMD adopted a screening threshold of 10,000 $MTCO_2eq$ per year ($MTCO_2eq$/yr). This threshold was selected to capture 90 percent of the GHG emissions from these types of projects where the combustion of natural gas is the primary source of GHG emissions. For all non-industrial projects, the SCAQMD is proposing a screening threshold of 3,000 $MTCO_2eq$/yr. SCAQMD concluded that projects with emissions less than the screening thresholds would not result in a significant cumulative impact.

Tier 4 consists of three decision tree options. Under the Tier 4 first option, the project would be excluded if design features and/or mitigation measures resulted in emissions 30 percent lower than business as usual (BAU) emissions. However, the Working Group did not provide a recommendation for this approach. The Working Group folded the Tier 4 second option into the third Option. Under the Tier 4 third option, the project would be excluded if it was below an efficiency-based threshold of 4.8 $MTCO_2eq$ per service population (SP) per year or 3.0 $MTCO_2eq$ per SP for post-2020 projects.[4] Tier 5 would exclude projects that implement offsite mitigation (GHG reduction projects) or purchase offsets to reduce GHG emission impacts to less than the proposed screening level.

While not adopted by the SCAQMD Board, the guidance document prepared for the stationary source threshold also suggested the same tiered approach for residential and commercial projects with a 3,000 $MTCO_2eq$/yr screening threshold. However, at the time of adoption of the industrial stationary source threshold, the SCAQMD felt additional analysis was required along with coordination with CARB's GHG significance threshold development efforts.

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[3] Governor's Office of Planning and Research, *CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review*, 2008.

[4] The project-level efficiency-based threshold of 4.8 $MTCO_2eq$ per SP per year is relative to the 2020 target date. The SCAQMD has also proposed efficiency-based thresholds relative to the 2035 target date to be consistent with the GHG reduction target date of SB 375. GHG reductions by the SB 375 target date of 2035 would be approximately 40 percent. Applying this 40 percent reduction to the 2020 targets results in an efficiency threshold for plans of 4.1 $MTCO_2eq$ per SP per year and an efficiency threshold at the project level of 3.0 $MTCO_2eq$/year.

At the November 2009 meeting of the SCAQMD GHG working group, SCAQMD staff presented two options for screening thresholds for residential and commercial projects. The first option would have different thresholds for specific land uses. The proposed threshold for residential projects is 3,500 $MTCO_2eq$/yr, the commercial threshold is 1,400 $MTCO_2eq$/yr, and the mixed-use threshold is 3,000 $MTCO_2eq$/yr. The second option would apply the 3,000 $MTCO_2eq$/yr screening threshold for all commercial/residential projects. Lead agencies would be able to select either option. These thresholds are based on capturing 90 percent of the emissions from projects and requiring them to comply with the higher tiers of the threshold (i.e., performance requirements or GHG reductions outside of the project) to not result in a significant impact.

SCAQMD staff also presented updates for compliance options for Tier 4 of the significance thresholds. The first option would be a reduction of 23.9 percent in GHG emissions over the base case. This percentage reduction represents the land use sector portion of the CARB's *Climate Change Scoping Plan's* overall reduction of 28 percent. This target would be updated as the AB 32 *Climate Change Scoping Plan* is revised. The base case scenario for this reduction still needs to be defined. Residual emissions would need to be less than 25,000 $MTCO_2eq$/yr to comply with the option. Staff proposed efficiency targets for the third option of 4.6 $MTCO_2eq$/yr per service population (population plus employment) for project level analysis and 6.6 $MTCO_2eq$/yr for plan level analyses. For project level analyses, residual emissions would need to be less than 25,000 $MTCO_2eq$/yr to comply with this option.

At the most recent meeting of the SCAQMD GHG working group, SCAQMD staff recommended extending the 10,000 $MTCO_2eq$/yr industrial project threshold for use by all lead agencies. The two options for land-use thresholds were reiterated with a recommendation that lead agencies use the second, 3,000 $MTCO_2eq$/yr threshold for all non-industrial development projects. Staff indicated that they would not be recommending a specific approach to address the first option of Tier 4, Percent Emissions Reduction Target. If lead agencies enquire about using this approach, staff will reference the approach recommended by the San Joaquin Valley Air Pollution Control District and describe the challenges to using this approach. For the third option of Tier 4, SCAQMD staff re-calculated the recommended Tier 4 efficiency targets for project level analyses to 4.8 $MTCO_2eq$/yr in 2020 and 3.0 $MTCO_2eq$/yr in 2035. The recommended plan level analysis efficiency target remains 6.6 $MTCO_2eq$/yr for 2020, but was lowered to 4.1 $MTCO_2eq$/yr for 2035. SCAQMD staff also stated that they are no longer proposing to include a 25,000 $MTCO_2eq$/yr maximum emissions requirement for compliance with Tier 4. Staff indicated that they hoped to bring the proposed GHG significance thresholds to the board for their December 2010 meeting; however, this did not occur.

For the proposed project, the 10,000 $MTCO_2eq$ per year industrial screening threshold is used as the significance threshold, in addition to the qualitative thresholds of significance set forth below from Section VII of Appendix G to the *CEQA Guidelines*.

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

<u>Less Than Significant Impact</u>.

Project-Related Sources of Greenhouse Gases

Project-related GHG emissions typically include emissions from construction and operational activities. Construction of the project would result in direct emissions of CO_2, N_2O, and CH_4 from the operation of construction equipment. Transportation of materials and construction workers to and from the project site would also result in GHG emissions. Construction activities would be short-term in duration and would cease upon project completion. The proposed project involves construction of the MUST facility and associated conveyance facilities and does not propose facilities that would generate emissions. Further, the proposed project would only require two shifts of three operators Monday through Friday and two shifts of two operators Saturday and Sunday. The facility would be open to scheduled tours and educational events. However, the tours and events would infrequent, periodic, and would involve small groups of attendees. Thus, vehicle related emissions due to project operations would be minimal. Direct project-related GHG emissions include emissions from construction activities, while indirect sources include emissions from electricity consumption for the additional 14 sump pump stations averaging 10 horsepower each (a total of 140 horsepower) and 100 kilowatts of treatment facility equipment. As such, operational GHG estimations are based on energy emissions from electricity.

Direct Project-Related Source of Greenhouse Gases

Construction Emissions. Construction GHG emissions are typically summed and amortized over the lifetime of the project (assumed to be 30 years), then added to the operational emissions.[5] As shown in Table 4.7-1, *Project Related Greenhouse Gas Emissions*, the proposed project would result in 1.99 $MTCO_2eq$/yr (amortized over 30 years), which represents a total of 572.55 $MTCO_2eq$ from construction activities.

Table 4.7-1
Project Related Greenhouse Gas Emissions

Source	CO_2	CH_4		N_2O		Total Metric Tons of CO_2eq
	Metric Tons/yr[1]	Metric Tons/yr[1]	Metric Tons of CO_2eq[2]	Metric Tons/yr[1]	Metric Tons of CO_2eq[2]	
Construction Emissions						
Total Construction Emissions (amortized over 30 years)	24.71	0.01	0.19	0.00	0.00	24.91
Indirect Emissions						
Energy[3]	570.50	0.02	0.59	0.01	1.49	572.58
Total Unmitigated Project-Related Emissions[4]	***597.49 $MTCO_2eq$/yr***					

Notes:
1. Emissions calculated using CalEEMod computer model.
2. CO_2 Equivalent values calculated using the US EPA Website, *Greenhouse Gas Equivalencies Calculator*, https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator, accessed May 2017.
3. Energy emissions from pumps were calculated separately. Emissions were based on energy consumption from operation of 14 sump pump stations averaging 10 horsepower each (a total of 140 horsepower) and 100 kilowatts of treatment facility equipment and Southern California Edison emissions factors from CalEEMod.
4. Totals may be slightly off due to rounding.

Refer to Appendix A, *Air Quality/Greenhouse Gas Emissions Data*, for detailed model input/output data.

Indirect Project-Related Source of Greenhouse Gases

Energy Consumption. Energy consumption were calculated using CalEEMod GHG energy emissions factors and project energy consumption. Electricity would be provided to the project site via Southern California Edison (SCE). The proposed project would indirectly result in 574.53 $MTCO_2eq$/year due to energy consumption; refer to Table 4.7-1.

As shown in Table 4.7-1, the total amount of project-related emissions from direct and indirect sources combined would total 597.49 $MTCO_2eq$/yr, which is below the 10,000 $MTCO_2eq$/yr threshold. Therefore, the proposed project would result in a less than significant impact with regard to GHG emissions.

Mitigation Measures: No mitigation is required.

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

Less Than Significant Impact. The City adopted its Sustainable City Action Plan (CAP) in February 2010 to guide operational, policy, and financial decisions within the City. While the CAP provides a sustainable framework for future developments within the City, the goals outlined in the City's CAP are primarily municipal in nature, and not

[5] The project lifetime is based on the standard 30 year assumption of the South Coast Air Quality Management District (SCAQMD). SCAQMD, *Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13,* August 26, 2009.

project-specific. Therefore, the implementation of the proposed project would not conflict with an adopted plan, policy, or regulation pertaining to GHGs. The proposed project involves construction of the MUST facility and associated conveyance facilities. As discussed above, the proposed project would not generate a significant amount of GHGs in an unmitigated condition and would not exceed the 10,000 $MTCO_2eq$/yr threshold. Thus, a less than significant impact would occur in this regard.

Mitigation Measures: No mitigation is required.

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4.8 HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	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 compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?		✓		
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				✓
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				✓
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?		✓		
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				✓

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

Less Than Significant Impact. Exposure of the public or the environment to hazardous materials could occur through the improper handling or use of hazardous materials or hazardous wastes particularly by untrained personnel; transportation accident; environmentally unsound disposal methods; and/or fire, explosion, or other emergencies. The severity of potential effects varies with the activity conducted, the concentration and type of hazardous material or wastes present, and the proximity of sensitive receptors.

Operation of the proposed MUST facility would involve the handling/use and storage of hazardous materials (e.g., chlorine and other chemicals associated with the treatment of urban runoff). The project would be subject to compliance with existing regulations, standards, and guidelines established by the U.S. Environmental Protection Agency (EPA), State, and the City of Long Beach related to the storage, use, and disposal of hazardous materials. The project is subject to compliance with the existing hazardous materials regulations, which are codified in California Code of Regulations Titles 8, 22, and 26, and their enabling legislations set forth in Health and Safety Code Chapter 6.95 as well as California Code of Regulations Title 49. Both the Federal and State governments require any business, where the maximum quantity of a regulated substance exceeds the specified threshold quantity, register with the City as a manager of regulated substances and prepare a Risk Management Plan. The Risk Management Plan must contain an off-site consequence analysis, a five-year accident history, an accident prevention program, an emergency response program, and a certification of the truth and accuracy of the submitted information. Businesses would be required to submit their plans to the Certified Unified Program Agency (CUPA) (City of Long Beach, Department of Environmental Health [DEH]), which would make the plans available to emergency response personnel. The Risk Management Plan must identify the type of business, location, emergency contacts, emergency procedures, mitigation plans, and chemical inventory at each location. The City of Long Beach Fire Department (acting as the CUPA as well) would be responsible for enforcing all laws and regulations pertaining to any aboveground or underground storage tanks as well.

While the risk of exposure to hazardous materials cannot be eliminated, best management practices can be implemented to reduce risk to acceptable levels. Adherence to existing regulations would ensure compliance with safety standards related to the use and storage of hazardous materials, and the safety procedures mandated by applicable Federal, State, and local laws and regulations, which would ensure that risks resulting from the routine transportation, use, storage, or disposal of hazardous materials or hazardous wastes associated with implementation of the proposed project would be less than significant.

Mitigation Measures: No mitigation is required.

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?

Less Than Significant Impact With Mitigation Incorporated.

Short-Term Impacts

Construction Equipment

During project construction, there is a possibility of accidental release of hazardous substances such as petroleum-based fuels or hydraulic fluid used for construction equipment. The level of risk associated with the accidental release of hazardous substances is not considered significant due to the small volume and low concentration of hazardous materials utilized during construction. The construction contractor would be required to use standard construction controls and safety procedures that would avoid and minimize the potential for accidental release of such substances into the environment. Standard construction practices would be observed such that any materials released are appropriately contained and remediated as required by local, State, and Federal law.

Contaminated Soil

Based on the State Water Resource Control Board's (SWRCB) GeoTracker online database, one on-site property (where conveyance segment 9 traverses, as depicted on Exhibit 2-3, *Project Overview*), specifically located at 960 De Forest Avenue, has reported a release to soil/groundwater at the project site. From approximately 1930 to 1965, this property was used for electric rail-car repair, maintenance, and inspection. In 1965, Southern Pacific Transportation Company (SPTCo) acquired the property. From 1967 to 1992, SPTCo leased the property to various entities for bulk transfer and storage of liquid petroleum and chemical products. Operators of the property during this period included:

- Gunco Chemical and Manufacturing Company, 1967-1971;
- Charter International Oil Company, 1971-1985; and
- Bulk Terminal Company, 1985-1992.

Three primary chemical storage and distribution areas were located on the property. These included the North Aboveground Storage Tank (AST) Pad, Overhead Piperack Area, and South AST Pad. The North AST Pad included the storage of different chemicals in 10 ASTs. This tank farm was constructed with a concrete and asphalt floor, divided into secondary containment with cinder-block walls. The Overhead Piperack Area was used to transfer chemicals. Ten product delivery pipes were installed and connected the Overhead Pipe Rack to the North AST Pad. Approximately 18 to 26 ASTs were installed in 1980 on a continuous concrete pad surrounded by a secondary-containment wall, referred to as the South AST Area.

Various chemical releases have been reported, including, but not limited to, the following:

- A release of approximately 18,000 gallons of xylenes from underground piping near the Overhead Piperack Area in 1979;

- A spill of unknown quantity of petroleum product known as transmix from tank No. 4 of the North AST Pad on 30 August 1990;

- A spill of approximately 50 to 100 gallons of propylene glycol methyl ether (1-methoxy-2-propanol) on 9 July 1991; and

- Releases of sulfuric acid on and near the South AST Pad, including a spill of unknown quantity in July 1991.

Past investigations documented the presence of chlorinated VOCs and aromatic VOCs (primarily xylenes) in soil and groundwater beneath the site. In addition to these conditions, concentrations of methyl tertiary butyl ether (MTBE), tertiary butyl alcohol (TBA), and fecal coliform have been observed in groundwater. MTBE and TBA have not been used at the site or observed at high concentrations in soil gas or soil at the site; thus, these hazardous materials are anticipated to originate from an off-site use. Remedial actions that have occurred at the site to-date include the following:

- Soil excavation and disposal of TPH-impacted materials in 2003, related to the 1990 transmix release;
- SVE from 2003 to 2004; and
- Thermally enhanced SVE utilizing hot air injection from 2004 to 2006.

In 1996, Union Pacific Railroad (UPRR) acquired the property by merger with SPTCo, and it has been vacant since that time. From 1997 to 1998, UPRR's contractor demolished and removed the Warehouse, North and South AST Pads, Overhead Piperack, and associated belowground pipes, railroad tracks, pavement, and general debris. The site currently sits as vacant disturbed land.

Subsequently, total petroleum hydrocarbon (TPH)-impacts soils associated with the transmix release in 1990 were excavated and removed from the site in 2003. ERM, on behalf of UPRR, installed a soil vapor extraction (SVE) system in 2003, which operated until 2004, and was enhanced with thermal injection from 2004 to 2006. ERM estimated that over 60,000 pounds of contaminants were removed from the site by the SVE technology. RWQCB staff approved the decommissioning of the SVE system in May 2007, since it achieved maximum efficiency, in terms of its ability to remove absorbed contaminants. The project underwent further remedial actions by the City of Long Beach in the 2000s, including additional excavation of impacted soil, imported clean backfill material, confirmation soil sampling for volatile organic compounds (VOCs), and groundwater monitoring.

The RWQCB determined that the City of Long Beach fulfilled the site assessment requirements and soil cleanup criteria for an industrial and commercial land use scenario, the current designated zoning, and a no-further-action (NFA) action letter for soil only at the site was issued by the RWQCB on April 23, 2012.

Development of the proposed project would not require any rezoning of the site. However, construction activities could expose construction workers to residual soil and groundwater contamination at the site. The project would be required to comply with Mitigation Measure HAZ-1 pertaining to notification of proposed work to the RWQCB and preparation of a Soils Management Plan (SMP). A qualified professional engineer or professional geologist would be required to prepare the SMP prior to any site disturbance activities at this property.

Overall, if potentially contaminated soil is identified during site disturbance activities for the project, as evidenced by discoloration, odor, detection by instruments, or other signs, the professional engineer or professional geologist would be required to inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project applicant, representatives of the RWQCB, and City of Long Beach stating the recommended course of action.

Depending on the nature and extent of contamination, the professional engineer or professional geologist would be required to temporarily suspend construction activity at the location, as necessary, for the protection of workers or the public. If, in the opinion of the professional engineer or professional geologist, significant remediation may be required, the City shall contact representatives of the RWQCB for guidance and possible oversight. With compliance with Mitigation Measures HAZ-1 and HAZ-2, impacts pertaining to known and unknown soil contamination during site disturbance would be reduced to less than significant levels.

Contaminated Groundwater

In addition to the former on-site former UPRR Bulk Terminal property, six other off-site properties located in the immediate vicinity of the project site, have reported releases to the groundwater, are undergoing investigation/remediation, and remain open with the RWQCB; refer to Table 4.8-1, *Open Groundwater Contamination Sites*.

Table 4.8-1
Open Groundwater Contamination Sites

Facility Name	Location
On-site Property	
City Owned (Formerly Union Pacific Railroad Company [UPRR] Bulk Terminal)	960 De Forest Avenue
Off-site Properties	
Formerly Robertshaw Controls Company	100 West Victoria Street
Long Beach Industrial Park	3701 Pacific Place
Chevron Service Station #9-4839	601 West Willow Street
Thompson Family Trust	741 West 17th Street
Ready Self Storage	800 West 15th Street
Formerly MTA Division 12 Bus Maintenance Facility	970 West Chester Place
Source: California Environmental Protection Agency, *Cortese List Data Resources*, http://www.calepa.ca.gov/SiteCleanup/CorteseList/, accessed May 24, 2017.	

Based on files reviewed, groundwater may be approximately 8 to 13 below ground surface (bgs), but is anticipated to vary depending the location within the project site. It is likely that dewatering activities would be required for construction of the project, posing a risk of exposure of potentially contaminated groundwater to construction workers. Mitigation Measure HAZ-3 would require a Construction Workers Safety Plan (CWSP) that would provide guidance for handling, segregating, and characterizing potentially contaminated groundwater extracted during dewatering activities in order to minimize impacts to worker safety and the environment. If the water is determined to be contaminated, the CWSP would provide recommendations for proper handling to minimize risk of exposure. Further, all discharge during dewatering would be required to comply with a Dewater Permit with the RWQCB. With implementation of the recommended Mitigation Measure HAZ-3, impacts pertaining to existing potential groundwater contamination on-site would be reduced to less than significant levels.

Roadway Resurfacing

Lead-based paints (LBPs) were commonly used in traffic striping materials before the discontinued use of lead chromate pigment in traffic striping/marking materials and hot-melt Thermoplastic stripe materials (discontinued in 1996 and 2004, respectively). Installation of conveyance facilities within roadway right-of-way could involve the disturbance of existing on-site traffic striping materials, which may involve LBPs. Mitigation Measure HAZ-4 would ensure proper disposal of traffic striping materials. With compliance with the recommended mitigation measure HAZ-4, impacts in this regard would be reduced to less than significant levels.

Long-Term Operational Impacts

As discussed in Response 4.8(a), adherence to existing regulations would ensure compliance with safety standards related to the accidental conditions involving hazardous materials during project operations would reduce impacts in this regard to less than significant levels.

Mitigation Measures:

HAZ-1 The City of Long Beach shall retain a qualified California-Registered Geologist or a California-Registered Civil Engineer to prepare a Soils Management Plan (SMP) prior to the issuance of any grading permit at or near the property located at 960 De Forest Avenue, Long Beach. As part of the SMP, the qualified professional shall notify the Los Angeles Regional Water Quality Control Board (RWQCB) of proposed activities at this property. The SMP shall include, but not be limited to:

- Land use history, including description and locations of known contamination;
- The nature and extent of previous investigations and remediation at the site;
- Identified areas of concern at the site, in relation to proposed activities;
- A listing and description of institutional controls, such as the City's excavation ordinance and other local, state, and federal regulations and laws that would apply to the project;
- Names and positions of individuals involved with soils management and their specific role;
- An earthwork schedule;
- Requirements for site-specific Health and Safety Plans (HSPs) to be prepared by all contractors at the project site. The HSP should be prepared by a Certified Industrial Hygienist and would protect onsite workers by including engineering controls, personal protective equipment, monitoring, and security to prevent unauthorized entry and to reduce construction related hazards. The HSP should address the possibility of encountering subsurface hazards including hazardous waste contamination and include procedures to protect workers and the public;
- Hazardous waste determination and disposal procedures for known and previously unidentified contamination, including those associated with any soil export activities, if applicable;
- Requirements for site specific techniques at the site to minimize dust, manage stockpiles, run-on and run-off controls, waste disposal procedures, etc.; and
- Copies of relevant permits or closures from regulatory agencies.

HAZ-2 If potentially contaminated soil is identified during site disturbance activities for the project, as evidenced by discoloration, odor, detection by instruments, or other signs, a qualified California-Registered Geologist or a California-Registered Civil Engineer retained by the City of Long Beach shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project applicant, representatives of the Los Angeles Regional Water Quality Control Board (RWQCB), and City of Long Beach stating the recommended course of action.

Depending on the nature and extent of contamination, the professional engineer or professional geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the professional engineer or professional geologist, substantial remediation may be required, the City of Long Beach shall contact representatives of the Los Angeles Regional Water Quality Control Board (RWQCB) for guidance and possible oversight.

HAZ-3 Prior to issuance of a Dewatering Permit for the proposed project, a Construction Workers Safety Plan (CWSP) shall be developed by a qualified California-Registered Geologist or a California-Registered Civil Engineer, retained by the City of Long Beach. At a minimum, the CWSP shall include guidance for handling, segregating, and characterizing potentially contaminated groundwater extracted during dewatering activities in order to minimize impacts to worker safety and the environment. The CWSP shall also require that the Contractor comply with any requirements made by a Dewatering Permit issued by the Los Angeles Regional Water Quality Control Board (RWQCB), as applicable.

HAZ-4 Prior to site disturbance activities, the City of Long Beach shall retain a lead specialist to conduct sampling activities to verify whether or not on-site traffic striping materials are associated with lead-based paints above regulatory thresholds. The lead specialist shall report the findings to the City of Long Beach City Engineer, and shall include recommendations for the construction contractor regarding proper handling and disposal of materials, if necessary.

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

Less Than Significant Impact With Mitigation Incorporated. The following schools currently exist within 0.25-mile of the project site:

- *Edison Elementary:* Located approximately 250 feet east of the MUST site at 625 Maine Avenue;
- *Lafayette Elementary:* Located approximately 340 feet east of Segment 6 at 2445 Chestnut Avenue;
- *Los Cerritos Elementary:* Located adjacent to Segment 5 at 515 West San Antonio Drive;
- *Colin Powell Elementary:* Located 920 feet west of Segment 3 at 150 West Victoria Street; and
- *Jordan High School:* Located adjacent to Segment 2 at 6500 Atlantic Avenue.

The proposed project may involve potential disturbance of soil contamination at 960 De Forest Avenue (as discussed above in Response 4.8(b). However, this particular property is located greater than 0.25-mile of any existing or proposed school site. Thus, impacts in this regard would be less than significant. Further, any handling of potentially contaminated soils would be required to comply with Federal, State, and local laws and regulations as well as Mitigation Measure HAZ-1. Project construction would also potentially involve the handling of LBPs associated with traffic striping during installation of conveyance facilities within roadway right-of-way. Compliance with Mitigation Measure HAZ-4 would reduce impacts in this regard, also reducing impacts pertaining to proximity to a school site.

Operations of the project would also involve the handling of hazardous materials at the MUST facility, which is located within 250 feet of Edison Elementary School. As discussed in Response 4.8(a), project operations would involve the handling/use and storage of hazardous materials (e.g., chlorine and other chemicals associated with the treatment of water). The project would be subject to compliance with existing regulations, standards, and guidelines established by the EPA, State, and the City of Long Beach related to the storage, use, and disposal of hazardous materials. The project would be required to register with the City as a manager of regulated substances and prepare a Risk Management Plan. The Risk Management Plan must contain an off-site consequence analysis, a five-year accident history, an accident prevention program, an emergency response program, and a certification of the truth and accuracy of the submitted information. Businesses would be required to submit their plans to the City of Long Beach, DEH, which would make the plans available to emergency response personnel. The City of Long Beach Fire Department (acting as the CUPA as well) would be responsible for enforcing all laws and regulations pertaining to any aboveground or underground storage tanks as well. Adherence to existing regulations would ensure compliance with safety standards related to the use and storage of hazardous materials, and the safety procedures mandated by applicable Federal, State, and local laws and regulations, which would ensure that risks resulting from the routine transportation, use, storage, or disposal of hazardous materials or hazardous wastes associated with implementation of the proposed project would be less than significant.

Thus, with compliance with existing Federal, State, and local laws and regulations and implementation of Mitigation Measures HAZ-1 and HAZ-4, the project would not result in any significant impacts involving the handling of hazardous materials, substances, or waste within the vicinity of a school. Impacts in this regard would be reduced to less than significant levels.

Mitigation Measures: Refer to Mitigation Measures HAZ-1 and HAZ-4.

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

Less Than Significant Impact With Mitigation Incorporated. Government Code Section 65962.5 requires the Department of Toxic Substances Control (DTSC) and the State Water Resources Control Board (SWRCB) to compile and update a regulatory sites listing (per the criteria of the Section). The California Department of Health Services is also required to compile and update, as appropriate, a list of all public drinking water wells that contain detectable levels of organic contaminants and that are subject to water analysis pursuant to Section 116395 of the Health and Safety Code. Section 65962.5 requires the local enforcement agency, as designated pursuant to Section 18051 of Title 14 of the California Code of Regulations (CCR), to compile, as appropriate, a list of all solid waste disposal facilities from which there is a known migration of hazardous waste.

Conveyance segment 9 traverses City-owned property that has been listed pursuant to Government Code Section 65962.5. As discussed in Response 4.8(b), implementation of the recommended Mitigation Measure HAZ-1 would reduce impacts in this regard to less than significant levels.

Mitigation Measures: Refer to Mitigation Measure HAZ-1.

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 for people residing or working in the project area?

No Impact. The proposed project site is not located within an airport land use plan or within two miles of a public airport or public use airport. The nearest airport to the project site is the Long Beach Airport, located approximately 3.3 miles to the northeast of the project site at 4100 Donald Douglas Drive. In addition, the project site is located outside of the Long Beach Airport Influence Area.[1] Therefore, no impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

[1] Los Angeles County Airport Land Use Commission, *Long Beach Airport, Airport Influence Area Map*, May 13, 2003.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. There are no private airstrips located within the vicinity of the proposed project, and no impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

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

Less Than Significant Impact With Mitigation Incorporated. The proposed project would not physically interfere with an adopted emergency response plan or emergency evacuation plan. Project construction activities could result in short-term temporary impacts to street traffic along roadway right-of-way on-site; refer to Exhibit 2-3, *Project Overview*. While temporary lane closures would be required, travel along surrounding roadways would remain open and would not interfere with emergency access in the site vicinity. In addition, the project would be required to comply with Mitigation Measure HAZ-5, which requires the construction contractor to notify the Long Beach Fire Department (LBFD), Long Beach Police Department (LBPD), and City of Long Beach Public Works Department of construction activities that would impede movement (such as lane closures) along roadway right-of-way on-site. Compliance with Mitigation Measure HAZ-5 would allow for uninterrupted emergency access to evacuation routes. Thus, impacts in this regard would be reduced to less than significant levels.

Mitigation Measures:

HAZ-5 At least three business days prior to any lane closure, the construction contractor shall notify the Long Beach Fire Department (LBFD) and Long Beach Police Department (LBPD), along with the City of Long Beach City Engineer, of construction activities that would impede movement (such as lane closures) along public roadways in the project area, in order to ensure uninterrupted emergency access and maintenance of evacuation routes. This requirement shall be indicated on project plans and specifications, subject to verification by the City of Long Beach City Engineer.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

No Impact. The project site is located within an urbanized area and is not identified as a high fire hazard area in the City.[2] Thus, no impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

[2] California Department of Forestry and Fire Protection, *California Fire Hazard Severity Zone Maps*, http://www.fire.ca.gov/fire_prevention/fhsz_maps_losangeles, accessed May 31, 2007.

4.9 HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements?			✓	
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			✓	
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?			✓	
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?			✓	
e. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?			✓	
f. Otherwise substantially degrade water quality?			✓	
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				✓
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				✓
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?			✓	
j. Inundation by seiche, tsunami, or mudflow?			✓	

a) Violate any water quality standards or waste discharge requirements?

***Less Than Significant Impact*.** As part of Section 402 of the Clean Water Act, the U.S. Environmental Protection Agency (EPA) has established regulations under the National Pollutant Discharge Elimination System (NPDES) program to control direct storm water discharges. In California, the State Water Regional Control Board (SWRCB) administers the NPDES permitting program and is responsible for developing NPDES permitting requirements. The NPDES program regulates industrial pollutant discharges, which include construction activities. The SWRCB works in coordination with the Regional Water Quality Control Boards (RWQCB) to preserve, protect, enhance, and restore water quality. The City of Long Beach is within the jurisdiction of the Los Angeles RWQCB.

Short-Term Construction

Dischargers whose projects disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP would contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP would list Best Management Practices (BMPs) the discharger would use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP would contain: a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Section A of the Construction General Permit describes the elements that must be contained in a SWPPP.

The project's construction activity would be subject to the State's General Construction Permit, as discussed above, because it involves clearing, grading, and disturbances to the ground such as stockpiling or excavation, and a construction site with soil disturbance greater than one acre. More specifically, as part of the project's compliance with NPDES requirements, the City would be required to prepare a Notice of Intent (NOI) for submittal to the Los Angeles RWQCB providing notification of intent to comply with the General Construction Permit. A copy of the SWPPP would be made available and implemented at the construction site at all times. The SWPPP is required to outline the erosion, sediment, and non-storm water BMPs, in order to minimize the discharge of pollutants at the construction site. These BMPs would include measures to contain runoff from vehicle washing at the construction site, prevent sediment from disturbed areas from entering the storm drain system using structural controls (i.e., sand bags at inlets), and cover and contain stockpiled materials to prevent sediment and pollutant transport. Implementation of the BMPs would ensure runoff and discharges during the project's construction phase would not violate any water quality standards. Compliance with NPDES requirements would reduce short-term construction-related impacts to water quality to a less than significant level.

Long-Term Operations

<u>Los Angeles RWQCB Requirements for Long Beach</u>

Since 1990, operators of municipal separate storm sewer systems are required to develop a storm water management program designed to prevent harmful pollutants from impacting water resources via storm water runoff. The City of Long Beach owns and/or operates a large municipal separate storm sewer system (MS4) that conveys and ultimately discharges into surface waters under the jurisdiction of the Los Angeles RWQCB. These discharges originate as surface runoff from the various land uses within the City's boundary. Untreated, these discharges contain pollutants with the potential to impair or contribute to the impairment of the beneficial uses in surface waters. Since 1999, the City's monitoring data and analyses in support of Total Maximum Daily Load (TMDL) development have identified pollutants of concern in discharges from the MS4. These pollutants of concern vary by receiving water. They generally include, but are not limited to, copper, lead, zinc, cadmium, PCBs, PAHs, pyrethroid pesticides, organophosphate pesticides fecal indicator bacteria, and trash. The project area's receiving waterbody is the Los Angeles River which contain the following pollutants of concern: chlordane, DDT, lead, PCBs, sediment toxicity, zinc, and trash.

On September 8, 2016, the Los Angeles RWQCB made effective Order No. R4-2014-0024-A01, which amended the municipal NPDES permit. As prescribed in Order No. R4-2014-0024-A01, *Water Discharge Requirements for*

Municipal Separate Storm Sewer System Discharges From The City of Long Beach, the City of Long Beach shall develop and implement procedures to ensure that a discharger fulfills the following for non-storm water discharges to MS4s:[1]

- Notifies the City of Long Beach of the planned discharge in advance, consistent with requirements in Table 7 of Order No. R4-2014-0024-A01 or recommendations pursuant to the applicable BMP manual;
- Obtains any local permits required by the City of Long Beach;
- Provides documentation to the City of Long Beach that it has obtained any other necessary permits of water quality certifications for the discharge;
- Conducts monitoring of the discharge, if required by the City of Long Beach;
- Implements BMPs and/or control measures as specified in Table 7 or in the applicable BMP manual(s) as a condition of the approval to discharge into the MS4; and
- Maintains records of its discharge to the MS4, consistent with requirements in Table 7 or recommendations pursuant to the applicable BMP manual.

In 2001, the City revised its Long Beach Storm Water Management Program (LBSWMP). The LBSWMP is a comprehensive program containing several elements, practices, and activities aimed at reducing or eliminating pollutants in storm water to the maximum extent possible. Furthermore, the City's NPDES and Standard Urban Storm Water Mitigation Plan (SUSMP) regulations contained in Chapter 18.61 of the *LBMC* state that:

A. The Building Official shall prepare, maintain, and update, as deemed necessary and appropriate, the NPDES and SUSMP Regulations Manual and shall include technical information and implementation parameters, alternative compliance for technical infeasibility, as well as other rules, requirements and procedures as the City deems necessary, for implementing the provisions of this chapter.

B. The Building Official shall develop, as deemed necessary and appropriate, in cooperation with other City departments and stakeholders, informational bulletins, training manuals and educational materials to assist in the implementation of this chapter.

Project implementation would construct the MUST facility, which would include pretreatment wetlands, treatment facility, and storage/polishing pond, and 11 segments of conveyance facilities. All conveyance facilities associated with the proposed project would be constructed as either subsurface pipelines or as open channels. The conveyance facilities would not have the capacity to result in substantial amounts of impervious surfaces, and as such, would not result in runoff that would violate water quality standards or waste discharge requirements.

The MUST facility would be constructed on land that is currently vacant and unpaved (pervious). Thus, implementation of the MUST facility would result in an increase in impervious surfaces as compared to existing conditions which could result in urban runoff affecting water quality in the project area. However, the Long Beach MUST Project would result in substantial beneficial impacts pertaining to water quality, since it would divert and treat urban runoff from tributary areas in the project area that would otherwise discharge into the LA River. The proposed MUST facility would provide a solution to meeting clean water mandates, as required under the NPDES Permits, as well as under the LA River Total Maximum Daily Load (TMDL) requirements, which are overseen by the Los Angeles RWQCB, SWRCB, and the U.S. Environmental Protection Agency (USEPA) under the Clean Water Act. All first

[1] Los Angeles Regional Water Quality Control Board, *Order No. R4-2014-0024-A01, NPDES Permit No, CAS004003*, September 8, 2016.

flush and dry weather urban runoff directly from the MUST facility site would be contained on-site and directed through the project's treatment system, prior to discharge to the LA River.

Thus, with compliance with the requirements of the NPDES, SUSMP, Order No. R4-2014-0024-A01, and the LBSWMP, impacts related to water quality standards and waste discharge requirements during long-term operations would be less than significant. Implementation of the MUST would result in substantial benefits in water quality for the project area since it would result in the treatment of urban runoff prior to discharge to the LA River.

Mitigation Measures: No mitigation is required.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Less Than Significant Impact. The proposed project site exists within a developed, urbanized area. The proposed project would be constructed on vacant/open space land and within existing right-of-way. According to the *Seismic Safety Element* of the *General Plan*, the project site's depth to groundwater ranges from 60 feet to less than 10 feet. Construction activities include subgrade excavation for the MUST facility, which would extend to a maximum vertical depth of 30 feet below ground surface (bgs), and the conveyance facilities, which would extend to a maximum vertical depth of 15 feet bgs. Should dewatering be required, the project would be required to get a Dewatering Permit with the Los Angeles Regional Water Quality Control Board (Los Angeles RWQCB), which require treatment, as necessary prior to discharge to the storm drain system. These activities would not substantially deplete groundwater and impacts in this regard would be less than significant. Further, the conveyance facilities would be constructed as either underground pipelines or open channels and would not substantially increase impervious areas or have the capacity to affect groundwater supplies or recharge. The project occurs within a highly developed and urbanized portion of Long Beach, and no designated groundwater recharge basins or infrastructure occur in the project area. Although the impervious surface area at the MUST site would increase as compared to existing conditions, project implementation would not include any components that would directly affect groundwater. Therefore, the project would not have the capacity to interfere substantially with groundwater recharge, such that there would be a net deficit in aquifer volume or lowering of the groundwater table level. Impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

Less Than Significant Impact. Soil disturbance would temporarily occur during project construction due to earth-moving activities such as excavation and trenching for foundations and utilities, soil compaction and moving, and grading. Disturbed soils would be susceptible to high rates of erosion from wind and rain, resulting in sediment transport via storm water runoff from the project site.

The project would be subject to compliance with the requirements set forth in the NPDES Storm Water General Construction Permit for construction activities; refer to Response 4.9(a). Compliance with the NPDES, including preparation of a SWPPP would reduce the volume of sediment-laden runoff discharging from the site. The implementation of BMPs such as storm drain inlet protection and fiber rolls would reduce the potential for sediment and storm water runoff containing pollutants from entering receiving waters. Therefore, project implementation would not substantially alter the existing drainage pattern of the site during the construction process such that substantial erosion or siltation would occur. Impacts in this regard would be less than significant.

The long-term operation of the proposed MUST facility and associated conveyance facilities would not have the potential to result in substantial erosion or siltation on- or off-site. The proposed conveyance facilities would be constructed as either subsurface pipelines, or as vegetated open channels and would not have the capacity to result in substantial erosion.

In addition, the project would not substantially alter the existing topography or drainage patterns at the MUST facility site. As noted above in Response 4.9(a), above, first flush and dry weather urban runoff at the MUST facility would be conveyed through the project's treatment system. By capturing the first flush from the LA River, the conveyance systems and the MUST would reduce the amount of sediment reaching receiving waters. Runoff during storm events, from the project location, would be collected via an on-site drainage system and conveyed to the LA River, similar to existing conditions. Since the land use is being converted from a vacant lot to an impervious surface, the amount of sedimentation during a storm event would be reduced compared to current conditions. As such, the project would not have the capacity to substantially alter drainage patterns in the project area, such that substantial erosion or siltation would occur on- or off-site. Impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

d) ***Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or 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. Refer to Response 4.9(c), above. The proposed conveyance facilities would be constructed as either subsurface pipelines, or as vegetated open channels and would not have the capacity to substantially alter drainage patterns that could result impacts related to flooding.

As noted above, the impervious surface area at the MUST facility site would increase; however, the project is not expected to result in substantial changes to drainage patterns since stormwater would be collected via an on-site drainage system that would be sized to adequately convey storm flows, and conveyed to the LA River, similar to existing conditions. As such, impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

e) ***Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?***

Less Than Significant Impact. Refer to Responses 4.9(a), 4.9(c), and 4.9(d) above. The conveyance facilities would include below ground pipelines or open channels that would convey urban runoff to the MUST facility; no associated stormwater drainage improvements would be required as part of the conveyance improvements and no additional sources of polluted runoff would occur. Implementation of the MUST facility would result in a nominal increase in impervious surfaces as compared to existing conditions. However, the project is expected to result in beneficial water quality impacts as the treatment facility would collect dry-weather and "first flush" storm flows and treat the water prior to entering the LA River. Runoff during storm events would be collected via an on-site drainage system and conveyed to the LA River, similar to existing conditions. Water quality concerns associated with construction activities would be addressed though the Construction General Permit. Impacts would be less than significant in this regard.

Mitigation Measures: No mitigation is required.

f) ***Otherwise substantially degrade water quality?***

Less Than Significant Impact. The proposed project is not anticipated to result in water quality impacts other than the potential impacts identified above in Responses 4.9(a) and 4.9(c). Water quality concerns associated with construction activities would be addressed though the Construction General Permit. Impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No Impact. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for the project area, the majority of the project site is located within "Zone X," within an area protected by levees from the one percent annual chance flood, which is outside of the 100-year flood hazard area. However, conveyance segment 8 is located within "Zone AH," which is in the 100-year flood hazard area.[2,3,4,5,6] However, this segment would be constructed underground. Since the project area is outside of the 100-year flood hazard area (with the exception of segment 8) and no housing is proposed as part of the project, no impacts would result in this regard.

Mitigation Measures: No mitigation is required.

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

No Impact. Refer to Response 4.9(g).

Mitigation Measures: No mitigation is required.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Less Than Significant Impact.

According to the *Public Safety Element* of the *General Plan*, the failure of structures that might cause flooding are dikes in the waterfront area of the City and flood-control dams which lie upstream from the City of Long Beach. Areas within 2 feet above mean sea level (msl) are considered most susceptible and areas over 2 feet up to 5 feet above msl are considered secondary flooding zones.

Three flood control dams lie upstream from the City: Sepulveda Basin, Hansen Basin, and Whittier Narrows Basin. The Sepulveda and Hansen Basins lie more than 30 miles upstream from where the LA River passes through the City. Due to the intervening low and flat ground and the distance involved, flood waters resulting from a dam failure at either of these reservoirs would be expected to dissipate before reaching the City of Long Beach. In the event of failure of the Whittier Narrows Dam while full, flooding could occur along both sides of the San Gabriel River where it passes through the City but would probably be most severe on the eastside of the river channel. Due to the infrequent periods of high precipitation and high river flow, the probability of flooding as a result of seismically induced failure of these structures is considered to be very low. Thus, impacts in this regard would be less than significant for the project area.

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[2] Federal Emergency Management Agency, Flood Insurance Rate Map #06037C1815F, Panel 1815 of 2350, revised September 26, 2008.

[3] Federal Emergency Management Agency, Flood Insurance Rate Map #06037C1960F, Panel 1960 of 2350, revised September 26, 2008.

[4] Federal Emergency Management Agency, Flood Insurance Rate Map #06037C1955F, Panel 1955 of 2350, revised September 26, 2008.

[5] Federal Emergency Management Agency, Flood Insurance Rate Map #06037C1962F, Panel 1962 of 2350, revised September 26, 2008.

[6] Federal Emergency Management Agency, Flood Insurance Rate Map #06037C1964F, Panel 1964 of 2350, revised September 26, 2008.

Mitigation Measures: No mitigation is required.

j) Inundation by seiche, tsunami, or mudflow?

Less Than Significant Impact. A seiche is an oscillation of a body of water in an enclosed or semi-enclosed basin, such as a reservoir, harbor, lake, or storage tank. A tsunami is a great sea wave, commonly referred to as a tidal wave, produced by a significant undersea disturbance such as tectonic displacement of a sea floor associated with large, shallow earthquakes. Mudflows result from the downslope movement of soil and/or rock under the influence of gravity.

The LA River is located immediately west of the project site and the Long Beach Harbor and Pacific Ocean are located to the south. Based on the State of California *Tsunami Inundation Map for Emergency Planning, Long Beach Quadrangle*, conveyance segment 11 is situated within a tsunami inundation area.[7] However, the conveyance facilities would be constructed underground or open channel, and would not involve any aboveground facilities that could result in hazards to human health or property. In addition, although the project site is located adjacent to the LA River, the risk of seiche is considered low due to the limited amount of water typically present in the river.

Due to the relatively flat and urbanized nature of the project area, inundation resulting from mudflows is not expected. A less than significant impact is anticipated in this regard.

Mitigation Measures: No mitigation is required.

[7] California Geological Survey, *Tsunami Inundation Map for Emergency Planning, Long Beach Quadrangle*, Scale 1:24,000, March 1, 2009.

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4.10 LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Physically divide an established community?			✓	
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			✓	
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?				✓

a) Physically divide an established community?

<u>Less Than Significant Impact</u>. The proposed project would occur within an entirely developed, urbanized area. Conveyance facilities associated with the project would be constructed as either subsurface pipelines or as open channels. Conveyance segments constructed as pipelines would be trenched, backfilled, and restored to existing conditions, and thus would not have the capacity to divide a community. Conveyance segments constructed as open channels would occur within vacant areas, and would not include structures or other features that could act as physical barriers segregating portions of the existing community. The MUST facility site would occur immediately adjacent to the eastern side of the LA River, which is an existing linear water feature that separates industrial areas on the west side of the River from communities to the east. As such, the MUST facility would not have the capacity to divide an established community. Impacts in this regard would be less than significant.

<u>Mitigation Measures</u>: No mitigation is required.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

<u>Less Than Significant Impact</u>.

City of Long Beach General Plan

As shown on <u>Table 4.10-1</u>, <u>*General Plan Land Use Designations*</u>, the *General Plan* designation for the MUST site is "LUD 9R; Restricted Industry," "LUD 11; Open Space/Parks," and "LUD 7; Mixed Use." According to the *General Plan*, *Land Use Element*, the Restricted Industry land use "is intended to attract and maintain businesses which conduct industrial or manufacturing operations primarily indoors, with limited outdoor appurtenant activities." The Open Space/Parks land use designation includes parks, plazas, promenades and boardwalks, vacant lots, cemeteries, community gardens, golf courses, beaches, flood control channels and basins, rivers and river levees, utility rights-of-way (e.g., transmission tower areas), oil drilling sites, median strips and back up lots, offshore islands, marinas, inland bodies of water, the ocean, estuaries and lagoons. The Mixed Use district encompasses a combination of land uses including employment centers such as retail, offices, medical facilities; high density residences; visitor-serving facilities; personal and professional services; or recreational facilities. The MUST facility would be consistent with these land use designations, and no General Plan Amendment would be required. As such, impacts in this regard would be less than significant.

Table 4.10-1
General Plan Land Use Designations

Designation	General Plan Land Use
MUST Facility	
9R	Restricted Industry
11	Open Space/Parks
7	Mixed Use
Conveyance Facilities	
1	Single Family
2	Mixed Style Homes
3A	Townhomes
4	High Density Residential
7	Mixed Use
8A	Traditional Retail Strip Commercial
8N	Shopping Nodes
9G	General Industry
9R	Restricted Industry
10	Institutions/Schools
11	Open Space/Parks
13	Right-of-Way

Given the wide geographical area spanned by the conveyance facilities, the proposed conveyance segments traverse a wide range of *General Plan* land use designations. Table 4.10-1, provides a summary of the existing land use designations for the conveyance facilities. All conveyance facilities would be constructed entirely beneath ground surface, within existing public right-of-way or easements. As such, these facilities would be consistent with the General Plan designations provided below, and impacts would be less than significant in this regard.

City of Long Beach Zoning Ordinance

As shown in Table 4.10-2, *Zoning Designations*, the zoning for the MUST facility site is "IL; Light Industrial," "PD-21, Planned Development, Queensway Bay," and "PD-30, Planned Development, Downtown Long Beach." Based on the *LBMC*, Light Industrial zoning "allows a wide range of industries whose primary operations occur entirely within enclosed structures and which pose limited potential for environmental impacts on neighboring uses." The Queensway Bay Planned Development Plan provides a flexible planning mechanism that allows mixed-use development to be built incrementally over time that is consistent with the intent of the Legislative grants of tide and submerged lands to the City of Long Beach and with the Port's Master Plan. The Downtown Long Beach Planned Development Plan is based on "form-base code," which changes the focus from traditional regulation characterized by a list of permitted uses to the design and character of the buildings and how they contribute to defining and activating the nearby public realm. The Plan includes the following topics: vision, connectivity and character, development standards, design standards, streetscape and public realm standards, sign standards, historic preservation, and plan administration. The MUST facility would be consistent with these zoning designations, and no Zone Change would be required. In addition, the MUST facility would be subject to the City's standard site plan review process to ensure consistency with design standards associated with the IL, PD-21, and PD-30 districts. As such, impacts in this regard would be less than significant.

Given the wide geographical area spanned by the conveyance facilities, the proposed conveyance segments traverse a wide range of *LBMC* zoning designations. Table 4.10-2, provides a summary of the existing zoning for the conveyance facilities. All conveyance facilities would be constructed entirely beneath ground surface, within existing public right-of-way or easements. As such, these facilities would be consistent with the zoning designations provided below, and impacts would be less than significant in this regard.

Table 4.10-2
Zoning Designations

Designation	Zoning
MUST Facility	
IL	Light Industrial
PD-21	Queensway Bay Planned Development
PD-30	Downtown Long Beach Planned Development
Conveyance Facilities	
CCA	Community Commercial Automobile-Oriented
CNA	Neighborhood Commercial Automobile-Oriented
I	Institutional
IG	General Industrial
IL	Light Industrial
P	Park
PD-6 (2)	Planned Development, Downtown Shoreline
PD-10	Planned Development, Wilmore City
PD-30	Planned Development, Downtown Long Beach
PR	Public Right-of-Way
R-1-L	Single-Family Residential, Large Lot
R-1-N	Single-Family Residential, Standard Lot
R-2-N	Two-Family Residential, Standard Lot
R-4-N	Medium-Density Multiple Residential
RM	Mobile Homes, Modular and Manufactured Residential
R-4-R	Moderate-Density Multiple Residential

California Coastal Act

The southerly extent of the project site (i.e., the southern portion of conveyance segment 11) is situated within the Coastal Zone. As such, the project would be required to comply with California Coastal Act (CCA) as administered by the California Coastal Commission (CCC). The project site is located in the City Permit Jurisdiction portion of the Coastal Zone, and therefore requires approval of a Local Coastal Development Permit (LCDP) from the City. According to the Local Coastal Program (LCP), the southern portion of conveyance segment 11 would be located within the Downtown Shoreline sub-area of the Long Beach coastal zone. The Downtown Shoreline sub-area is characterized by mid- to high-rise office and residential buildings and large scale public recreation and entertainment facilities. Public recreation, RV Park, parking, boat launch, nature preserve, wetlands, and State University and college offices are permitted uses within this area.

The only facilities associated with the proposed project that would occur within the Downtown Shoreline sub-area would be conveyance facilities (either subsurface pipeline or open channel facilities). No structures or other land uses that would be capable of conflicts with the CCA would occur. Moreover, the project would be subject to review by the City as part of the LCDP process, which would ensure consistency with the CCA. As such, impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

<u>No Impact</u>. As stated in Response 4.4(f), the project site is not located within a Natural Community Conservation Plan (NCCP) and/or Habitat Conservation Plan (HCP).[1,2] As such, no impacts would occur in this regard.

<u>Mitigation Measures</u>: No mitigation is required.

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[1] U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, *HCP/NCCP Planning Areas in Southern California*, October 2008.

[2] California Department of Fish and Wildlife, *California Regional Conservation Plans Map*, August 2015.

4.11 MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	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) 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?

Less Than Significant Impact. Historically, the primary mineral resources within the City of Long Beach have been oil and natural gas. However, oil and natural gas extraction has diminished over the last century as the resources have become depleted. Today, extraction operations continue, but on a reduced scale compared to past levels. The proposed project would include the MUST facility and associated conveyance facilities. According to Figure 9.6, *Mineral Resources*, of the *General Plan*, designated Mineral Resources Zones are identified in the vicinity of the project site and within the project footprint (as Oil and Gas Resources). However, the proposed project would not affect any existing oil, gas, or other mineral resource recovery facilities. Thus, development of the proposed project would not result in a loss of availability of the identified mineral resources. As such, less than significant impacts would result in this regard.

Mitigation Measures: No mitigation is required.

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

Less Than Significant Impact. Refer to Response 4.11(a), above.

Mitigation Measures: No mitigation is required.

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4.12 NOISE

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		✓		
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			✓	
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			✓	
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		✓		
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 expose people residing or working in the project area to excessive noise levels?				✓
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				✓

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air, and is characterized by both its amplitude and frequency (or pitch). The human ear does not hear all frequencies equally. In particular, the ear deemphasizes low and very high frequencies. To better approximate the sensitivity of human hearing, the A-weighted decibel scale (dBA) has been developed. On this scale, the human range of hearing extends from approximately 3 dBA to around 140 dBA.

Noise is generally defined as unwanted or excessive sound, which can vary in intensity by over one million times within the range of human hearing; therefore, a logarithmic scale, known as the decibel scale (dB), is used to quantify sound intensity. Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks, and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Noise generated by mobile sources typically attenuates (is reduced) at a rate between 3 dBA and 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. Hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance. Noise generated by stationary sources typically attenuates at a rate between 6 dBA and about 7.5 dBA per doubling of distance.

There are a number of metrics used to characterize community noise exposure, which fluctuate constantly over time. One such metric, the equivalent sound level (L_{eq}), represents a constant sound that, over the specified period, has the same sound energy as the time-varying sound. Noise exposure over a longer period of time is often evaluated based on the Day-Night Sound Level (L_{dn}). This is a measure of 24-hour noise levels that incorporates a 10-dBA penalty for sounds occurring between 10:00 PM and 7:00 AM. The penalty is intended to reflect the increased human sensitivity to noises occurring during nighttime hours, particularly at times when people are sleeping and there are lower ambient noise conditions. Typical L_{dn} noise levels for light and medium density residential areas range from 55 dBA to 65 dBA.

Two of the primary factors that reduce levels of environmental sounds are increasing the distance between the sound source to the receiver and having intervening obstacles such as walls, buildings, or terrain features between the sound source and the receiver. Factors that act to increase the loudness of environmental sounds include moving the sound source closer to the receiver, sound enhancements caused by reflections, and focusing caused by various meteorological conditions.

REGULATORY SETTING

State of California

The State Office of Planning and Research *Noise Element Guidelines* include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The *Noise Element Guidelines* contain a land use compatibility table that describes the compatibility of various land uses with a range of environmental noise levels in terms of the Community Noise Equivalent Level (CNEL). A noise environment of 50 CNEL to 60 CNEL is considered to be of “normally acceptable” for residential uses. The Office of Planning and Research recommendations also note that, under certain conditions, more restrictive standards than the maximum levels cited may be appropriate.

City of Long Beach

Municipal Code

Chapter 8.80, *Noise,* of the *LBMC* sets forth all noise regulations controlling unnecessary, excessive, and annoying noise and vibration in the City. As outlined in Section 8.80.150 of the *LBMC*, maximum exterior noise levels are based on land use districts. According to the *Noise District Map* of the *LBMC*, the project site and surrounding uses are located within Receiving Land Use District One and Receiving Land Use District Four. District One is defined as “predominantly residential uses with other land use types also present” and District Four is defined as “predominantly industrial uses with other land use types also present.” Table 4.12-1, *Long Beach Noise Limits*, summarizes the exterior and interior noise limits for both District One and District Four.

Table 4.12-1
Long Beach Noise Limits

Land Use District	Exterior		Interior	
	Exterior Noise Level (Leq) 7 AM to 10 PM	Exterior Noise Level (Leq) 10 PM to 7 AM	Interior Noise Level (Leq) 7 AM to 10 PM	Interior Noise Level (Leq) 10 PM to 7 AM
District One	50	45	45	35
District Four	70	70	--	--

Notes:
1. District Four limits are intended primarily for use at their boundaries rather than for noise control within the district.
2. No person shall operate or cause to be operated any source of sound at any location within the incorporated limits of the City or allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, which causes the noise level when measures from any other property to exceed:
   - The noise standard for that land use district as specified in Table 4.12-1 for a cumulative period of more than five (5) minutes in any hour; or
   - The noise standard plus five decibels (5 dB) for a cumulative period of more than one (1) minute in any hour; or
   - The noise standard plus ten decibels (10 dB) or the maximum measured ambient, for any period of time.

Source: City of *Long Beach Municipal Code (LBMC)*, Section 8.80.160 and Section 8.80.170, 1977.

Section 8.80.202, *Construction Activity – Noise Regulations*, of the *LBMC* specifies the following construction-related noise standards:

> *The following regulations shall apply only to construction activities where a building or other related permit is required or was issued by the Building Official and shall not apply to any construction activities within the Long Beach harbor district as established pursuant to Section 201 of the City Charter.*
>
> A. *Weekdays and federal holidays. No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity which produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity between the hours of 7:00 PM and 7:00 AM the following day on weekdays, except for emergency work authorized by the Building Official. For purposes of this Section, a federal holiday shall be considered a weekday.*
>
> *B. Saturdays. No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity which produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity between the hours of 7:00 PM on Friday and 9:00 AM on Saturday and after 6:00 PM on Saturday, except for emergency work authorized by the Building Official.*
>
> *C. Sundays. No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity at any time on Sunday, except for emergency work authorized by the Building Official or except for work authorized by permit issued by the Noise Control Officer.*
>
> *D. Owner's/employee's responsibility. It is unlawful for the landowner, construction company owner, contractor, subcontractor or employer of persons working, laboring, building, or assisting in construction to permit construction activities in violation of provisions in this Section.*
>
> *E. Sunday work permits. Any person who wants to do construction work on a Sunday must apply for a work permit from the Noise Control Officer. The Noise Control Officer may issue a Sunday work permit if there is good cause shown; and in issuing such a permit, consideration will be given to the nature of the work and its proximity to residential areas. The permit may allow work on Sundays, only between 9:00 AM and 6:00 PM, and it shall designate the specific dates when it is allowed.*

EXISTING STATIONARY SOURCES

The project area is urbanized and generally built-out. Surrounding uses in proximity to the project site consist of residential, industrial, recreational, commercial, transportation, open space, water land, and institutional uses. The primary sources of stationary noise in the project vicinity are urban-related activities (i.e., mechanical equipment associated with existing industrial uses). The noise associated with these sources may represent a single-event noise occurrence, short-term or long-term/continuous noise.

EXISTING MOBILE SOURCES

The majority of the existing noise from mobile sources in the project area is generated from vehicle sources along the adjacent roadways.

a) Exposure of persons to or generation of noise levels 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 Incorporated. It is difficult to specify noise levels that are generally acceptable to everyone; noise that is considered a nuisance to one person may be unnoticed by another. Standards may be based on documented complaints in response to documented noise levels, or based on studies of the ability of people to sleep, talk, or work under various noise conditions. However, all such studies recognize that individual responses vary considerably. Standards usually address the needs of the majority of the general population.

As stated above, the *LBMC* includes some regulations controlling unnecessary, excessive, and annoying noise within the City. As outlined in the *LBMC*, maximum noise levels are based on land use districts.

Short-Term Noise Impacts

Construction activities generally are temporary and have a short duration, resulting in periodic increases in the ambient noise environment. Construction activities involving the installation of the treatment and conveyance facilities would be completed over the course of approximately four years (from 2018 through 2021). Construction of the conveyance facilities would occur incrementally and would not occur in one location for the entire construction period. Construction activities would include demolition, excavation/trenching, building construction, equipping, and paving. Ground-borne noise and other types of construction-related noise impacts typically occur during the initial demolition and earthwork phases. These phases of construction have the potential to create the highest levels of noise. Typical noise levels generated by construction equipment are shown in Table 4.12-2, *Maximum Noise Levels Generated by Construction Equipment*. It should be noted that the noise levels identified in Table 4.12-2 are maximum sound levels (L_{max}), which are the highest individual sound occurring at an individual time period. Operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be due to random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts).

Table 4.12-2
Maximum Noise Levels Generated by Construction Equipment

Type of Equipment	Acoustical Use Factor[1]	L_{max} at 50 Feet (dBA)
Concrete Saw	20	90
Crane	16	81
Augur Drill Rig	20	85
Concrete Mixer Truck	40	79
Backhoe	40	78
Dozer	40	82
Excavator	40	81
Forklift	40	78
Paver	50	77
Roller	20	80
Tractor	40	84
Water Truck	40	80
Grader	40	85
General Industrial Equipment	50	85

Note:
1. Acoustical Use Factor (percent): Estimates the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

Source: Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054)*, January 2006.

Sensitive uses surrounding the project site include residential and institutional uses. Residential uses adjoin Segments 1-7, 9, and 10 and are located approximately 280 feet east of the proposed MUST facility. Jordan High School, located at 6500 Atlantic Avenue, adjoins Segments 2. Los Cerritos Elementary School, located at 515 West San Antonio Drive, adjoins Segment 5. Lafayette Elementary School, located at 2445 Chestnut Avenue, is approximately 330 feet east of Segment 6. Edison Elementary School, located at 625 Maine Avenue, is located approximately 245 feet east of the proposed MUST facility. These sensitive uses may be exposed to elevated noise levels during project construction.

Construction noise would be acoustically dispersed throughout the project site and not concentrated in one area near adjacent sensitive uses. Pursuant to the *LBMC*, all construction activities may only occur between the hours of 7:00 AM and 7:00 PM, Monday through Friday, and between the hours of 9:00 AM and 6:00 PM on Saturday. Construction activities are prohibited on Sundays and Federal holidays. Additionally, implementation of Mitigation Measure NOI-1 would further minimize impacts from construction noise as it requires the use of best management practices. Mitigation Measure NOI-1 requires construction equipment to be equipped with properly operating and maintained mufflers and other state required noise attenuation devices. Thus, a less than significant noise impact would result from construction activities.

Long-Term Off-Site Mobile Noise Impacts

The only long-term mobile noise associated with the proposed project would be generated through operation of the MUST facility. The proposed project would not substantially increase off-site mobile noise, since it only requires two shifts of three operators Monday through Friday, two shifts of two operators Saturday and Sunday, and the facility would be open to the public on a limited basis for educational tours. Therefore, project-related traffic would not substantially increase with implementation of the project. Although the project may result in a nominal number of trips associated with new employees and limited educational opportunities, the impact of these trips would be negligible. Thus, impacts in this regard would be less than significant.

Long-Term Stationary Noise Impacts

Upon project completion, noise in the project area would not significantly increase. The project involves construction of the MUST facility and associated conveyance facilities within an urbanized, built-out area. The proposed project would include 14 sump pumps associated with the conveyance facilities (i.e, diversion structures), in addition to treatment facility equipment/pumps, and heating, ventilation, and air conditioning (HVAC) equipment associated with the MUST facility, which would generate stationary source noise.

The sump pumps associated with the diversion structures would be constructed below ground surface within a vault. Since these pumps would be below grade, enclosed, electrically-powered, and of limited capacity (10 horsepower each), it is not anticipated that these pumps would have the capacity to exceed City noise standards and adversely affect adjacent uses.

The MUST facility would include treatment facility machinery, pumps and HVAC equipment. These facilities would be located at least 280 feet away from the closest sensitive receptor, which include residential uses. Typical water conveyance pumps generate approximately 90 dB at one meter (3.28 feet). Based on distance attenuation alone, pump levels would be approximately 72 dB at 25 feet and approximately 51 dBA at 280 feet, which is below the City's 70 dBA noise limit for District Four. Additionally, all pump and treatment equipment would be housed within enclosed structures or housed underground, which would further reduce noise levels by 24 to 39 dBA depending on the structure/enclosure type. Thus, under the worst-case scenario, pump and treatment equipment at the MUST Facility is anticipated to be less than 28 dBA at the nearest sensitive receptor, which is below the City's 50 dBA noise limit for District One.

Mechanical equipment noise, including HVAC, is typically 55 dBA at 50 feet from the source. As noted above, the nearest residential uses are located approximately 280 feet east of the proposed MUST facility. At this distance and height, potential noise from the HVAC unit would be approximately 40 dBA, which is below the City's 50 dBA noise limit for District One and 70 dBA noise limit for District Four. Therefore, noise generated by project operation is not anticipated to adversely affect adjacent land uses. Impacts during long-term operations would be less than significant.

Mitigation Measures:

NOI-1 Prior to Grading Permit issuance, the City of Long Beach City Engineer shall ensure that the project complies with the following:

- Construction contracts specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other state required noise attenuation devices.

- Property owners and occupants located within 100 feet of the project boundary shall be sent a notice, at least 15 days prior to commencement of construction of each phase, regarding the construction schedule of the proposed project. A sign, legible at a distance of 50 feet shall also be posted at the project construction site. All notices and signs shall be reviewed and approved by the City of Long Beach Development Services Department, prior to mailing or posting and shall indicate the dates and duration of construction activities, as well as provide a contact name and a telephone number where residents can inquire about the construction process and register complaints.

- Prior to issuance of any Grading or Building Permit, the contractor shall provide evidence that a construction staff member will be designated as a Noise Disturbance Coordinator and will be present on-site during construction activities. The Noise Disturbance Coordinator shall be responsible for responding to any local complaints about construction noise. When a complaint is received, the Noise Disturbance Coordinator shall notify the City within 24-hours of the complaint and determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall implement reasonable measures to resolve the complaint, as deemed acceptable by the City of Long Beach City Engineer. All notices that are sent to residential units immediately surrounding the construction site and all signs posted at the construction site shall include the contact name and the telephone number for the Noise Disturbance Coordinator.

- Prior to issuance of any Grading or Building Permit, the project applicant shall demonstrate to the satisfaction of the City of Long Beach City Engineer that construction noise reduction methods shall be used where feasible. These reduction methods include shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, and electric air compressors and similar power tools.

- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact. Project construction can generate varying degrees of ground-borne vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Ground-borne vibrations from construction activities rarely reach levels that damage structures.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.20 inch/second) appears to be conservative. The types of construction vibration impact include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. Typical vibration produced by construction equipment is illustrated in Table 4.12-3, *Typical Vibration Levels for Construction Equipment*.

Table 4.12-3
Typical Vibration Levels for Construction Equipment

Equipment	Approximate peak particle velocity at 15 feet (inches/second)	Approximate peak particle velocity at 25 feet (inches/second)	Approximate peak particle velocity at 280 feet (inches/second)
Large bulldozer	0.192	0.089	0.002
Loaded trucks	0.164	0.076	0.002
Small bulldozer	0.007	0.003	0.000
Jackhammer	0.075	0.035	0.001
Pile Driver - Impact (associated with construction of the MUST facility only)	3.266	1.518	0.041
Pile Driver – Sonic (associated with construction of the MUST facility only)	1.579	0.734	0.020

Notes:
1. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006. Table 12-2.
2. Calculated using the following formula:

$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

where: PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance
PPV (ref) = the reference vibration level in in/sec from Table 12-2 of the FTA *Transit Noise and Vibration Impact Assessment Guidelines*
D = the distance from the equipment to the receiver

The nearest structures to the project site are the residential uses adjoining Segments 1-7, 9, and 10. Pile driving would only be required during construction of the MUST facility, which is approximately 280 feet west of the nearest residential uses. Groundborne vibration decreases rapidly with distance. As indicated in Table 4.12-3, based on the FTA data, vibration velocities from typical heavy construction equipment operation that would be used during project construction range from 0.003 to 0.089 inch-per-second peak particle velocity (PPV) at 25 feet from the source of activity (this range does not include pile driving as this is only associated with construction of the MUST facility). With regard to the proposed project, groundborne vibration would be generated primarily during grading activities on-site and by off-site haul-truck travel. Although the adjacent residential uses are located approximately 15 feet of the project site, the proposed construction activities would not be capable of exceeding the 0.2 inch-per-second PPV significance threshold for vibration, as construction activities would be limited and would not be concentrated within 15 feet of the adjoining structures for an extended period of time. As stated, pile driving would only be associated with construction of the MUST facility. At a distance of 280 feet, pile driving would not be capable of exceeding the 0.2 inch-per-second PPV significance threshold for vibration. Therefore, vibration impacts would be less than significant.

Mitigation Measures: No mitigation is required.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less Than Significant Impact. Refer to Response 4.12(a) above.

Mitigation Measures: No mitigation is required.

d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above the levels existing without the project?

Less Than Significant Impact With Mitigation Incorporated. Refer to Response 4.12(a) above.

Mitigation Measures: Refer to Mitigation Measure NOI-1.

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 expose people residing or working in the project area to excessive noise levels?

No Impact. The MUST facility site is not located within an airport land use plan or within two miles of a public airport or public use airport. The nearest airport to the project site is the Long Beach Airport, located approximately 3.3 miles to the northeast of the proposed MUST facility at 4100 Donald Douglas Drive. In addition, the project site is located outside of the Long Beach Airport Influence Area.[1] Therefore, no impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. There are no private airstrips located within the project area or in the vicinity. Thus, no impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

[1] Los Angeles County Airport Land Use Commission, *Long Beach Airport, Airport Influence Area Map*, May 13, 2003.

4.13 POPULATION AND HOUSING

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Induce substantial 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 housing, necessitating the construction of replacement housing elsewhere?				✓
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?		✓		

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less Than Significant Impact. A project could induce population growth in an area, either directly (for example, by proposing new homes and/or businesses) or indirectly (for example, through extension of roads or other infrastructure). No residential or business uses would be developed as part of the project. Therefore, the project would not induce direct population growth in the City through new development.

The proposed project would involve the construction of the MUST facility and associated conveyance facilities. The MUST facility could increase daytime employee population within the area. The employment created by the proposed project has the potential to result in an indirect growth in the City's population, since the potential exists that "future employees" (and their families) may choose to relocate to the City. However, the MUST facility would only require two shifts of three operators Monday through Friday, and two shifts of two operators Saturday and Sunday. Any potential increase in population within the project area as a result of the project employment would be negligible. Additionally, housing opportunities exist for the project's future employees in the communities surrounding the City. As such, impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

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

No Impact. It is anticipated that the project would occur entirely within existing public rights-of-way or easements. There is no existing housing on-site. As such, no impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Less Than Significant Impact With Mitigation Incorporated. As noted above in Response 4.13(b), no housing would be affected or displaced as a result of the proposed project. However, portions of the project site are known to be occupied by the homeless. In order for construction of the proposed project to move forward, any homeless population existing within the construction impact area would be displaced.

Impacts related to the potential displacement of the homeless would be minimized to a level below significance through the implementation of Mitigation Measure PH-1. Mitigation Measure PH-1 would require that the City provide any potentially displaced homeless with access to support services intended to reduce homelessness throughout the City. The City of Long Beach Department of Health and Human Services provides assistance to homeless and chronically-homeless individuals and families in the Long Beach area. Assistance is provided as part of a collaborative that includes non-profit agencies, the Long Beach Police Department Quality of Life Unit, City of Long Beach Department of Mental Health, the faith-based community and other private entities. Services are aimed at reducing homelessness through outreach, case management and permanent housing placement. Through this collaborative, Mitigation Measure PH-1 would provide for coordinated/proactive outreach, medical/psychiatric assistance, provision of basic needs (e.g., hygiene, food, clothing, and transportation), access to emergency/ temporary/permanent housing, and ongoing social services provide a linkage to continuum of care. Implementation of Mitigation Measure PH-1 would reduce potential displacement impacts to a less than significant level.

Mitigation Measures:

PH-1 Prior to construction of project facilities in areas that would displace the homeless, the City of Long Beach Department of Health and Human Services shall provide advanced notice to the affected homeless population, and upon commencement of construction activities, shall provide outreach, assessment, and support services consistent with the City's practices to reduce homelessness in the Long Beach area. Support services shall include, but not be limited to, coordinated/proactive outreach, medical/psychiatric assistance, provision of basic needs (e.g., hygiene, food, clothing, and transportation), access to emergency/temporary/permanent housing, and ongoing social services provide a linkage to continuum of care.

4.14 PUBLIC SERVICES

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	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 public services:				
1) Fire protection?			✓	
2) Police protection?			✓	
3) Schools?			✓	
4) Parks?			✓	
5) 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 governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

1) Fire protection?

Less Than Significant Impact. The Long Beach Fire Department (LBFD) provides fire protection within the City. The LBFD has 23 stations within the City of Long Beach. The nearest station to the project site is Fire Station 1, located at 100 Magnolia Avenue, approximately 0.65 mile southeast of the MUST facility site. Project implementation is not anticipated to increase response times to the project site or surrounding vicinity. Additionally, the overall project design would be subject to compliance with the requirements set forth in the 2016 California Fire Code (CFC), 2016 California Building Code (CBC) and *LBMC*, Title 18, *Building and Construction*, and LBFD requirements for fire access. The project plans for the MUST facility would be subject to LBFD site/building plan review, which would ensure adequate emergency access, fire hydrant availability, and compliance with all applicable codes.

The proposed project would construct a MUST facility and associated conveyance facilities. Conveyance facilities would be constructed below ground or as open channel facilities, and would not have the capacity to require fire protection services. However, the MUST facility would implement structures, water treatment facilities, and other equipment. The increase in development intensity could increase the demand for fire protection services at the project site. *LBMC* Chapter 18.23, *Fire Facilities Impact Fee*, was adopted for the purpose of imposing mitigation fees on applicants seeking to construct development projects. The purpose of such fees is to assure that the impacts created by proposed development pay its fair share of the costs required to support needed fire facilities and related costs necessary to accommodate such development. The amount of applicable fire facilities impact fee would be calculated based on the gross square feet of floor area and type of use and location in a non-residential development. Compliance with *LBMC* Chapter 18.23, which requires payment of fire facilities impact fee, would ensure that project implementation would result in a less than significant impact to fire protection services.

Project implementation is not anticipated to require the construction of new or physically altered fire protection facilities. Upon compliance with the existing CBC, CFC, *LBMC*, and LBFD design standards, impacts pertaining to fire hazards would be reduced to less than significant levels.

Mitigation Measures: No mitigation is required.

2) Police protection?

Less Than Significant Impact. The Long Beach Police Department (LBPD) provides law enforcement services to the City, including the project site. According to the *Police Reporting Districts Map*, prepared by the City of Long Beach, the MUST facility would be located within the South Police Division, Police Beat 6. This division operates out of a central location at 400 West Broadway, which is approximately 0.65 mile southeast of the project site (also known as the South Patrol Division).

Although the proposed project would generate a nominal number of new employees, it is not anticipated that this increase would have the capacity to result in a substantial adverse impact in relation to police services. Further, the proposed project would not introduce a use that would substantially increase the need for police response. As a result, project implementation is not anticipated to increase response times to the project site or surrounding vicinity, or require the construction of new or physically altered police protection facilities. In addition, the project would be subject to site plan review by the City prior to project approval to ensure that it meets City requirements in regards to safety (e.g., nighttime security lighting) to minimize the potential for safety concerns. Thus, impacts in this regard would be less than significant.

Moreover, *LBMC* Chapter 18.22, *Police Facilities Impact Fee*, was adopted for the purpose of imposing mitigation fees on applicants seeking to construct development projects. The purpose of such fees is to assure that the impacts created by proposed development pay its fair share of the costs required to support needed police facilities and related costs necessary to accommodate such development. The amount of applicable police facilities impact fee would be calculated based on the gross square feet of floor area and type of use and location in a non-residential development. Compliance with *LBMC* Chapter 18.22, which requires payment of police facilities impact fee, would ensure that project implementation would result in a less than significant impact to police protection services.

Mitigation Measures: No mitigation is required.

3) Schools?

Less Than Significant Impact. The area surrounding the MUST facility is served by the Long Beach Unified School District (LBUSD), which includes 84 public schools in the cities of Long Beach, Lakewood, Signal Hill, and Avalon on Catalina Island.[1] Edison Elementary School is located approximately 250 feet west of the MUST project site.

Implementation of the proposed project would increase employees to the site, which could increase population in the project vicinity; refer to Section 4.13, *Population and Housing*. However, the potential population increase would not result in the need for the construction of additional school facilities, as the project would not result in a substantial increase in population. However, the project would be subject to the requirements of Assembly Bill (AB) 2926 and Senate Bill (SB) 50, which allow school districts to collect impact fees from developers of new projects. According to Section 65996 of the California Government Code, development fees authorized by SB 50 are deemed to be "full and complete school facilities mitigation." Thus, upon payment of required fees by the project applicant consistent with existing State requirements, impacts in this regard would be reduced to less than significant levels.

Mitigation Measures: No mitigation is required.

[1] Long Beach Unified School District, *About - Long Beach Unified School District*, http://www.lbusd.k12.ca.us/District/, accessed May 10, 2017.

4) Parks?

Less Than Significant Impact. The project does not propose new or physically altered parks or recreational facilities. However, the project would provide educational opportunities to the public. According to the City of Long Beach, Parks, Recreation, and Marine Department, the City maintains 162 parks and 26 community centers, among other programs and services. It should also be noted that the MUST facility and its proposed water features (i.e., pretreatment wetlands and storage pond) may become an integrated component of an expansion/improvement of Cesar E. Chavez Park located at 401 Golden Avenue (a separate project under development by the City's Parks, Recreation, and Marine Department). Although the project could indirectly increase population growth within the project vicinity, the nominal increase would not generate a demand for park facilities. In addition, the project would include features such as the open channel conveyance facilities, pretreatment wetlands, storage pond) that would provide vegetated open space features providing for enhanced recreational opportunities in the project area. Less than significant impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

5) Other public facilities?

Less Than Significant Impact. Library services for the project area are provided by the Long Beach Public Library. The Long Beach Public Library, located at 101 Pacific Avenue, is approximately 0.60 mile southeast of the MUST facility site. Although the project may result in a negligible increase in population growth within the project vicinity, the nominal increase would not generate a demand for library facilities. Less than significant impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

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4.15 RECREATION

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	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?

***Less Than Significant Impact*.** Refer to Response 4.14(a)(4). The proposed project would not result in a substantial increase in demand for parks or other recreational facilities, and would not result in physical deterioration of these facilities. Less than significant impacts would occur in this regard.

***Mitigation Measures*:** No mitigation is required.

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?

***Less Than Significant Impact*.** The project does not include recreational facilities, nor would it require the construction or expansion of existing recreational facilities. It should also be noted that the MUST facility would include facilities that may result in enhanced recreational opportunities in the project area (i.e., open channel conveyance facilities, pretreatment wetlands, and storage pond). In addition, the MUST facility and its proposed water features (i.e., pretreatment wetlands and storage pond) may become an integrated component of an expansion/improvement of Cesar E. Chavez Park located at 401 Golden Avenue (a separate project under development by the City's Parks, Recreation, and Marine Department).

The existing LA River Bicycle Path runs along the easterly side of the River, immediately adjacent to the River levee along the entire project corridor. The only project construction activities occurring in the immediate vicinity of the existing path would occur at the MUST facility, in the vicinity of the Shoemaker Bridge. However, construction activities associated with the MUST facility would not affect the existing path, and the path would remain open to the public at all times.

A number of City-owned multi-use trails exist within and surrounding the MUST facility site. These trails generally provide for recreational activity and connectivity within the existing Cesar E. Chavez Park. In order to implement the MUST facility and associated pretreatment and storage ponds, a realignment of portions of these existing trails would be required. However, it is anticipated that the new segments of these realigned trails can be constructed while the existing trails remain open for use, and that closure of the trail system within this area would not be required. Moreover, as an integrated component of Cesar E. Chavez Park, the MUST facility would be designed to accommodate a proposed multi-use recreational trail network that would further enhance recreational opportunities in the project area. Thus, impacts in this regard would be less than significant.

***Mitigation Measures*:** No mitigation is required.

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4.16 TRANSPORTATION/TRAFFIC

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?			✓	
b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?			✓	
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				✓
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?		✓		
e. Result in inadequate emergency access?			✓	
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?		✓		

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Less Than Significant Impact. Implementation of the proposed project would result in the construction of the MUST facility and associated conveyance facilities. Short-term construction trips would include the transfer of construction equipment, construction worker trips, and hauling trips for construction material. It is expected that many of these construction-related trips would occur outside of the peak morning and evening congestion periods. The City of Long Beach regulates truck routes on the City roadways. Project related trucks must utilize designated truck routes near the project site. According to the Map 18, *Designated Truck Routes*, of the *Mobility Element* of the *General Plan*, Santa Fe Avenue/9th Street and Anaheim Street (west of I-710), and Long Beach Boulevard are designated as appropriate paths of travel for trucks. According to the *General Plan*, "trucks are prohibited from nontruck routes unless they are entering or exiting a property for business purposes or storage by the most direct route." Given that construction-related trips would occur largely outside of the peak hour and would be short-term in nature, the classification of nearby roadways as appropriate truck routes, and adherence to the *General Plan* to use the most direct route of travel, short-term impacts would be less than significant.

Long-term operation of the conveyance facilities would not generate substantial vehicle trips along nearby roadways, since the conveyance facilities would only require occasional trips for the purposes of inspection and maintenance. Operation of the MUST facility would not generate substantial vehicle trips along nearby roadways, since the proposed project would require nominal employment (only two shifts of three operators Monday through Friday and two shifts of two operators Saturday and Sunday). The facility would be open to scheduled tours and educational events. However, the tours and events would be infrequent, periodic, and would not involve substantial vehicle trips. Further, the tours and events are not anticipated to be conducted during peak traffic hours. Moreover, the project would not result in any change to roadway geometry or capacity on surrounding roadways. Therefore, long-term operational impacts would be less than significant.

Mitigation Measures: No mitigation is required.

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Less Than Significant Impact. The *2010 Congestion Management Program* (CMP) prepared by the Los Angeles Metropolitan Transportation Authority (Metro) is intended to address the impact of local growth on the regional transportation system for Los Angeles County. The CMP was created to link local land use decisions with their impacts on regional transportation and air quality. One of the primary reasons for defining and monitoring a CMP highway and roadway system is to assess the overall performance of the highway system in Los Angeles County and track changes over time. The nearest designed CMP highway to the project site is Interstate 710 (I-710). The proposed project may result in the generation of operational trips that could result in trips along I-710. However, the threshold for CMP analysis is 50 peak hour trips. Since the project would only require two shifts of three operators Monday through Friday, two shifts of two operators Saturday and Sunday, and the facility would be open to the public on a limited basis, peak hour trips are anticipated to be less than 50. Short-term construction process for the project would result in increase in traffic on the roadways in the project area; however, impacts in this regard would be temporary in nature and would cease upon project completion. Thus, the project would not create the potential for additional traffic that would conflict with an applicable CMP. Therefore, impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. The nearest airport to the MUST site is the Long Beach Airport, located approximately 3.3 miles to the northeast of the project site at 4100 Donald Douglas Drive. Construction and operation of the proposed project would not increase the frequency of air traffic or alter air traffic patterns. No impacts are anticipated in this regard.

Mitigation Measures: No mitigation is required.

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

Less Than Significant Impact With Mitigation Incorporated. Implementation of the proposed project would result in the construction of the MUST facility and associated conveyance facilities. The proposed MUST facility would be constructed on existing vacant land, and would not alter the geometry on surrounding roadways, nor would it substantially increase hazards due to a design feature. Thus, impacts related to the MUST facility would be less than significant.

The project has the potential to result in safety hazards during the short-term construction process, since the project would include construction of the several conveyance facilities within roadway right-of-way (Segments 1 to 8). Although the roadways would remain open to traffic at all times, partial lane closures may be required. During periods when partial lane closures are required, the construction contractor would be required to implement a temporary Traffic Management Plan (TMP) to minimize congestion and safety impacts during the construction process. The TMP would meet City of Long Beach traffic control guidelines, and would include potential measures such as construction signage, measures for pedestrian protection, limitations on timing for lane closures to avoid peak hours, temporary striping plans, construction vehicle routing plans, and the need for a construction flagperson to direct traffic during heavy equipment use, among others. The TMP would provide congestion relief during short-term construction activities and ensure safe travel. Thus, with implementation of Mitigation Measure TR-1, impacts would be less than significant.

Mitigation Measures:

TR-1 Prior to the initiation of construction, the City of Long Beach Director of Public Works shall ensure that a Traffic Management Plan (TMP) has been prepared for the proposed project. The TMP shall include measures to minimize potential safety impacts during the short-term construction process, when partial lane closures may be required. It shall include measures such as construction signage, pedestrian protection, limitations on timing for lane closures to avoid peak hours, temporary striping plans, identification of alternate bus stops during potential short-term bus stop closures, construction vehicle routing plans, and the need for a construction flagperson to direct traffic during heavy equipment use. The TMP shall be incorporated into project specifications for verification prior to final plan approval.

e) Result in inadequate emergency access?

Less Than Significant Impact. Refer to Response 4.8(g), above.

Mitigation Measures: No mitigation is required.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Less Than Significant Impact With Mitigation Incorporated. The proposed project would not conflict with any policies related to alternative forms of transportation. The project includes construction of the MUST facility and associated conveyance facilities. The conveyance facilities would be constructed within existing right-of-way. The MUST site is located within an area comprised of a variety of uses including industrial, residential, mixed use, and open space/park uses. As stated, the MUST facility would be accessed along Fairbanks Avenue. Currently, Fairbanks Avenue does not provide sidewalk facilities nor striped bicycle lanes. The Los Angeles River Bicycle Path, a Class I bike path, is located adjacent to the MUST facility along the east bank of the Los Angeles River. According to the *Mobility Element* of the *General Plan*, additional bike trails are present in the vicinity. Additionally, the City of Long Beach provides a bus route and bus stops along Magnolia Avenue, approximately 0.3 mile east of the MUST site. No modifications to the Los Angeles River Bicycle Path nor the bus stops would occur as part of the project.

Construction activities could temporarily impact the public transit and pedestrian facilities within the project vicinity. However, Mitigation Measure TRA-1 would require implementation of a TMP that would include potential measures such as construction signage, measures for pedestrian protection, limitations on timing for lane closures to avoid peak hours, temporary striping plans, construction vehicle routing plans, and the need for a construction flagperson to direct traffic during heavy equipment use, among others. Thus, with implementation of Mitigation Measure TR-1, impacts would be less than significant.

Mitigation Measures: Refer to Mitigation Measure TR-1.

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4.17 TRIBAL CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
1) 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			✓	
2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		✓		

As of July 1, 2015, California Assembly Bill 52 (AB 52) was enacted and expanded CEQA by establishing a formal consultation process for California tribes within the CEQA process. The bill specifies that any project may affect or cause a substantial adverse change in the significance of a tribal cultural resource would require a lead agency to "begin consultation with a California Native American tribe that is traditional and culturally affiliated with the geographic area of the proposed project." Section 21074 of AB 52 also defines a new category of resources under CEQA called "tribal cultural resources." Tribal cultural resources are defined as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and is either listed on or eligible for the California Register of Historical Resources or a local historic register, or if the lead agency chooses to treat the resource as a tribal cultural resource.

In compliance with AB 52, the City of Long Beach distributed letters to numerous Native American tribes notifying each tribe of the opportunity to consult with the City regarding the proposed project. The tribes were identified based on a list provided by the Native American Heritage Commission (NAHC), or were tribes that had previously requested to be notified of future projects proposed by the City. These letters were distributed on April 3, 2017. Two tribal response letters were received by the City; the Gabrielino Band of Mission Indians – Kizh Nation provided a letter to the City dated May 2, 2017 requesting consultation regarding the proposed project. The Tongva Ancestral Territorial Tribal Nation also responded and requested additional information pertinent to the cultural resources analysis; this information was provided but no further correspondence or request for consultation was received.

On February 19, 2016, the California Natural Resources Agency proposed to adopt and amend regulations as part of AB 52 implementing Title 14, Division 6, Chapter 3 of the California Code of Regulations, CEQA Guidelines, to include consideration of impacts to tribal cultural resources pursuant to Government Code Section 11346.6. On September 27, 2016, the California Office of Administrative Law approved the amendments to Appendix G of the CEQA Guidelines, and these amendments are addressed within this environmental document.

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

1) 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. Refer to Response 4.5(a). Based on the Cultural Report, the only historic resources determined to exist on-site are two segments of the Pacific Electric Railway, Long Beach Line, designated as the Pacific Electric Railway Freight Line (PERY Freight Line). The railroad segments recorded are thought to be at least 75 years old, possibly several years older. These resources were recommended as not eligible for the California Register of Historical Resources or other local register, and thus do not meet the definition of a tribal cultural resource. Impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less Than Significant Impact With Mitigation Incorporated. As noted above, the City of Long Beach solicited consultation with potentially affected Native American tribes (as applicable) regarding the proposed project in accordance with AB 52. Two tribal response letters were received by the City; the Gabrielino Band of Mission Indians – Kizh Nation provided a letter to the City dated May 2, 2017 requesting consultation regarding the proposed project, and that the tribe has requested the presence of a Native American monitor during ground disturbing activities associated with the project. Based on the results of the consultation between the City and the Gabrielino Band of Mission Indians – Kizh Nation, the City has indicated it is amenable to the presence of a tribal observer during construction activities. The Tongva Ancestral Territorial Tribal Nation also responded and requested additional information pertinent to the cultural resources analysis; this information was provided but no further correspondence or request for consultation was received.

Given the level of previous disturbance within the project site, it is not expected that any tribal cultural resources remain within the shallow soils on-site due to the placement of fill material. However, construction of the proposed project would require grading and excavation activities and may have the potential to encounter native soils, which may contain undiscovered tribal cultural resources. In the unlikely event resources are discovered during ground-disturbing activities, compliance with Mitigation Measure CUL-1, which provides instructions in the event a material of potential cultural significance is uncovered, would reduce potential impacts to a less than significant level.

Mitigation Measures: Refer to Mitigation Measure CUL-1.

4.18 UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?			✓	
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			✓	
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			✓	
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			✓	
e. 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?			✓	
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			✓	
g. Comply with federal, state, and local statutes and regulations related to solid waste?			✓	

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Less Than Significant Impact. The State Water Resource Control Board (SWRCB) works in coordination with the Regional Water Quality Control Boards (RWQCBs) to preserve, protect, enhance, and restore water quality. The City is within the jurisdiction of the Los Angeles RWQCB. The Los Angeles County Sanitation District (LACSD) oversees treatment facilities that serve the City. The LACSD constructs, operates, and maintains facilities to collect, treat, recycle, and dispose of sewage and industrial wastes. Sewer services for the project site are provided by the Long Beach Water Department (LBWD). The LBWD operates and maintains nearly 765 miles of sanitary sewer lines, delivering over 40 million gallons per day (mgd) to Los Angeles County Sanitation Districts (LACSD) facilities located on the north and south sides of the City.[1] From these facilities, treated sewage would be used in one of three ways: 1) to irrigate parks, golf courses, cemeteries, and athletic fields, 2) recharge the City's groundwater basin, or 3) pumped into the Pacific Ocean.[2]

Currently, a majority of the City's wastewater is delivered to the Joint Water Pollution Control Plant (JWPCP) of the LACSD. The remaining portion of the City's wastewater is delivered to the Long Beach Water Reclamation Plant of the LACSD. JWPCP is located approximately 5 miles northwest of the MUST site at 24501 South Figueroa Street in the City of Carson. The plant occupies approximately 420 acres to the east of the Harbor (110) Freeway.[3] The JWPCP is the largest of the LACSDs' wastewater treatment plants. It provides both primary and secondary treatment for 280 mgd of wastewater.[4] The plant serves a population of approximately 3.5 million people, including

1 Long Beach Water Department, *Sewage Treatment*, http://www.lbwater.org/sewage-treatment, accessed April 26, 2017.
2 Ibid.
3 Joint Water Pollution Control Plant website, http://www.lacsd.org/wastewater/wwfacilities/jwpcp/, accessed April 26, 2017.
4 Joint Water Pollution Control Plant website, http://www.lacsd.org/wastewater/wwfacilities/jwpcp/, accessed April 26, 2017.

most of the 460,000 residents of the City.[5] At JWPCP, the treated wastewater is disinfected with chlorine and sent to the Pacific Ocean through networks of outfalls that extend 1.5 miles off the Palos Verdes Peninsula to a depth of 200 feet.[6] The Long Beach Water Reclamation Plant is located at 7400 East Willow Street in the City of Long Beach, approximately 7 miles to the northeast of the MUST site. The plant occupies 17 acres west of the San Gabriel River (605) Freeway.[7] The plant provides primary, secondary, and tertiary treatment for 25 mgd of wastewater.[8] The plant serves a population of approximately 250,000 people, including a portion of the 460,000 residents of the City.[9]

Implementation of the proposed project would result in construction of the MUST facility and associated conveyance facilities. The only potential for project-related generation of wastewater would occur as part of restroom facilities proposed at the MUST facility. The restrooms would accommodate on-site employees, in addition to the general public and visitors to the site. The proposed project would entail two shifts of three operators Monday through Friday and two shifts of two operators Saturday and Sunday. The MUST facility would include restroom facilities that would be open to the public from 8:00 a.m. to 5:00 p.m. The proposed restroom facilities would be subject to limited use, and it is not anticipated that substantial amounts of wastewater would be generated. The LACSD is responsible for meeting all State and Federal wastewater treatment requirements. As part of any new development project, the LACSD would charge a standard sewer connection fee that would assist LACSD in ensuring that sufficient capacity is available and that the wastewater treatment requirements of the Los Angeles RWQCB are met. Thus, impacts in this regard would be less than significant.

Mitigation Measures: No mitigation measures are required.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less Than Significant Impact. The LBWD maintains and operates its own municipal water system, and would continue to provide water service within the project area. Impacts regarding wastewater treatment facilities are described in Response 4.18(a), above. The MUST facility would include restroom facilities. As stated in Response 4.18(a), the LACSD would charge a standard sewer connection fee that would assist LACSD in ensuring that sufficient capacity is available and that the wastewater treatment requirements of the Los Angeles RWQCB are met. Refer to Response 4.18(d), below, for a discussion of water supply impacts. Although the project may result in an increase in water demand due the proposed public restrooms and components of the urban runoff treatment process, the City and MWD UWMPs demonstrate that adequate supply is available to serve the City through the long-range year of 2040. As such, it is not anticipated that any water or wastewater facilities would be required to serve the project that would result in a significant environmental effect. Impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less Than Significant Impact. The proposed project would involve the construction of a new MUST facility on vacant, disturbed land, and construction of the conveyance facilities within existing right-of-way/easements. The conveyance facilities would include pipelines or open channels that would convey urban runoff to the MUST facility; no associated stormwater drainage improvements would be required as part of the conveyance improvements.

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[5] Ibid.
[6] Ibid.
[7] Los Angeles County Sanitation District, *Long Beach Water Reclamation Plant*, http://www.lacsd.org/wastewater/wwfacilities/joint_outfall_system_wrp/long_beach.asp, accessed April 26, 2017.
[8] Ibid.
[9] Ibid.

Although the MUST facility would include a nominal increase in impervious surface area, the project would not result in the construction or expansion of existing storm water drainage facilities that could cause significant impacts. As noted in Response 4.9(a), first flush and dry weather urban runoff at the MUST facility would be conveyed through the project's treatment system. Runoff during storm events would be collected via an on-site drainage system and conveyed to the LA River, similar to existing conditions. Therefore, impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

d) ***Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?***

Less Than Significant Impact. Long Beach receives its potable (drinking) water supply from two main sources, groundwater and imported water. Approximately 60 percent of the City's water supply is produced from groundwater wells located within the City.[10] The remainder of the City's potable water supply is treated surface water purchased from the Metropolitan Water District of Southern California (MWD). This water originates from two sources: the Colorado River, via the 242-mile Colorado River Aqueduct and Northern California's Bay-Delta region, via the 441-mile California Aqueduct.[11] Long Beach satisfies non-potable water demand through reclaimed water supplies. Reclaimed water originates from the Long Beach Water Reclamation Plant. The water produced at the Long Beach Water Reclamation Plant comes from sewage water that is treated to a quality standard that is suitable for irrigating parks, golf courses, and other outdoor landscapes.

According to the City's 2015 Urban Water Management Plan (UWMP), the City's projected water demand is 76,983 acre-feet per year (AFY) consisting of 35,100 AFY from MWD wholesale purchases, 32,693 AFY from groundwater, and 9,190 AFY from recycled water.[12] The UWMP projects that water demand in 2040 will increase to 79,291 AFY. The UWMP includes an analysis of water supply reliability projected through 2040. Based on the analysis, the City would be capable of providing adequate water supply to its service area under a normal supply and demand scenario, single dry-year supply and demand scenario, and multiple dry-year supply and demand scenario through 2040. Furthermore, the MWD 2015 UWMP states that the MWD "has supply capabilities that would be sufficient to meet expected demands from 2020 through 2040 under the single dry-year and multiple dry-year hydrologic conditions."[13] Thus, the City and MWD UWMPs account for increased demand as growth within the City occurs.

Although the MUST facility may result in an increase in water demand due the proposed public restrooms and on-site water usage required for treatment plant operations, the City and MWD UWMPs demonstrate that adequate supply is available to serve the City through the long-range year of 2040. Impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

e) ***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. Refer to Response 4.18(a), above.

Mitigation Measures: No mitigation is required.

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[10] Long Beach Water Department, *The Groundwater Supply, A Brief History*, http://www.lbwater.org/groundwater-supply-brief-history, accessed May 17, 2017.

[11] Long Beach Water Department, *Sources of Water*, http://www.lbwater.org/sources-water, accessed May 17, 2017.

[12] Long Beach Water Department, *2015 Urban Water Management Plan*, June 2, 2016.

[13] Metropolitan Water District of Southern California, *2015 Urban Water Management Plant*, June 2016.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Less Than Significant Impact. Implementation of the proposed project would result in construction of the MUST facility and associated conveyance facilities. The project would not include any habitable structures. The primary disposal facility for the proposed project is anticipated to be the Falcon Refuse Center, Inc., located at 3031 East 'I' Street, Wilmington, approximately 1.3 miles northwest of the MUST facility. This facility is a 5.7-acre large volume transfer station/processing facility and accepts construction and demolition waste, green materials, industrial, inert, and mixed municipal waste.[14] Once the waste has been processed at Falcon Refuse Center, Inc., waste would be transferred to a nearby landfill for disposal. The nearest landfill to the project site that would handle solid waste and recycling for the project is Savage Canyon Landfill located at 13919 East Penn Street in the City of Whittier, approximately 17 miles to the northeast of the project site. The Savage Canyon Landfill has a daily permitted capacity of 3,350 tons per day and a maximum permitted capacity of 19,337,450 cubic yards (with a remaining capacity of 9,510,833 cubic yards).

Demolition and construction activities associated with the proposed development would generate construction debris (soil, asphalt, demolished materials, etc.). However, the generation of these materials would be short-term in nature and would not have the capability to substantially affect the capacity of regional landfills. Additionally, the proposed project operational activities is not expected to substantially increase the volume of solid waste generated by the project over existing conditions, since the project would only require two shifts of three operators Monday through Friday and two shifts of two operators Saturday and Sunday. The facility would be open to scheduled tours and educational events. However, the tours and events would infrequent and periodic. As a result, once construction is completed, the facility would generate minimal amount of waste. Thus, impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

Less Than Significant Impact. The County of Los Angeles prepares and administers solid waste management plans to project the capacity of the County's landfills and other facilities to accommodate future solid waste demand generated by future development. Local jurisdictions, including the City of Long Beach, are required to assess the effect of new development on the County's facilities and develop and implement programs to reduce the amount of solid waste generated within their boundaries that requires disposal at such facilities.

The City is required to comply with Assembly Bill 939 (AB 939) which recognizes that an integrated approach to waste management is effective in extending the life of existing landfills and preventing the need to devote additional valuable land resources to trash disposal. The City is required to comply with AB 939 provisions and any related legislation that may be enacted. The City participates in a variety of efforts to meet the AB 939 source reduction, recycling, and composting requirements. Nation's Best Environmental Services Bureau (Bureau) for Long Beach is provided through the City's Public Works Department. The Bureau provides several websites and a monthly e-newsletter called *LB EcoGuide* to inform and educate the local community of recycling, refuse collection, and hazardous waste requirements and events, as well as street sweeping and parking enforcement and donation opportunities. The project would comply with adopted programs and federal, State, and local regulations pertaining to solid waste, including the *LBMC* Chapter 50, *Solid Waste Management*, and Chapter 53, *Construction and Demolition Materials Management*. With compliance with the *LBMC*, impacts would be less than significant.

Mitigation Measures: No mitigation is required.

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[14] CalRecycle, Facility/Site Summary Details: Falcon Refuse Center, Inc. (19-AR-0302), http://www.calrecycle.ca.gov/SWFacilities/Directory/19-AR-0302/Detail/, accessed May 17, 2017.

4.19 MANDATORY FINDINGS OF SIGNIFICANCE

Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		✓		
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 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 With Mitigation Incorporated. As shown within Section 4.4, *Biological Resources*, construction of the proposed MUST facilities would occur within an urbanized and fully developed area. The project site would be located on vacant disturbed land or within existing public right-of-way/easements. The project would not result in direct impacts to any sensitive species or wildlife habitat and impacts to sensitive biological resources would be less than significant. Since the proposed project may result in the removal of disturbed habitat and ornamental vegetation in various locations of the project site, the proposed project could result in potential impacts to nesting birds protected by the Migratory Bird Treaty Act (MBTA). Mitigation Measure BIO-1 has been included in order to minimize potential impacts to nesting birds in the event any mature trees are affected during the avian nesting season.

In addition, as described within Section 4.5, *Cultural Resources*, and Section 4.17, *Tribal Cultural Resources*, the project site has been completely disturbed and has been subject to ground disturbance in the past. As such, any historical and archaeological resources which may have existed in the project area have likely been disturbed. However, Mitigation Measures CUL-1 would be required in the event unexpected resources are uncovered during the grading and excavation process. The project site is however paleontologically sensitive for all excavations more than five feet in depth and planned excavations range from 15 to 30 feet below the current surface. As such, Mitigation Measure CUL-2 would require a Paleontological Resources Management Plan providing paleontological resources awareness training, framework for evaluating fossils recovered for significance under CEQA, and curation agreement with an accredited museum. With implementation of recommended mitigation, the project is not anticipated to eliminate important examples of the major periods of California history or prehistory. Thus, impacts in this regard would be less than significant.

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

Less Than Significant Impact With Mitigation Incorporated. The proposed project would include construction of the treatment and conveyance facilities. The project would not result in substantial population growth within the area, either directly or indirectly. Although the project may incrementally affect other resources that were determined to be less than significant, the project's contribution to these effects is not considered "cumulatively considerable," in consideration of the relatively nominal impacts of the project and mitigation measures provided.

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

Less Than Significant Impact With Mitigation Incorporated. Previous sections of this Initial Study reviewed the proposed project's potential impacts related to aesthetics, air quality, geology and soils, greenhouse gases, hydrology/water quality, noise, hazards and hazardous materials, traffic, and other issues. As concluded in these previous discussions, the proposed project would result in less than significant environmental impacts with implementation of the recommended mitigation measures. Therefore, the proposed project would not result in environmental impacts that would cause substantial adverse effects on human beings.

4.20 REFERENCES

The following references were utilized during preparation of this Initial Study. These documents are available for review at the City of Long Beach Development Services Department, located at 333 West Ocean Boulevard, 3rd Floor, Long Beach, California 90802.

1. California Air Resources Board, *Climate Change Scoping Plan*, December 2008, http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm.

2. California Department of Fish and Wildlife, *California Regional Conservation Plans Map*, August 2015.

3. California Department of Forestry and Fire Protection, *California Fire Hazard Severity Zone Maps*, http://www.fire.ca.gov/ fire_prevention/fhsz_maps_losangeles, accessed May 31, 2007.

4. California Department of Transportation website, http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm, accessed April 17, 2017.

5. California Environmental Protection Agency, *California Greenhouse Gas Emission Inventory - 2016 Edition*, http://www.arb.ca.gov/cc/inventory/data/data.htm, accessed May 23, 2017.

6. California Environmental Protection Agency, *Cortese List Data Resources*, http://www.calepa.ca.gov/SiteCleanup/CorteseList/, accessed May 24, 2017.

7. California Environmental Quality Act, 1970, as amended, *Public Resources Code Sections 21000-21178*.

8. California Geological Survey, *Tsunami Inundation Map for Emergency Planning*, Long Beach Quadrangle, Scale 1:24,000, March 1, 2009.

9. City of Long Beach, *City of Long Beach General Plan*, Last updated October 2013.

10. City of Long Beach, *City of Long Beach Municipal Code*, codified through Ordinance No. ORD-16-0008, enacted May 24, 2016.

11. City of Long Beach, *Sustainable City Action Plan,* February 2010.

12. Cogstone, *Cultural Resources Survey Report for the Long Beach Municipal Urban Stormwater Treatment (MUST) Project, City of Long Beach, Los Angeles County, California*, April 2017.

13. Cogstone, *Paleontological Resources Assessment for the Long Beach Municipal Urban Stormwater Treatment Project, City of Long Beach, Los Angeles County, California*, April 2017.

14. Department of Conservation Division of Mines and Geology, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report*, August 2000.

15. Federal Emergency Management Agency, Flood Insurance Rate Map #06037C1815F, Panel 1815 of 2350, revised September 26, 2008.

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17. Federal Emergency Management Agency, Flood Insurance Rate Map #06037C1960F, Panel 1960 of 2350, revised September 26, 2008.

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19. Federal Emergency Management Agency, Flood Insurance Rate Map #06037C1964F, Panel 1964 of 2350, revised September 26, 2008.

20. Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054)*, January 2006.

21. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006, https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/noise-and-vibration.

22. Governor's Office of Planning and Research, *CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act Review*, 2008.

23. Koa Consulting, *City of Long Beach Municipal Urban Stormwater Treatment Facility Feasibility Study*, May 31, 2016.

24. Long Beach Unified School District, *About - Long Beach Unified School District*, http://www.lbusd.k12.ca.us/District/, accessed May 10, 2017.

25. Los Angeles County Airport Land Use Commission, *Long Beach Airport, Airport Influence Area Map*, May 13, 2003.

26. Los Angeles County Metropolitan Transportation Authority, *2010 Congestion Management Program*.

27. Los Angeles Regional Water Quality Control Board, *Order No. R4-2014-0024-A01, NPDES Permit No. CAS004003*, September 8, 2016.

28. Michael Baker International, Inc., *Long Beach Municipal Urban Stormwater Treatment (MUST) Facility Project Biological Resources Report*, April 2017.

29. State of California Department of Conservation, *Earthquake Zones of Required Investigation Long Beach Quadrangle*, http://gmw.conservation.ca.gov/SHP/EZRIM/Maps/LONG_BEACH_EZRIM.pdf, accessed on May 3, 2017.

30. State of California Department of Conservation, *2010 Fault Activity Map of California*, http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html, accessed on May 11, 2017.

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32. Southern California Association of Governments, *Regional Comprehensive Plan,* 2008, http://www.scag.ca.gov/Documents/Forms/NewDisplayForm.aspx?ID=222.

33. South Coast Air Quality Management District, *Air Quality Management Plan*, 2016, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan.

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4.21 REPORT PREPARATION PERSONNEL

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5.0 INVENTORY OF MITIGATION MEASURES

AESTHETICS

AES-1 Construction equipment staging areas shall be located, to the greatest extent feasible, away from nearby existing sensitive viewers (e.g., resident, pedestrians/bicyclists, and motorists), and shall utilize appropriate screening (i.e., temporary fencing with opaque material) to shield public views of construction equipment and material. Prior to issuance of a grading permit, the City of Long Beach City Engineer shall verify that staging locations are identified on final grading/development plans and that appropriate perimeter screening is included as a construction specification.

AES-2 The City of Long Beach shall ensure that any exterior lighting does not spill over onto adjacent uses. Prior to issuance of any building permit, an Outdoor Lighting Plan shall be prepared and submitted to the City of Long Beach Development Services Department, for review and approval, that includes a footcandle map illustrating the amount of light from the proposed project at adjacent light sensitive receptors. All exterior light fixtures shall be shielded or directed away from adjoining uses.

AIR QUALITY

AQ-1 Prior to issuance of any Grading Permit, the City of Long Beach City Engineer shall confirm that the Grading Plan and specifications stipulate that, in compliance with SCAQMD Rule 403, excessive fugitive dust emissions shall be controlled by regular watering or other dust prevention measures, as specified in the SCAQMD's Rules and Regulations. In addition, SCAQMD Rule 402 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off-site. Implementation of the following measures would reduce short-term fugitive dust impacts on nearby sensitive receptors:

- All active portions of the construction site shall be watered every three hours during daily construction activities and when dust is observed migrating from the project site to prevent excessive amounts of dust;
- Pave or apply water every three hours during daily construction activities or apply non-toxic soil stabilizers on all parking areas and staging areas. More frequent watering shall occur if dust is observed migrating from the site during site disturbance;
- Any on-site stockpiles of debris, dirt, or other dusty material shall be enclosed, covered, or watered three times daily, or non-toxic soil binders shall be applied;
- All grading and excavation operations shall be suspended when wind speeds exceed 25 miles per hour;
- Disturbed areas shall be replaced with ground cover or paved immediately after construction is completed in the affected area;
- Track-out devices such as gravel bed track-out aprons (3 inches deep, 25 feet long, 12 feet wide per lane and edged by rock berm or row of stakes) shall be installed to reduce mud/dirt trackout from unpaved truck exit routes;
- On-site vehicle speed shall be limited to 15 miles per hour;

- Visible dust beyond the property line which emanates from the project shall be prevented to the maximum extent feasible;
- All material transported off-site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust prior to departing the job site; and
- Trucks associated with soil-hauling activities shall avoid residential streets and utilize City-designated truck routes to the extent feasible.

BIOLOGICAL RESOURCES

BIO-1 If ground-disturbing activities or removal of any trees, shrubs, or any other potential nesting habitat are scheduled within the avian nesting season (nesting season generally extend from January 1 - August 31), a pre-construction clearance survey for nesting birds shall be conducted twice per week during the three weeks prior to the scheduled vegetation clearance.

The biologist conducting the clearance survey shall document the negative results if no active bird nests are observed on the project site or within the vicinity during the clearance survey with a brief letter report indicating that no impacts to active bird nests would occur before construction can proceed. If an active avian nest is discovered during the pre-construction clearance survey, construction activities shall stay outside of a 300-foot buffer around the active nest. For raptor species, this buffer shall be 500 feet. A biological monitor shall be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Results of the pre-construction survey and any subsequent monitoring shall be provided to the California Department of Fish and Wildlife (CDFW) and other appropriate agencies.

BIO-2 Prior to any construction activities affecting jurisdictional waters of the U.S. or State, the City of Long Beach shall conduct a jurisdictional delineation (JD) for the proposed project to quantify impacts to jurisdictional features, pursuant to Section 404 of the Federal Clean Water Act (CWA), Section 1600 of the California Fish and Game Code, and Section 401 of the CWA. Based on the results of the JD, the City of Long Beach shall consult with the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and Regional Water Quality Control Board to obtain regulatory permits, as necessary based on project impacts. In consultation with the regulatory agencies, compensatory mitigation for jurisdictional impacts shall be provided at a minimum 1:1 ratio, or as directed in accordance with existing agency requirements.

CULTURAL RESOURCES

CUL-1 If evidence of cultural resources is found during excavation, vegetation clearance, and other ground disturbing activities, activity in that area shall cease and the construction contractor shall contact the City of Long Beach Development Services Department. With direction from the Development Services Department, an archaeologist certified by the County of Los Angeles shall be retained to evaluate the discovery prior to resuming grading in the immediate vicinity of the find. If warranted, the archaeologist shall develop a plan of mitigation which may include, but shall not be limited, to, salvage excavation, laboratory analysis and processing, research, curation of the find in a local museum or repository, and preparation of a report summarizing the find.

CUL-2 Prior to construction, a Paleontological Resources Management Plan shall be prepared for the proposed project. The Paleontological Resources Management Plan shall include paleontological resources awareness training for earthmoving personnel, provide a rationale for spot-checking to determine when sediments suitable for fossil preservation have been reached in each location and implement monitoring at that point. The plan shall also provide a framework for evaluating fossils recovered for significance under CEQA. Fossils meeting significance criteria shall be prepared, identified by a paleontologist certified by the County of Los Angeles and submitted for curation at an accredited museum such as the Natural History Museum of Los Angeles County. The City of Long Beach Development Services Department shall ensure that the requirement for preparation of the Paleontological Resources Management Plan is identified on project plans and specifications.

HAZARDS AND HAZARDOUS MATERIALS

HAZ-1 The City of Long Beach shall retain a qualified California-Registered Geologist or a California-Registered Civil Engineer to prepare a Soils Management Plan (SMP) prior to the issuance of any grading permit at or near the property located at 960 De Forest Avenue, Long Beach. As part of the SMP, the qualified professional shall notify the Los Angeles Regional Water Quality Control Board (RWQCB) of proposed activities at this property. The SMP shall include, but not be limited to:

- Land use history, including description and locations of known contamination;
- The nature and extent of previous investigations and remediation at the site;
- Identified areas of concern at the site, in relation to proposed activities;
- A listing and description of institutional controls, such as the City's excavation ordinance and other local, state, and federal regulations and laws that would apply to the project;
- Names and positions of individuals involved with soils management and their specific role;
- An earthwork schedule;
- Requirements for site-specific Health and Safety Plans (HSPs) to be prepared by all contractors at the project site. The HSP should be prepared by a Certified Industrial Hygienist and would protect onsite workers by including engineering controls, personal protective equipment, monitoring, and security to prevent unauthorized entry and to reduce construction related hazards. The HSP should address the possibility of encountering subsurface hazards including hazardous waste contamination and include procedures to protect workers and the public;
- Hazardous waste determination and disposal procedures for known and previously unidentified contamination, including those associated with any soil export activities, if applicable;
- Requirements for site specific techniques at the site to minimize dust, manage stockpiles, run-on and run-off controls, waste disposal procedures, etc.; and
- Copies of relevant permits or closures from regulatory agencies.

HAZ-2 If potentially contaminated soil is identified during site disturbance activities for the project, as evidenced by discoloration, odor, detection by instruments, or other signs, a qualified California-Registered Geologist or a California-Registered Civil Engineer retained by the City of Long Beach shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project applicant, representatives of the Los Angeles Regional Water Quality Control Board (RWQCB), and City of Long Beach stating the recommended course of action.

Depending on the nature and extent of contamination, the professional engineer or professional geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the professional engineer or professional geologist, substantial remediation may be required, the City of Long Beach shall contact representatives of the Los Angeles RWQCB for guidance and possible oversight.

HAZ-3 Prior to issuance of a Dewatering Permit for the proposed project, a Construction Workers Safety Plan (CWSP) shall be developed by a qualified California-Registered Geologist or a California-Registered Civil Engineer, retained by the City of Long Beach. At a minimum, the CWSP shall include guidance for handling, segregating, and characterizing potentially contaminated groundwater extracted during dewatering activities in order to minimize impacts to worker safety and the environment. The CWSP shall also require that the Contractor comply with any requirements made by a Dewatering Permit issued by the Los Angeles Regional Water Quality Control Board (RWQCB), as applicable.

HAZ-4 Prior to site disturbance activities, the City of Long Beach shall retain a lead specialist to conduct sampling activities to verify whether or not on-site traffic striping materials are associated with lead-based paints above regulatory thresholds. The lead specialist shall report the findings to the City of Long Beach City Engineer, and shall include recommendations for the construction contractor regarding proper handling and disposal of materials, if necessary.

HAZ-5 At least three business days prior to any lane closure, the construction contractor shall notify the Long Beach Fire Department (LBFD) and Long Beach Police Department (LBPD), along with the City of Long Beach City Engineer, of construction activities that would impede movement (such as lane closures) along public roadways in the project area, in order to ensure uninterrupted emergency access and maintenance of evacuation routes. This requirement shall be indicated on project plans and specifications, subject to verification by the City of Long Beach City Engineer.

NOISE

NOI-1 Prior to Grading Permit issuance, the City of Long Beach City Engineer shall ensure that the project complies with the following:

- Construction contracts specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other state required noise attenuation devices.

- Property owners and occupants located within 100 feet of the project boundary shall be sent a notice, at least 15 days prior to commencement of construction of each phase, regarding the construction schedule of the proposed project. A sign, legible at a distance of 50 feet shall also be posted at the project construction site. All notices and signs shall be reviewed and approved by the City of Long Beach Development Services Department, prior to mailing or posting and shall indicate the dates and duration of construction activities, as well as provide a contact name and a telephone number where residents can inquire about the construction process and register complaints.

- Prior to issuance of any Grading or Building Permit, the contractor shall provide evidence that a construction staff member will be designated as a Noise Disturbance Coordinator and will be present on-site during construction activities. The Noise Disturbance Coordinator shall be responsible for responding to any local complaints about construction noise. When a complaint is received, the Noise Disturbance Coordinator shall notify the City within 24-hours of the complaint and determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall implement reasonable measures to resolve the complaint, as deemed acceptable by the City of Long Beach City Engineer. All notices that are sent to residential units immediately surrounding the construction site and all signs posted at the construction site shall include the contact name and the telephone number for the Noise Disturbance Coordinator.

- Prior to issuance of any Grading or Building Permit, the project applicant shall demonstrate to the satisfaction of the City of Long Beach City Engineer that construction noise reduction methods shall be used where feasible. These reduction methods include shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, and electric air compressors and similar power tools.

- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.

POPULATION AND HOUSING

PH-1 Prior to construction of project facilities in areas that would displace the homeless, the City of Long Beach Department of Health and Human Services shall provide advanced notice to the affected homeless population, and upon commencement of construction activities, shall provide outreach, assessment, and support services consistent with the City's practices to reduce homelessness in the Long Beach area. Support services shall include, but not be limited to, coordinated/proactive outreach, medical/psychiatric assistance, provision of basic needs (e.g., hygiene, food, clothing, and transportation), access to emergency/temporary/permanent housing, and ongoing social services provide a linkage to continuum of care.

TRANSPORTATION/TRAFFIC

TR-1 Prior to the initiation of construction, the City of Long Beach Director of Public Works shall ensure that a Traffic Management Plan (TMP) has been prepared for the proposed project. The TMP shall include measures to minimize potential safety impacts during the short-term construction process, when partial lane closures may be required. It shall include measures such as construction signage, pedestrian protection, limitations on timing for lane closures to avoid peak hours, temporary striping plans, identification of alternate bus stops during potential short-term bus stop closures, construction vehicle routing plans, and the need for a construction flagperson to direct traffic during heavy equipment use. The TMP shall be incorporated into project specifications for verification prior to final plan approval.

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Long Beach MUST Project

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	11.50	User Defined Unit	11.50	500,940.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	11			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per Site Plan.

Construction Phase - Anticipated construction schedule.

Off-road Equipment -

Demolition -

Grading - Total site acreages 11.5

Construction Off-road Equipment Mitigation - Per SCAQMD rules.

Area Mitigation -

Energy Mitigation - Current code is 30% more efficient than CalEEMod baseline per CEC.

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	20.00	520.00
tblConstructionPhase	NumDays	30.00	520.00
tblConstructionPhase	PhaseStartDate	12/28/2019	1/1/2020
tblGrading	AcresOfGrading	1,300.00	11.50
tblGrading	MaterialExported	0.00	1,000.00
tblLandUse	BuildingSpaceSquareFeet	0.00	500,940.00
tblLandUse	LandUseSquareFeet	0.00	500,940.00
tblLandUse	LotAcreage	0.00	11.50
tblProjectCharacteristics	OperationalYear	2018	2020

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.8154	38.6773	23.0478	0.0413	0.3931	1.9410	2.3342	0.0817	1.8072	1.8888	0.0000	4,120.6240	4,120.6240	1.0785	0.0000	4,147.5856
2019	3.6014	36.1147	22.7289	0.0412	0.3933	1.7973	2.1906	0.0817	1.6719	1.7536	0.0000	4,059.3941	4,059.3941	1.0728	0.0000	4,086.2149
2020	4.5503	50.3179	32.7092	0.0643	6.2749	2.1758	8.4507	3.3736	2.0017	5.3753	0.0000	6,236.1996	6,236.1996	1.9498	0.0000	6,284.9439

2021	4.2849	46.5098	31.5698	0.0642	6.2750	1.9872	8.2622	3.3736	1.8282	5.2018	0.0000	6,230.2653	6,230.2653	1.9495	0.0000	6,279.0039
Maximum	**4.5503**	**50.3179**	**32.7092**	**0.0643**	**6.2750**	**2.1758**	**8.4507**	**3.3736**	**2.0017**	**5.3753**	**0.0000**	**6,236.1996**	**6,236.1996**	**1.9498**	**0.0000**	**6,284.9439**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.8154	38.6773	23.0478	0.0413	0.2800	1.9410	2.2211	0.0646	1.8072	1.8717	0.0000	4,120.6240	4,120.6240	1.0785	0.0000	4,147.5856
2019	3.6014	36.1147	22.7289	0.0412	0.2802	1.7973	2.0775	0.0646	1.6719	1.7365	0.0000	4,059.3941	4,059.3941	1.0728	0.0000	4,086.2149
2020	4.5503	50.3179	32.7092	0.0643	2.8138	2.1758	4.9896	1.4770	2.0017	3.4787	0.0000	6,236.1996	6,236.1996	1.9498	0.0000	6,284.9439
2021	4.2849	46.5098	31.5698	0.0642	2.8139	1.9872	4.8011	1.4770	1.8282	3.3052	0.0000	6,230.2653	6,230.2653	1.9495	0.0000	6,279.0039
Maximum	**4.5503**	**50.3179**	**32.7092**	**0.0643**	**2.8139**	**2.1758**	**4.9896**	**1.4770**	**2.0017**	**3.4787**	**0.0000**	**6,236.1996**	**6,236.1996**	**1.9498**	**0.0000**	**6,284.9439**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**53.60**	**0.00**	**33.66**	**55.38**	**0.00**	**26.92**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	11.1910	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6900e-003

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**11.1910**	**1.0000e-005**	**1.1800e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.5200e-003**	**2.5200e-003**	**1.0000e-005**	**0.0000**	**2.6900e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	11.1910	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6900e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**11.1910**	**1.0000e-005**	**1.1800e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.5200e-003**	**2.5200e-003**	**1.0000e-005**	**0.0000**	**2.6900e-003**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/27/2019	5	520	
2	Grading	Grading	1/1/2020	12/24/2021	5	520	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 11.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	475.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	99.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1975	0.0000	0.1975	0.0299	0.0000	0.0299			0.0000			0.0000
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048		3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**	**0.1975**	**1.9386**	**2.1361**	**0.0299**	**1.8048**	**1.8347**		**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.5300e-003	0.2913	0.0599	7.2000e-004	0.0279	1.1300e-003	0.0291	7.3100e-003	1.0800e-003	8.4000e-003		77.3696	77.3696	5.8800e-003		77.5165
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0879	0.0635	0.6839	1.7200e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2400e-003	0.0457		171.4879	171.4879	5.8700e-003		171.6347
Total	**0.0964**	**0.3548**	**0.7437**	**2.4400e-003**	**0.1956**	**2.4700e-003**	**0.1981**	**0.0518**	**2.3200e-003**	**0.0541**		**248.8575**	**248.8575**	**0.0118**		**249.1512**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Fugitive Dust					0.0844	0.0000	0.0844	0.0128	0.0000	0.0128			0.0000			0.0000
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048	0.0000	3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**	**0.0844**	**1.9386**	**2.0230**	**0.0128**	**1.8048**	**1.8176**	**0.0000**	**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.5300e-003	0.2913	0.0599	7.2000e-004	0.0279	1.1300e-003	0.0291	7.3100e-003	1.0800e-003	8.4000e-003		77.3696	77.3696	5.8800e-003		77.5165
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0879	0.0635	0.6839	1.7200e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2400e-003	0.0457		171.4879	171.4879	5.8700e-003		171.6347
Total	**0.0964**	**0.3548**	**0.7437**	**2.4400e-003**	**0.1956**	**2.4700e-003**	**0.1981**	**0.0518**	**2.3200e-003**	**0.0541**		**248.8575**	**248.8575**	**0.0118**		**249.1512**

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1975	0.0000	0.1975	0.0299	0.0000	0.0299			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**0.1975**	**1.7949**	**1.9924**	**0.0299**	**1.6697**	**1.6996**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.0800e-003	0.2757	0.0584	7.1000e-004	0.0281	1.0400e-003	0.0292	7.3600e-003	9.9000e-004	8.3500e-003		76.4196	76.4196	5.8000e-003		76.5646
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0800	0.0560	0.6105	1.6700e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		166.0751	166.0751	5.2100e-003		166.2053
Total	**0.0881**	**0.3317**	**0.6689**	**2.3800e-003**	**0.1958**	**2.3500e-003**	**0.1981**	**0.0518**	**2.2000e-003**	**0.0540**		**242.4947**	**242.4947**	**0.0110**		**242.7698**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0844	0.0000	0.0844	0.0128	0.0000	0.0128			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**0.0844**	**1.7949**	**1.8793**	**0.0128**	**1.6697**	**1.6825**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	8.0800e-003	0.2757	0.0584	7.1000e-004	0.0281	1.0400e-003	0.0292	7.3600e-003	9.9000e-004	8.3500e-003		76.4196	76.4196	5.8000e-003		76.5646
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0800	0.0560	0.6105	1.6700e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		166.0751	166.0751	5.2100e-003		166.2053
Total	**0.0881**	**0.3317**	**0.6689**	**2.3800e-003**	**0.1958**	**2.3500e-003**	**0.1981**	**0.0518**	**2.2000e-003**	**0.0540**		**242.4947**	**242.4947**	**0.0110**		**242.7698**

3.3 Grading - 2020

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					6.0455	0.0000	6.0455	3.3128	0.0000	3.3128			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000		6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**6.0455**	**2.1739**	**8.2194**	**3.3128**	**2.0000**	**5.3128**		**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	1.5500e-003	0.0537	0.0118	1.5000e-004	5.8000e-003	1.7000e-004	5.9800e-003	1.5200e-003	1.7000e-004	1.6900e-003		15.7641	15.7641	1.1800e-003		15.7935

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0987	0.0666	0.7392	2.1500e-003	0.2236	1.7100e-003	0.2253	0.0593	1.5700e-003	0.0609		214.5703	214.5703	6.1800e-003		214.7247
Total	**0.1002**	**0.1204**	**0.7509**	**2.3000e-003**	**0.2294**	**1.8800e-003**	**0.2312**	**0.0608**	**1.7400e-003**	**0.0626**		**230.3344**	**230.3344**	**7.3600e-003**		**230.5182**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5845	0.0000	2.5845	1.4162	0.0000	1.4162			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**2.5845**	**2.1739**	**4.7584**	**1.4162**	**2.0000**	**3.4162**	**0.0000**	**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5500e-003	0.0537	0.0118	1.5000e-004	5.8000e-003	1.7000e-004	5.9800e-003	1.5200e-003	1.7000e-004	1.6900e-003		15.7641	15.7641	1.1800e-003		15.7935
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0987	0.0666	0.7392	2.1500e-003	0.2236	1.7100e-003	0.2253	0.0593	1.5700e-003	0.0609		214.5703	214.5703	6.1800e-003		214.7247
Total	**0.1002**	**0.1204**	**0.7509**	**2.3000e-003**	**0.2294**	**1.8800e-003**	**0.2312**	**0.0608**	**1.7400e-003**	**0.0626**		**230.3344**	**230.3344**	**7.3600e-003**		**230.5182**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0455	0.0000	6.0455	3.3128	0.0000	3.3128			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**6.0455**	**1.9853**	**8.0309**	**3.3128**	**1.8265**	**5.1393**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4800e-003	0.0500	0.0116	1.4000e-004	5.9200e-003	1.6000e-004	6.0800e-003	1.5500e-003	1.5000e-004	1.7000e-003		15.5917	15.5917	1.1600e-003		15.6207
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0922	0.0600	0.6797	2.0800e-003	0.2236	1.6500e-003	0.2252	0.0593	1.5200e-003	0.0608		207.6302	207.6302	5.5800e-003		207.7698
Total	**0.0937**	**0.1099**	**0.6914**	**2.2200e-003**	**0.2295**	**1.8100e-003**	**0.2313**	**0.0608**	**1.6700e-003**	**0.0625**		**223.2219**	**223.2219**	**6.7400e-003**		**223.3905**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5845	0.0000	2.5845	1.4162	0.0000	1.4162			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**2.5845**	**1.9853**	**4.5698**	**1.4162**	**1.8265**	**3.2427**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4800e-003	0.0500	0.0116	1.4000e-004	5.9200e-003	1.6000e-004	6.0800e-003	1.5500e-003	1.5000e-004	1.7000e-003		15.5917	15.5917	1.1600e-003		15.6207
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0922	0.0600	0.6797	2.0800e-003	0.2236	1.6500e-003	0.2252	0.0593	1.5200e-003	0.0608		207.6302	207.6302	5.5800e-003		207.7698
Total	**0.0937**	**0.1099**	**0.6914**	**2.2200e-003**	**0.2295**	**1.8100e-003**	**0.2313**	**0.0608**	**1.6700e-003**	**0.0625**		**223.2219**	**223.2219**	**6.7400e-003**		**223.3905**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU/yr	lb/day										lb/day					

User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	11.1910	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6900e-003
Unmitigated	11.1910	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6900e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.2723					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.9186					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6900e-003
Total	**11.1910**	**1.0000e-005**	**1.1800e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.5200e-003**	**2.5200e-003**	**1.0000e-005**		**2.6900e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.2723					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.9186					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6900e-003
Total	**11.1910**	**1.0000e-005**	**1.1800e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.5200e-003**	**2.5200e-003**	**1.0000e-005**		**2.6900e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Long Beach MUST Project

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	11.50	User Defined Unit	11.50	500,940.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	11			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per Site Plan.

Construction Phase - Anticipated construction schedule.

Off-road Equipment -

Demolition -

Grading - Total site acreages 11.5

Construction Off-road Equipment Mitigation - Per SCAQMD rules.

Area Mitigation -

Energy Mitigation - Current code is 30% more efficient than CalEEMod baseline per CEC.

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	20.00	520.00
tblConstructionPhase	NumDays	30.00	520.00
tblConstructionPhase	PhaseStartDate	12/28/2019	1/1/2020
tblGrading	AcresOfGrading	1,300.00	11.50
tblGrading	MaterialExported	0.00	1,000.00
tblLandUse	BuildingSpaceSquareFeet	0.00	500,940.00
tblLandUse	LandUseSquareFeet	0.00	500,940.00
tblLandUse	LotAcreage	0.00	11.50
tblProjectCharacteristics	OperationalYear	2018	2020

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.8074	38.6676	23.1101	0.0414	0.3931	1.9410	2.3341	0.0817	1.8071	1.8888	0.0000	4,133.2505	4,133.2505	1.0786	0.0000	4,160.2157
2019	3.5941	36.1059	22.7863	0.0413	0.3933	1.7972	2.1906	0.0817	1.6719	1.7536	0.0000	4,071.6800	4,071.6800	1.0730	0.0000	4,098.5038
2020	4.5413	50.3112	32.7845	0.0645	6.2749	2.1758	8.4507	3.3736	2.0017	5.3753	0.0000	6,250.6705	6,250.6705	1.9501	0.0000	6,299.4242

2021	4.2763	46.5038	31.6403	0.0644	6.2750	1.9871	8.2622	3.3736	1.8282	5.2018	0.0000	6,244.2872	6,244.2872	1.9499	0.0000	6,293.0343
Maximum	**4.5413**	**50.3112**	**32.7845**	**0.0645**	**6.2750**	**2.1758**	**8.4507**	**3.3736**	**2.0017**	**5.3753**	**0.0000**	**6,250.6705**	**6,250.6705**	**1.9501**	**0.0000**	**6,299.4242**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.8074	38.6676	23.1101	0.0414	0.2800	1.9410	2.2211	0.0646	1.8071	1.8717	0.0000	4,133.2505	4,133.2505	1.0786	0.0000	4,160.2157
2019	3.5941	36.1059	22.7863	0.0413	0.2802	1.7972	2.0775	0.0646	1.6719	1.7365	0.0000	4,071.6800	4,071.6800	1.0730	0.0000	4,098.5038
2020	4.5413	50.3112	32.7845	0.0645	2.8138	2.1758	4.9896	1.4770	2.0017	3.4787	0.0000	6,250.6705	6,250.6705	1.9501	0.0000	6,299.4242
2021	4.2763	46.5038	31.6403	0.0644	2.8139	1.9871	4.8011	1.4770	1.8282	3.3052	0.0000	6,244.2872	6,244.2872	1.9499	0.0000	6,293.0343
Maximum	**4.5413**	**50.3112**	**32.7845**	**0.0645**	**2.8139**	**2.1758**	**4.9896**	**1.4770**	**2.0017**	**3.4787**	**0.0000**	**6,250.6705**	**6,250.6705**	**1.9501**	**0.0000**	**6,299.4242**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**53.60**	**0.00**	**33.66**	**55.38**	**0.00**	**26.92**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	11.1910	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6900e-003

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**11.1910**	**1.0000e-005**	**1.1800e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.5200e-003**	**2.5200e-003**	**1.0000e-005**	**0.0000**	**2.6900e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	11.1910	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6900e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**11.1910**	**1.0000e-005**	**1.1800e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.5200e-003**	**2.5200e-003**	**1.0000e-005**	**0.0000**	**2.6900e-003**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/27/2019	5	520	
2	Grading	Grading	1/1/2020	12/24/2021	5	520	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 11.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	475.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	99.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1975	0.0000	0.1975	0.0299	0.0000	0.0299			0.0000			0.0000
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048		3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**	**0.1975**	**1.9386**	**2.1361**	**0.0299**	**1.8048**	**1.8347**		**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.3000e-003	0.2873	0.0557	7.3000e-004	0.0279	1.1100e-003	0.0291	7.3100e-003	1.0600e-003	8.3800e-003		78.6759	78.6759	5.6500e-003		78.8171
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0801	0.0578	0.7505	1.8400e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2400e-003	0.0457		182.8080	182.8080	6.2500e-003		182.9642
Total	**0.0884**	**0.3451**	**0.8061**	**2.5700e-003**	**0.1956**	**2.4500e-003**	**0.1981**	**0.0518**	**2.3000e-003**	**0.0541**		**261.4840**	**261.4840**	**0.0119**		**261.7813**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					0.0844	0.0000	0.0844	0.0128	0.0000	0.0128			0.0000			0.0000
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048	0.0000	3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**	**0.0844**	**1.9386**	**2.0230**	**0.0128**	**1.8048**	**1.8176**	**0.0000**	**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.3000e-003	0.2873	0.0557	7.3000e-004	0.0279	1.1100e-003	0.0291	7.3100e-003	1.0600e-003	8.3800e-003		78.6759	78.6759	5.6500e-003		78.8171
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0801	0.0578	0.7505	1.8400e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2400e-003	0.0457		182.8080	182.8080	6.2500e-003		182.9642
Total	**0.0884**	**0.3451**	**0.8061**	**2.5700e-003**	**0.1956**	**2.4500e-003**	**0.1981**	**0.0518**	**2.3000e-003**	**0.0541**		**261.4840**	**261.4840**	**0.0119**		**261.7813**

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1975	0.0000	0.1975	0.0299	0.0000	0.0299			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**0.1975**	**1.7949**	**1.9924**	**0.0299**	**1.6697**	**1.6996**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8700e-003	0.2720	0.0544	7.2000e-004	0.0281	1.0200e-003	0.0291	7.3600e-003	9.7000e-004	8.3300e-003		77.7264	77.7264	5.5700e-003		77.8658
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0728	0.0510	0.6719	1.7800e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		177.0542	177.0542	5.5500e-003		177.1930
Total	**0.0807**	**0.3230**	**0.7263**	**2.5000e-003**	**0.1958**	**2.3300e-003**	**0.1981**	**0.0518**	**2.1800e-003**	**0.0540**		**254.7806**	**254.7806**	**0.0111**		**255.0587**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0844	0.0000	0.0844	0.0128	0.0000	0.0128			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**0.0844**	**1.7949**	**1.8793**	**0.0128**	**1.6697**	**1.6825**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	7.8700e-003	0.2720	0.0544	7.2000e-004	0.0281	1.0200e-003	0.0291	7.3600e-003	9.7000e-004	8.3300e-003		77.7264	77.7264	5.5700e-003		77.8658
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0728	0.0510	0.6719	1.7800e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		177.0542	177.0542	5.5500e-003		177.1930
Total	**0.0807**	**0.3230**	**0.7263**	**2.5000e-003**	**0.1958**	**2.3300e-003**	**0.1981**	**0.0518**	**2.1800e-003**	**0.0540**		**254.7806**	**254.7806**	**0.0111**		**255.0587**

3.3 Grading - 2020

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					6.0455	0.0000	6.0455	3.3128	0.0000	3.3128			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000		6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**6.0455**	**2.1739**	**8.2194**	**3.3128**	**2.0000**	**5.3128**		**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	1.5200e-003	0.0530	0.0110	1.5000e-004	5.8000e-003	1.7000e-004	5.9800e-003	1.5200e-003	1.6000e-004	1.6800e-003		16.0380	16.0380	1.1300e-003		16.0664

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0897	0.0607	0.8152	2.3000e-003	0.2236	1.7100e-003	0.2253	0.0593	1.5700e-003	0.0609		228.7673	228.7673	6.5900e-003		228.9321
Total	**0.0912**	**0.1137**	**0.8262**	**2.4500e-003**	**0.2294**	**1.8800e-003**	**0.2312**	**0.0608**	**1.7300e-003**	**0.0625**		**244.8053**	**244.8053**	**7.7200e-003**		**244.9984**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5845	0.0000	2.5845	1.4162	0.0000	1.4162			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**2.5845**	**2.1739**	**4.7584**	**1.4162**	**2.0000**	**3.4162**	**0.0000**	**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5200e-003	0.0530	0.0110	1.5000e-004	5.8000e-003	1.7000e-004	5.9800e-003	1.5200e-003	1.6000e-004	1.6800e-003		16.0380	16.0380	1.1300e-003		16.0664
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0897	0.0607	0.8152	2.3000e-003	0.2236	1.7100e-003	0.2253	0.0593	1.5700e-003	0.0609		228.7673	228.7673	6.5900e-003		228.9321
Total	**0.0912**	**0.1137**	**0.8262**	**2.4500e-003**	**0.2294**	**1.8800e-003**	**0.2312**	**0.0608**	**1.7300e-003**	**0.0625**		**244.8053**	**244.8053**	**7.7200e-003**		**244.9984**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0455	0.0000	6.0455	3.3128	0.0000	3.3128			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**6.0455**	**1.9853**	**8.0309**	**3.3128**	**1.8265**	**5.1393**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4500e-003	0.0494	0.0109	1.5000e-004	5.9200e-003	1.5000e-004	6.0700e-003	1.5500e-003	1.5000e-004	1.7000e-003		15.8641	15.8641	1.1200e-003		15.8920
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.0546	0.7509	2.2200e-003	0.2236	1.6500e-003	0.2252	0.0593	1.5200e-003	0.0608		221.3797	221.3797	5.9700e-003		221.5288
Total	**0.0852**	**0.1040**	**0.7618**	**2.3700e-003**	**0.2295**	**1.8000e-003**	**0.2313**	**0.0608**	**1.6700e-003**	**0.0625**		**237.2437**	**237.2437**	**7.0900e-003**		**237.4208**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					2.5845	0.0000	2.5845	1.4162	0.0000	1.4162			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**2.5845**	**1.9853**	**4.5698**	**1.4162**	**1.8265**	**3.2427**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	1.4500e-003	0.0494	0.0109	1.5000e-004	5.9200e-003	1.5000e-004	6.0700e-003	1.5500e-003	1.5000e-004	1.7000e-003		15.8641	15.8641	1.1200e-003		15.8920
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0837	0.0546	0.7509	2.2200e-003	0.2236	1.6500e-003	0.2252	0.0593	1.5200e-003	0.0608		221.3797	221.3797	5.9700e-003		221.5288
Total	**0.0852**	**0.1040**	**0.7618**	**2.3700e-003**	**0.2295**	**1.8000e-003**	**0.2313**	**0.0608**	**1.6700e-003**	**0.0625**		**237.2437**	**237.2437**	**7.0900e-003**		**237.4208**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					

User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	11.1910	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6900e-003
Unmitigated	11.1910	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6900e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.2723					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.9186					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6900e-003
Total	**11.1910**	**1.0000e-005**	**1.1800e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.5200e-003**	**2.5200e-003**	**1.0000e-005**		**2.6900e-003**

<u>Mitigated</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.2723					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.9186					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1800e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.5200e-003	2.5200e-003	1.0000e-005		2.6900e-003
Total	**11.1910**	**1.0000e-005**	**1.1800e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.5200e-003**	**2.5200e-003**	**1.0000e-005**		**2.6900e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Long Beach MUST Project

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	11.50	User Defined Unit	11.50	500,940.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	11			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per Site Plan.

Construction Phase - Anticipated construction schedule.

Off-road Equipment -

Demolition -

Grading - Total site acreages 11.5

Construction Off-road Equipment Mitigation - Per SCAQMD rules.

Area Mitigation -

Energy Mitigation - Current code is 30% more efficient than CalEEMod baseline per CEC.

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	20.00	520.00
tblConstructionPhase	NumDays	30.00	520.00
tblConstructionPhase	PhaseStartDate	12/28/2019	1/1/2020
tblGrading	AcresOfGrading	1,300.00	11.50
tblGrading	MaterialExported	0.00	1,000.00
tblLandUse	BuildingSpaceSquareFeet	0.00	500,940.00
tblLandUse	LandUseSquareFeet	0.00	500,940.00
tblLandUse	LotAcreage	0.00	11.50
tblProjectCharacteristics	OperationalYear	2018	2020

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.4968	5.0484	3.0097	5.3900e-003	0.0508	0.2533	0.3041	0.0105	0.2358	0.2464	0.0000	488.2405	488.2405	0.1277	0.0000	491.4323
2019	0.4654	4.6777	2.9452	5.3400e-003	0.0505	0.2327	0.2832	0.0105	0.2165	0.2270	0.0000	477.2962	477.2962	0.1260	0.0000	480.4470
2020	0.5948	6.5920	4.2874	8.4300e-003	1.5953	0.2850	1.8803	0.8658	0.2622	1.1281	0.0000	741.5386	741.5386	0.2317	0.0000	747.3317

2021	0.5473	5.9536	4.0432	8.2300e-003	1.5946	0.2544	1.8490	0.8657	0.2340	1.0997	0.0000	723.8549	723.8549	0.2264	0.0000	729.5146
Maximum	**0.5948**	**6.5920**	**4.2874**	**8.4300e-003**	**1.5953**	**0.2850**	**1.8803**	**0.8658**	**0.2622**	**1.1281**	**0.0000**	**741.5386**	**741.5386**	**0.2317**	**0.0000**	**747.3317**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.4968	5.0484	3.0097	5.3900e-003	0.0361	0.2533	0.2894	8.3100e-003	0.2358	0.2441	0.0000	488.2400	488.2400	0.1277	0.0000	491.4318
2019	0.4654	4.6777	2.9452	5.3400e-003	0.0358	0.2327	0.2686	8.2500e-003	0.2165	0.2248	0.0000	477.2956	477.2956	0.1260	0.0000	480.4464
2020	0.5948	6.5920	4.2874	8.4300e-003	0.6989	0.2850	0.9839	0.3746	0.2622	0.6369	0.0000	741.5378	741.5378	0.2317	0.0000	747.3308
2021	0.5473	5.9536	4.0432	8.2300e-003	0.6982	0.2544	0.9526	0.3745	0.2340	0.6085	0.0000	723.8541	723.8541	0.2264	0.0000	729.5138
Maximum	**0.5948**	**6.5920**	**4.2874**	**8.4300e-003**	**0.6989**	**0.2850**	**0.9839**	**0.3746**	**0.2622**	**0.6369**	**0.0000**	**741.5378**	**741.5378**	**0.2317**	**0.0000**	**747.3308**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**55.37**	**0.00**	**42.21**	**56.31**	**0.00**	**36.54**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
1	**1-1-2018**	**3-31-2018**	1.3658	1.3658
2	**4-1-2018**	**6-30-2018**	1.3804	1.3804
3	**7-1-2018**	**9-30-2018**	1.3956	1.3956
4	**10-1-2018**	**12-31-2018**	1.3962	1.3962
5	**1-1-2019**	**3-31-2019**	1.2766	1.2766
6	**4-1-2019**	**6-30-2019**	1.2902	1.2902
7	**7-1-2019**	**9-30-2019**	1.3044	1.3044
8	**10-1-2019**	**12-31-2019**	1.2482	1.2482

9	**1-1-2020**	**3-31-2020**	1.7832	1.7832
10	**4-1-2020**	**6-30-2020**	1.7827	1.7827
11	**7-1-2020**	**9-30-2020**	1.8023	1.8023
12	**10-1-2020**	**12-31-2020**	1.8028	1.8028
13	**1-1-2021**	**3-31-2021**	1.6327	1.6327
14	**4-1-2021**	**6-30-2021**	1.6504	1.6504
15	**7-1-2021**	**9-30-2021**	1.6685	1.6685
		Highest	1.8028	1.8028

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.0424	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.9000e-004	2.9000e-004	0.0000	0.0000	3.0000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.0424**	**0.0000**	**1.5000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.0000**	**3.0000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Area	2.0424	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.9000e-004	2.9000e-004	0.0000	0.0000	3.0000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.0424**	**0.0000**	**1.5000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.0000**	**3.0000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/27/2019	5	520	
2	Grading	Grading	1/1/2020	12/24/2021	5	520	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 11.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38

Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	475.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	99.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0258	0.0000	0.0258	3.9000e-003	0.0000	3.9000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4853	5.0011	2.9107	5.0700e-003		0.2530	0.2530		0.2355	0.2355	0.0000	458.3692	458.3692	0.1263	0.0000	461.5263

Total	**0.4853**	**5.0011**	**2.9107**	**5.0700e-003**	**0.0258**	**0.2530**	**0.2788**	**3.9000e-003**	**0.2355**	**0.2394**	**0.0000**	**458.3692**	**458.3692**	**0.1263**	**0.0000**	**461.5263**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-003	0.0388	7.5000e-003	9.0000e-005	3.5800e-003	1.5000e-004	3.7300e-003	9.4000e-004	1.4000e-004	1.0800e-003	0.0000	9.2493	9.2493	6.8000e-004	0.0000	9.2663
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0104	8.5200e-003	0.0915	2.3000e-004	0.0215	1.8000e-004	0.0217	5.7000e-003	1.6000e-004	5.8700e-003	0.0000	20.6221	20.6221	7.1000e-004	0.0000	20.6397
Total	**0.0115**	**0.0473**	**0.0990**	**3.2000e-004**	**0.0251**	**3.3000e-004**	**0.0254**	**6.6400e-003**	**3.0000e-004**	**6.9500e-003**	**0.0000**	**29.8714**	**29.8714**	**1.3900e-003**	**0.0000**	**29.9060**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0110	0.0000	0.0110	1.6700e-003	0.0000	1.6700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4853	5.0011	2.9107	5.0700e-003		0.2530	0.2530		0.2355	0.2355	0.0000	458.3686	458.3686	0.1263	0.0000	461.5258
Total	**0.4853**	**5.0011**	**2.9107**	**5.0700e-003**	**0.0110**	**0.2530**	**0.2640**	**1.6700e-003**	**0.2355**	**0.2372**	**0.0000**	**458.3686**	**458.3686**	**0.1263**	**0.0000**	**461.5258**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-003	0.0388	7.5000e-003	9.0000e-005	3.5800e-003	1.5000e-004	3.7300e-003	9.4000e-004	1.4000e-004	1.0800e-003	0.0000	9.2493	9.2493	6.8000e-004	0.0000	9.2663
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0104	8.5200e-003	0.0915	2.3000e-004	0.0215	1.8000e-004	0.0217	5.7000e-003	1.6000e-004	5.8700e-003	0.0000	20.6221	20.6221	7.1000e-004	0.0000	20.6397
Total	**0.0115**	**0.0473**	**0.0990**	**3.2000e-004**	**0.0251**	**3.3000e-004**	**0.0254**	**6.6400e-003**	**3.0000e-004**	**6.9500e-003**	**0.0000**	**29.8714**	**29.8714**	**1.3900e-003**	**0.0000**	**29.9060**

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0256	0.0000	0.0256	3.8700e-003	0.0000	3.8700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4550	4.6339	2.8568	5.0200e-003		0.2324	0.2324		0.2162	0.2162	0.0000	448.4110	448.4110	0.1247	0.0000	451.5296
Total	**0.4550**	**4.6339**	**2.8568**	**5.0200e-003**	**0.0256**	**0.2324**	**0.2580**	**3.8700e-003**	**0.2162**	**0.2201**	**0.0000**	**448.4110**	**448.4110**	**0.1247**	**0.0000**	**451.5296**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Hauling	1.0300e-003	0.0364	7.2700e-003	9.0000e-005	3.5800e-003	1.3000e-004	3.7100e-003	9.4000e-004	1.3000e-004	1.0600e-003	0.0000	9.0669	9.0669	6.7000e-004	0.0000	9.0835
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3500e-003	7.4600e-003	0.0811	2.2000e-004	0.0213	1.7000e-004	0.0215	5.6600e-003	1.6000e-004	5.8200e-003	0.0000	19.8183	19.8183	6.2000e-004	0.0000	19.8339
Total	**0.0104**	**0.0438**	**0.0884**	**3.1000e-004**	**0.0249**	**3.0000e-004**	**0.0252**	**6.6000e-003**	**2.9000e-004**	**6.8800e-003**	**0.0000**	**28.8852**	**28.8852**	**1.2900e-003**	**0.0000**	**28.9174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0109	0.0000	0.0109	1.6600e-003	0.0000	1.6600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4550	4.6339	2.8568	5.0200e-003		0.2324	0.2324		0.2162	0.2162	0.0000	448.4104	448.4104	0.1247	0.0000	451.5290
Total	**0.4550**	**4.6339**	**2.8568**	**5.0200e-003**	**0.0109**	**0.2324**	**0.2434**	**1.6600e-003**	**0.2162**	**0.2179**	**0.0000**	**448.4104**	**448.4104**	**0.1247**	**0.0000**	**451.5290**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0300e-003	0.0364	7.2700e-003	9.0000e-005	3.5800e-003	1.3000e-004	3.7100e-003	9.4000e-004	1.3000e-004	1.0600e-003	0.0000	9.0669	9.0669	6.7000e-004	0.0000	9.0835
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3500e-003	7.4600e-003	0.0811	2.2000e-004	0.0213	1.7000e-004	0.0215	5.6600e-003	1.6000e-004	5.8200e-003	0.0000	19.8183	19.8183	6.2000e-004	0.0000	19.8339

Total	**0.0104**	**0.0438**	**0.0884**	**3.1000e-004**	**0.0249**	**3.0000e-004**	**0.0252**	**6.6000e-003**	**2.9000e-004**	**6.8800e-003**	**0.0000**	**28.8852**	**28.8852**	**1.2900e-003**	**0.0000**	**28.9174**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.5658	0.0000	1.5658	0.8580	0.0000	0.8580	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5830	6.5759	4.1865	8.1200e-003		0.2848	0.2848		0.2620	0.2620	0.0000	713.7442	713.7442	0.2308	0.0000	719.5152
Total	**0.5830**	**6.5759**	**4.1865**	**8.1200e-003**	**1.5658**	**0.2848**	**1.8506**	**0.8580**	**0.2620**	**1.1200**	**0.0000**	**713.7442**	**713.7442**	**0.2308**	**0.0000**	**719.5152**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-004	7.1700e-003	1.4900e-003	2.0000e-005	7.5000e-004	2.0000e-005	7.7000e-004	2.0000e-004	2.0000e-005	2.2000e-004	0.0000	1.8923	1.8923	1.4000e-004	0.0000	1.8957
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0117	8.9800e-003	0.0994	2.9000e-004	0.0287	2.2000e-004	0.0290	7.6300e-003	2.1000e-004	7.8400e-003	0.0000	25.9021	25.9021	7.5000e-004	0.0000	25.9207
Total	**0.0119**	**0.0162**	**0.1009**	**3.1000e-004**	**0.0295**	**2.4000e-004**	**0.0297**	**7.8300e-003**	**2.3000e-004**	**8.0600e-003**	**0.0000**	**27.7944**	**27.7944**	**8.9000e-004**	**0.0000**	**27.8165**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6694	0.0000	0.6694	0.3668	0.0000	0.3668	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5830	6.5759	4.1865	8.1200e-003		0.2848	0.2848		0.2620	0.2620	0.0000	713.7434	713.7434	0.2308	0.0000	719.5144
Total	**0.5830**	**6.5759**	**4.1865**	**8.1200e-003**	**0.6694**	**0.2848**	**0.9542**	**0.3668**	**0.2620**	**0.6288**	**0.0000**	**713.7434**	**713.7434**	**0.2308**	**0.0000**	**719.5144**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-004	7.1700e-003	1.4900e-003	2.0000e-005	7.5000e-004	2.0000e-005	7.7000e-004	2.0000e-004	2.0000e-005	2.2000e-004	0.0000	1.8923	1.8923	1.4000e-004	0.0000	1.8957
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0117	8.9800e-003	0.0994	2.9000e-004	0.0287	2.2000e-004	0.0290	7.6300e-003	2.1000e-004	7.8400e-003	0.0000	25.9021	25.9021	7.5000e-004	0.0000	25.9207
Total	**0.0119**	**0.0162**	**0.1009**	**3.1000e-004**	**0.0295**	**2.4000e-004**	**0.0297**	**7.8300e-003**	**2.3000e-004**	**8.0600e-003**	**0.0000**	**27.7944**	**27.7944**	**8.9000e-004**	**0.0000**	**27.8165**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Fugitive Dust					1.5658	0.0000	1.5658	0.8580	0.0000	0.8580	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5365	5.9392	3.9524	7.9400e-003		0.2541	0.2541		0.2338	0.2338	0.0000	697.5358	697.5358	0.2256	0.0000	703.1757
Total	**0.5365**	**5.9392**	**3.9524**	**7.9400e-003**	**1.5658**	**0.2541**	**1.8199**	**0.8580**	**0.2338**	**1.0918**	**0.0000**	**697.5358**	**697.5358**	**0.2256**	**0.0000**	**703.1757**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9000e-004	6.5200e-003	1.4400e-003	2.0000e-005	7.4000e-004	2.0000e-005	7.6000e-004	1.9000e-004	2.0000e-005	2.1000e-004	0.0000	1.8288	1.8288	1.3000e-004	0.0000	1.8321
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0106	7.9000e-003	0.0893	2.7000e-004	0.0281	2.1000e-004	0.0283	7.4600e-003	2.0000e-004	7.6500e-003	0.0000	24.4903	24.4903	6.6000e-004	0.0000	24.5068
Total	**0.0108**	**0.0144**	**0.0908**	**2.9000e-004**	**0.0288**	**2.3000e-004**	**0.0291**	**7.6500e-003**	**2.2000e-004**	**7.8600e-003**	**0.0000**	**26.3191**	**26.3191**	**7.9000e-004**	**0.0000**	**26.3389**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6694	0.0000	0.6694	0.3668	0.0000	0.3668	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5365	5.9392	3.9524	7.9400e-003		0.2541	0.2541		0.2338	0.2338	0.0000	697.5349	697.5349	0.2256	0.0000	703.1749
Total	**0.5365**	**5.9392**	**3.9524**	**7.9400e-003**	**0.6694**	**0.2541**	**0.9235**	**0.3668**	**0.2338**	**0.6006**	**0.0000**	**697.5349**	**697.5349**	**0.2256**	**0.0000**	**703.1749**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9000e-004	6.5200e-003	1.4400e-003	2.0000e-005	7.4000e-004	2.0000e-005	7.6000e-004	1.9000e-004	2.0000e-005	2.1000e-004	0.0000	1.8288	1.8288	1.3000e-004	0.0000	1.8321
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0106	7.9000e-003	0.0893	2.7000e-004	0.0281	2.1000e-004	0.0283	7.4600e-003	2.0000e-004	7.6500e-003	0.0000	24.4903	24.4903	6.6000e-004	0.0000	24.5068
Total	**0.0108**	**0.0144**	**0.0908**	**2.9000e-004**	**0.0288**	**2.3000e-004**	**0.0291**	**7.6500e-003**	**2.2000e-004**	**7.8600e-003**	**0.0000**	**26.3191**	**26.3191**	**7.9000e-004**	**0.0000**	**26.3389**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e

Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.0424	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.9000e-004	2.9000e-004	0.0000	0.0000	3.0000e-004
Unmitigated	2.0424	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.9000e-004	2.9000e-004	0.0000	0.0000	3.0000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2322					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.8102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.9000e-004	2.9000e-004	0.0000	0.0000	3.0000e-004
Total	**2.0424**	**0.0000**	**1.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.0000**	**3.0000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2322					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.8102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.9000e-004	2.9000e-004	0.0000	0.0000	3.0000e-004
Total	**2.0424**	**0.0000**	**1.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.0000**	**3.0000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

Land Use	Indoor/Outdoor Use Mgal	Total CO2	CH4	N2O	CO2e
		MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

Land Use	Indoor/Outdoor Use Mgal	Total CO2	CH4	N2O	CO2e
		MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY PROJECT

City of Long Beach, California

BIOLOGICAL RESOURCES REPORT

Prepared For:

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April 2017
JN 158703

Michael Baker
INTERNATIONAL

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY PROJECT

CITY OF LONG BEACH, CALIFORNIA

Biological Resources Report

The undersigned certify that this report is a complete and accurate account of the findings and conclusions of a biological resources assessment for the above-referenced project.

Dan Rosie
Project Manager/Ecologist
Natural Resources/Regulatory Permitting

Richard Beck, PWS, CEP, CPESC
Vice President
Natural Resources/Regulatory Permitting

April 2017

Executive Summary

On behalf of the City of Long Beach (City), Michael Baker International (Michael Baker) has prepared this Biological Resources Report for the Long Beach Municipal Urban Stormwater Treatment (MUST) Facility Project (project) located in the City of Long Beach, Los Angeles County, California. The proposed project consists of improving the water quality of existing urban runoff by capturing and conveying urban flows through an approximately 8-mile conveyance system (a combination of 11 new conveyance segments and existing pipelines) to the proposed MUST Facility for treatment prior to discharge into the Los Angeles River.

This report was prepared to document all biological resources identified within the survey area (comprised of the 11 new segments and the MUST Facility) during a general biological resources survey, which includes a floral and faunal inventory, vegetation/land use mapping, habitat suitability assessment to determine the potential for special-status plant and wildlife species and vegetation communities to occur within the survey area, and an evaluation of jurisdictional aquatic resources (if present within the survey area).

The survey area, located on the coastal portion of the Los Angeles Basin, consists almost entirely of urban areas, primarily residential developments and their associated ornamental trees, shrubs, and ground cover, in addition to various commercial and industrial development areas. Mature, dense coastal sage scrub, which was installed for a restoration project, is present along Segment 5, including volunteer coastal sage scrub components in adjacent disturbed areas. All other vegetated areas are limited to ornamental vegetation and disturbed areas dominated by nonnative, opportunistic species.

Based on a 5-mile radius search of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB), a 1-quadrangle search of the California Native Plant Society Online Inventory of Rare and Endangered Plants, and the U.S. Fish and Wildlife Service (USFWS) Species List, Michael Baker determined that the fifteen (15) special-status plant species and twenty (20) special-status wildlife species known to occur within the vicinity of the survey area are either not expected or have a low potential to occur within the survey area. No special-status plant or wildlife species were observed within the study area.

According to the Federal Emergency Management Agency, the 100-year flood zone within the survey area is primarily confined to the Los Angeles River and Compton Creek channels (Zone A, flooding), with the exception of the area surrounding the conveyance segment located between East Pacific Coast Highway and East Anaheim Street (Zone AH, shallow flooding). Jurisdictional hydrological features within the survey area are limited to a concrete-lined channel at the northern end of Segment 5 and existing basins throughout the survey area that convey urban storm flows to the Los Angeles River and the Pacific Ocean.

Because the proposed project is located within a primarily urban setting and would not obstruct wildlife movement, impacts to wildlife corridors are not expected as a result of project implementation. However, project activities conducted within the bird breeding season (typically January through July for raptors and February through August for other avian species) will require pre-construction nesting bird surveys, and the appropriate setbacks if active nests are found.

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Appendices

LIST OF ACRONYMS

°F	degrees Fahrenheit
amsl	above mean sea level
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
City	City of Long Beach
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
CRPR	California Rare Plant Rank
CWA	Clean Water Act
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
HA	Hydrologic Area
HU	Hydrologic Unit
IPaC	Information for Planning and Conservation
Michael Baker	Michael Baker International
MBTA	Migratory Bird Treaty Act
MUST	Municipal Urban Stormwater Treatment
NRCS	Natural Resources Conservation Service
Project	Long Beach MUST Facility Project
Regional Board	Regional Water Quality Control Board
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

Section 1 Introduction

On behalf of the City of Long Beach (City), Michael Baker International (Michael Baker) has prepared this Biological Resources Report for the Long Beach Municipal Urban Stormwater Treatment (MUST) Facility Project (project). This report describes the biological resources record searches and literature review, survey methodologies, and results of the general biological resources survey conducted within the survey area to determine the presence or potential occurrence of State-listed and/or Federally-listed as rare, threatened, or endangered, and other special-status plants, animals, and natural communities.

1.1 PROJECT LOCATION

The survey area (comprised of the MUST facility and 11 segments of new conveyance facilities) is generally located between just north of State Route 91 and just south of Ocean Boulevard, primarily east of the Los Angeles River for a distance of approximately 8 miles, entirely within the City of Long Beach, Los Angeles County, California (Figure 1, *Regional Vicinity*). Specifically, the survey area is located within an unsectioned portion of Township 3 South, Range 13 West; of the U.S. Geological Survey (USGS) *South Gate, California* 7.5-minute topographic quadrangle map and unsectioned portions of Townships 3, 4, and 5 South, Range 13 West of the USGS *Long Beach, California* 7.5-minute topographic quadrangle map (Figure 2, *Site Vicinity*).

The survey area (Figure 3, *Survey Area*) is generally bounded by developed land primarily consisting of residential neighborhoods, various commercial and industrial complexes, and the Virginia Country Club (golf course). The Los Angeles River conveys flows south between the northernmost survey area and to the west of the remainder of the survey area, with the Port of Long Beach, San Pedro Bay, and Pacific Ocean to the south.

1.2 PROJECT DESCRIPTION

The proposed project is intended to improve the water quality of existing urban runoff to the Los Angeles River, and ultimately to the Long Beach Harbor. Currently, pollutants (metals, bacteria, hydrocarbons, pesticides, and trash, for example) enter the Los Angeles River via urban runoff; the proposed project would divert flows from tributary areas immediately east and west of the river to the MUST facility for treatment prior to discharge, resulting in water quality benefits in the project area.

The proposed project would include two primary project components: 1) the MUST facility; and 2) conveyance facilities. A brief summary of these facilities is provided below:

4/14/2017 JN M:\Mdata\158703\GIS\MXD\Figure 01 Regional Vicinity.mxd

Michael Baker INTERNATIONAL

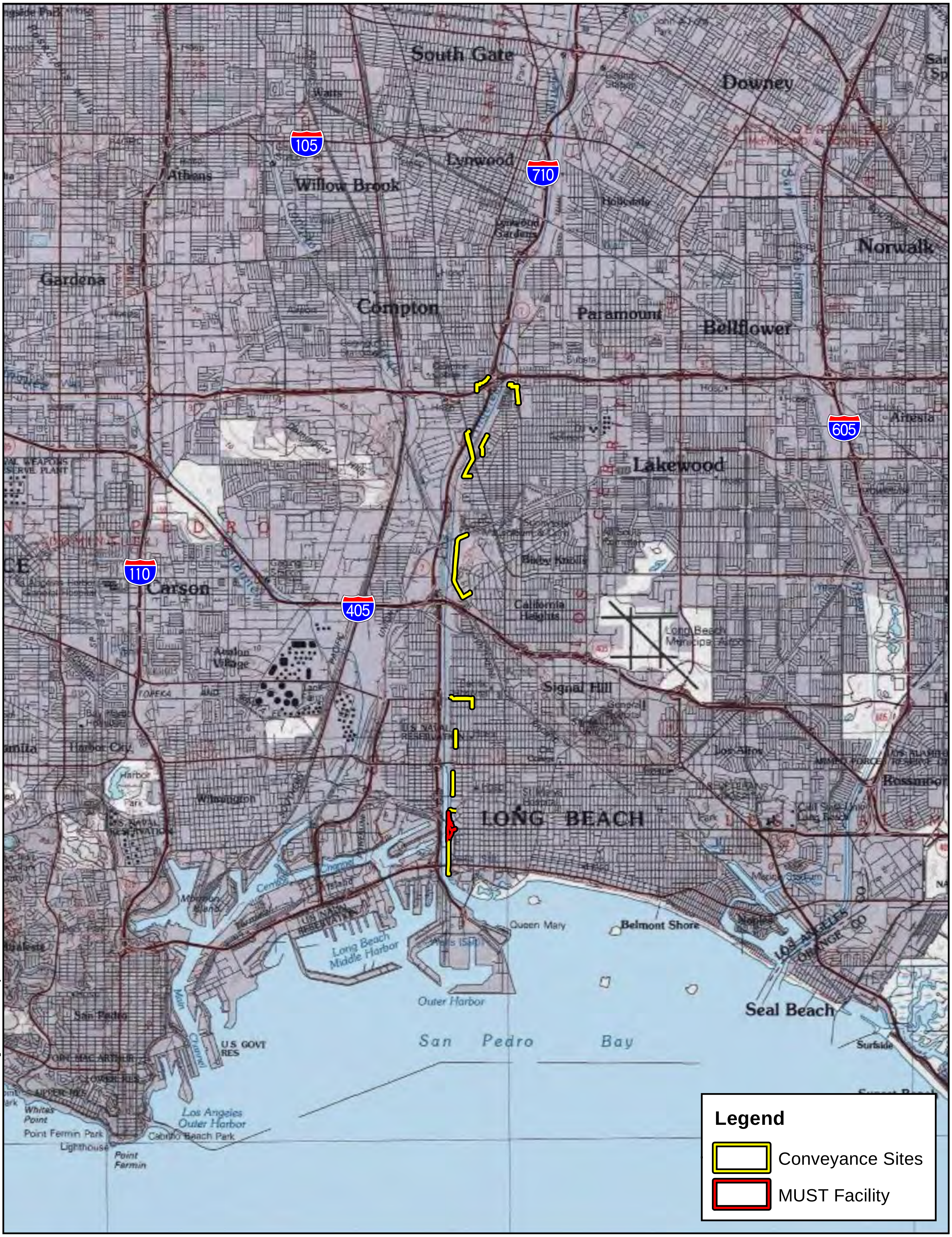
0 2.5 5 Miles

Source: ArcGIS Online

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY

Regional Vicinity

Figure 1



4/12/2017 JN M:\Mdata\158703\GIS\MXD\Figure 02 Site Vicinity.mxd

Michael Baker INTERNATIONAL

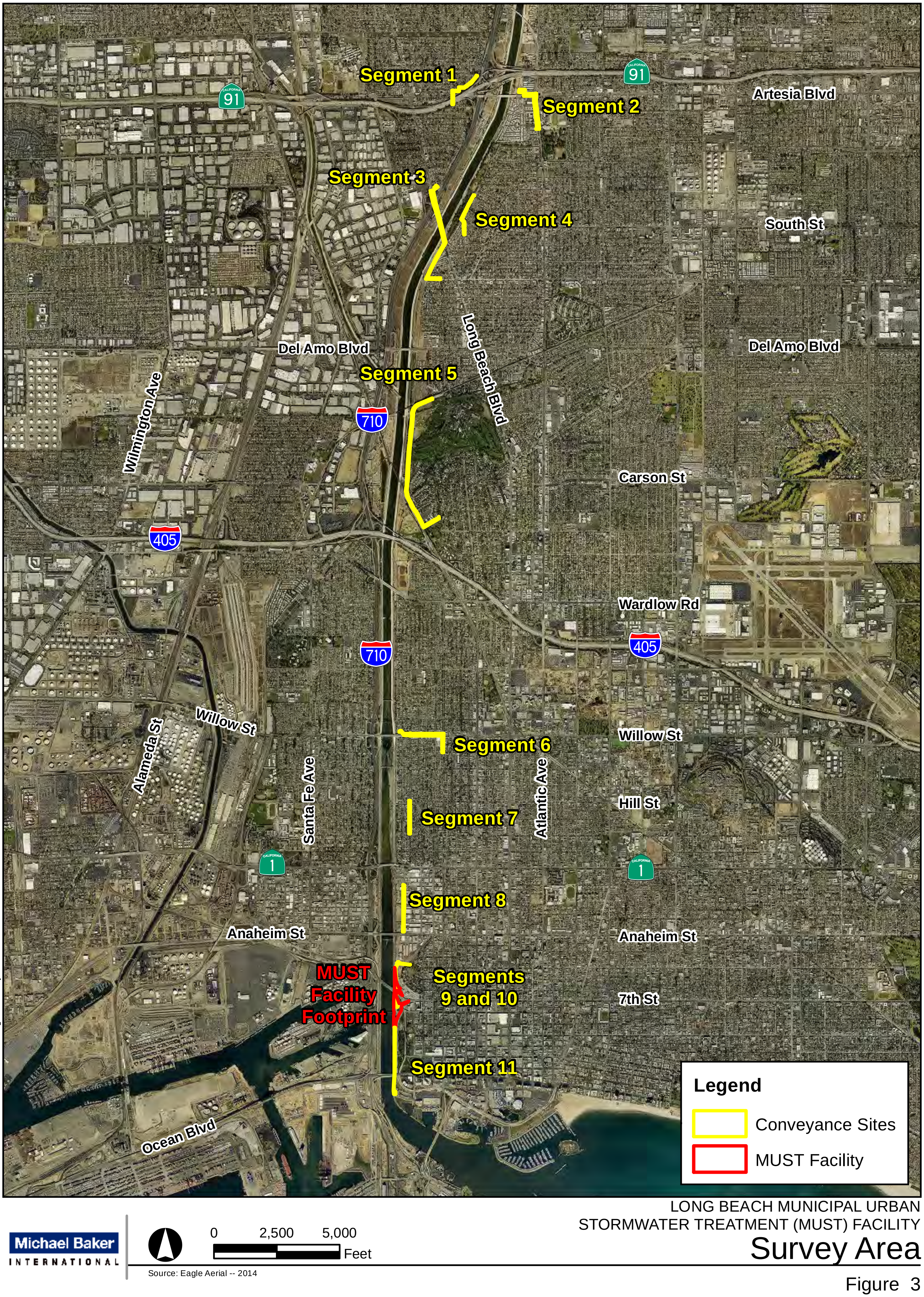
0 1 2 Miles

Source: ArcGIS Online

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY

Site Vicinity

Figure 2



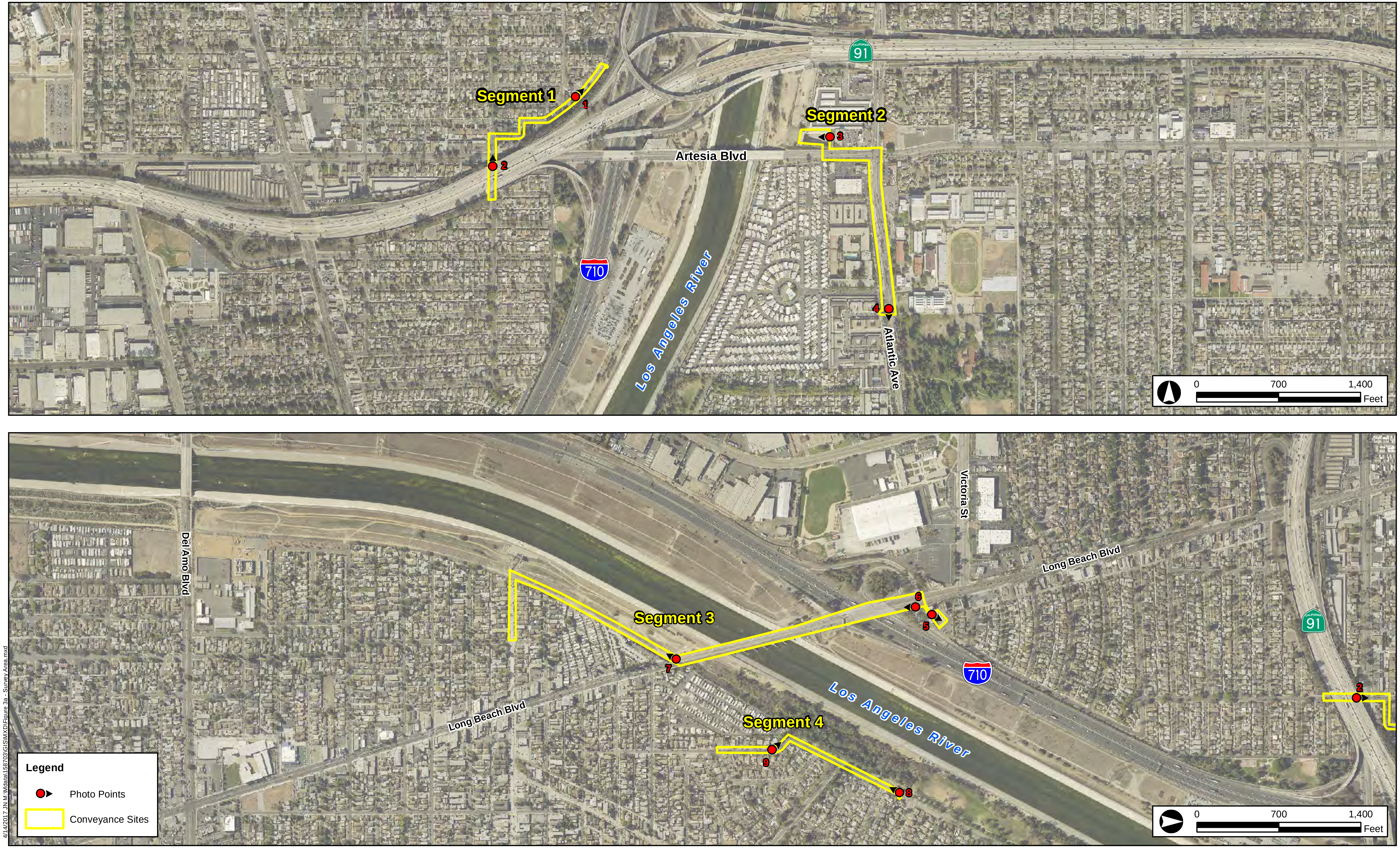
4/12/2017 JN M:\Mdata\158703\GIS\MXD\Figure 3 - Project Site.mxd

Michael Baker INTERNATIONAL

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY

Survey Area

Figure 3



4/14/2017 JN M:\Mdata\158703\GIS\MXD\Figure 3a - Survey Area.mxd

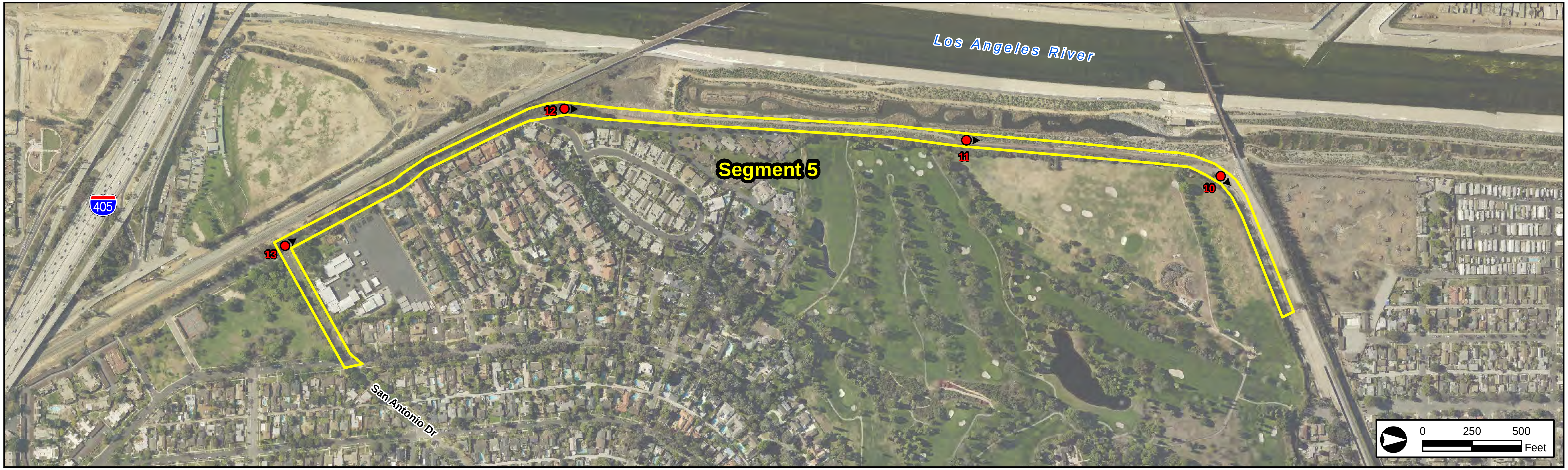
Michael Baker INTERNATIONAL

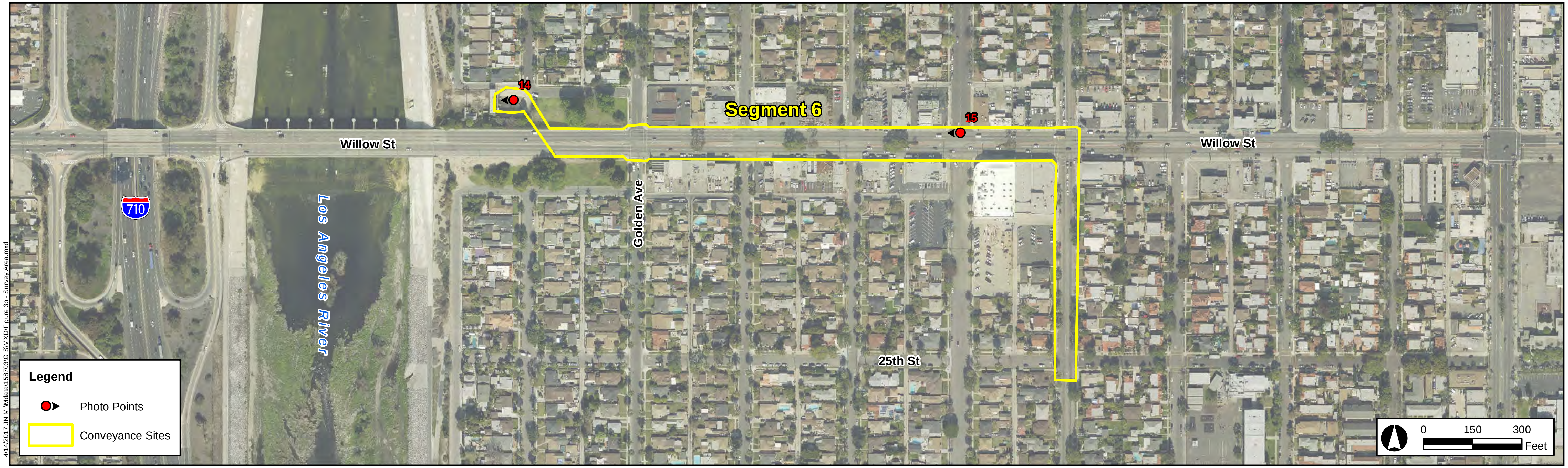
Source:

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY

Survey Area

Figure 3a





4/14/2017 JN M:\Mdata\158703\GIS\MXD\Figure 3b - Survey Area.mxd

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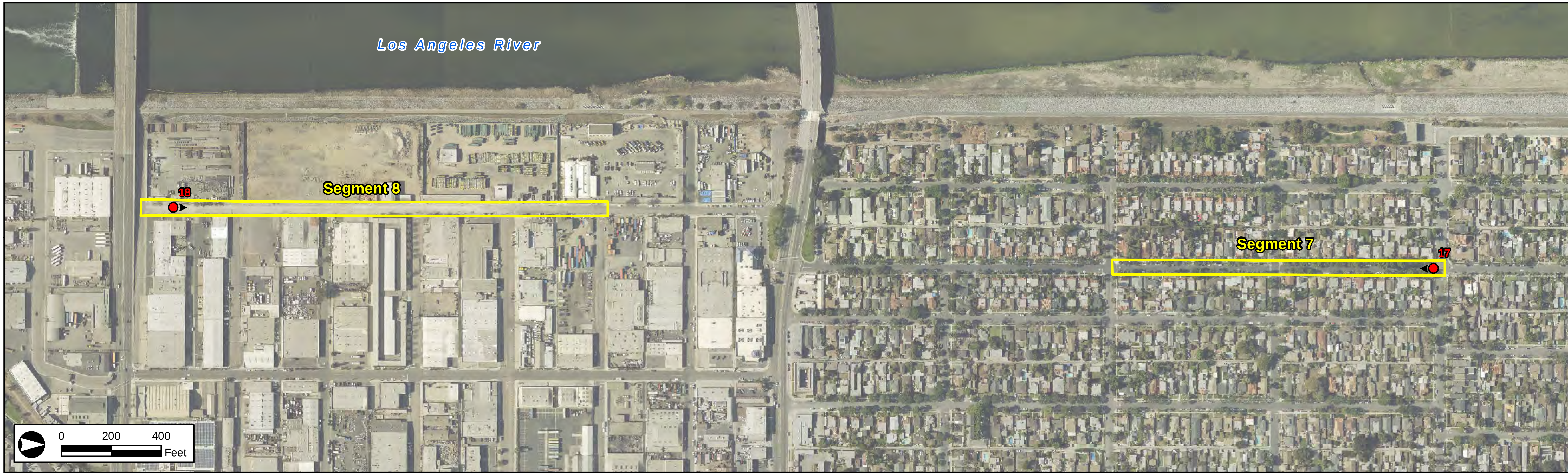
Source: USDA Soils

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY

Survey Area

Figure 3b



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LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY

Survey Area

Figure 3c

- **MUST Facility:** The MUST facility would be sited in close proximity to the City's existing Pump Station No. SD-01, on the east side of the Los Angeles River near the existing Shoemaker Bridge. The MUST facility would include facilities related to solids removal, oxidation, filtration, and disinfection, followed by a treated water terminal storage pond.
- **Conveyance Facilities:** The project would include conveyance facilities to carry stormwater from tributary areas to the MUST facility. Stormwater would be conveyed to the MUST facility via a combination of existing and proposed conveyance facilities. The project would include a total of 11 segments of new conveyance facilities that would provide the connections that would complete the approximately 8-mile conveyance system. Nine (9) of these segments are located east of the Los Angeles River, one west of the river, and one within the Long Beach Boulevard Bridge. Two options exist for conveyance – as underground pipelines, or as open channel facilities that provide for biofiltration pre-treatment and open space/aesthetic opportunities. A combination of the two options would be implemented.

It is anticipated that the project would occur entirely within existing public rights-of-way, and no right-of-way acquisition would be required for project implementation.

1.3 PURPOSE OF DOCUMENT

This report documents all biological resources identified within the survey area during a general biological resources survey and vegetation/land use mapping. Further, this report includes an analysis of the potential for the various on-site biological resources to support other special-status plant and animal species and special-status vegetation communities that are subject to provisions of the Federal Endangered Species Act of 1973 (FESA), Migratory Bird Treaty Act (MBTA), California Endangered Species Act (CESA), California Environmental Quality Act (CEQA), California Fish and Game Code (CFGC), California Native Plant Protection Act, Bald and Golden Eagle Protection Act, and other local policies and ordinances protecting biological resources.

Section 2 Methodology

2.1 LITERATURE REVIEW AND DATABASE SEARCHES

Prior to conducting the field work, Michael Baker researched the environmental setting of the survey area, such as regional and local geography, land use, climate, and watershed. Further, Michael Baker conducted a 5-mile radius search of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) RareFind 5 (CDFW, Biogeographic Data Branch 2017) and a South Gate quadrangle search of the California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants (CNPS 2017), and generated a Species and Resources List queried from the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) online system (USFWS 2017a). These sources helped to identify special-status plant and wildlife species, vegetation communities, and other biological resources that have been previously documented within, near, and/or have the potential to occur within the survey area. The *Special Animals List* (CDFW 2017a) and the *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2017b) were reviewed for the current status of rare and endangered plant and wildlife species. Other resources reviewed include the CNPS California Rare Plant Ranking System (CRPR); recent aerial photography (Google Earth Pro 2017); the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) *Soil Survey of the Los Angeles County, California, Southeastern Part* (USDA, NRCS 2017); the National Hydric Soils List (USDA, NRCS 2015); and the National Wetland Inventory (USFWS 2017b).

2.2 GENERAL BIOLOGICAL RESOURCES SURVEYS

Following the database searches, on April 4, 2017, Michael Baker biologists Dan Rosie and Linda Nguyen conducted a general biological resources survey of the entire survey area to document existing site conditions and biological resources, and to evaluate habitat with the potential to support various special-status plant and wildlife resources, including jurisdictional aquatic features if present. Representative photographs of the survey area are provided at the end of this report in Appendix A, *Site Photographs*. Figure 3 provides the location and direction from which each photo was taken.

2.2.1 Vegetation/Land Use Mapping and Plant Species Inventory

Classification of the on-site vegetation communities and other land uses is based on the descriptions provided in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986), with modifications to better represent existing conditions in the field using the *Draft Vegetation Communities of San Diego County* (Oberbauer et al. 2008), an expanded vegetation classification system based on Holland (1986). Plant species nomenclature and taxonomy follow *The Jepson Manual: Vascular Plants of California, second edition* (Baldwin et al. 2012). All plant species encountered were noted and identified at minimum to the lowest possible taxonomic level necessary to determine rarity. For a complete list of plant species observed on-site, refer to Appendix B, *Plant and Wildlife Species Observed List*.

2.2.2 General Wildlife Observations

Wildlife identification and nomenclature followed standard references, including The American Ornithologists' Union *Checklist of North and Middle American Birds* (The American Ornithologists' Union 2016), the *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, With Comments Regarding Confidence In Our Understanding* (Crother 2012), and *Mammals of North America, Second Edition* (Kays and Wilson 2009). All wildlife observed and/or otherwise detected through sign (e.g., tracks, scat) were recorded. Other wildlife may occupy the site, but are not easily detectable during the day (i.e., nocturnal) and without extraordinary survey efforts during the appropriate season, in addition to several species being transient and potentially occupying the site other times of the year. For a complete list of wildlife species observed or otherwise detected on-site, refer to Appendix B.

2.3 SURVEY LIMITATIONS

This Biological Resources Report has been performed in accordance with professionally accepted biological investigation practices conducted at this time and in this geographic area. The biological investigation is limited by the scope of work performed. Biological surveys for the presence or absence of certain taxa have been conducted as part of this assessment, but were not necessarily performed during a particular blooming period, nesting period, or particular portion of the season when positive identification would be expected if present, and therefore, cannot be considered definitive. The biological surveys are limited also by the environmental conditions present at the time of the surveys. In addition, general biological (or protocol) surveys do not guarantee that the organisms are not present and will not be discovered in the future within the site. In particular, mobile wildlife species could occupy the site on a transient basis, or re-establish populations in the future. Our field studies were based on current industry practices, which change over time and may not be applicable in the future. No other guarantees or warranties, expressed or implied, are provided.

The findings and opinions conveyed in this report are based on findings derived from site reconnaissance and review of the CNDDB RareFind5 and CNPS Online Inventory. Standard data sources relied upon during the completion of this report, such as the CNDDB, may vary with regard to accuracy and completeness. In particular, the CNDDB is compiled from research and observations reported to CDFW that may or may not have been the result of comprehensive or site-specific field surveys. Although Michael Baker believes the data sources are reasonably reliable, Michael Baker cannot and does not guarantee the authenticity or reliability of the data sources it has used. Additionally, pursuant to our contract, the data sources reviewed included only those that are practically reviewable without the need for extraordinary research and analysis.

Section 3 Existing Conditions

The following is a summarization of the results of the database searches and biological resources survey. Discussions regarding the general environmental setting, vegetation communities and other land uses present, and plant and animal species observed are presented below. Representative photographs of the survey area are provided in Appendix A, and a complete list of all the plant and animal species observed on-site during the field surveys is provided in Appendix B.

3.1 ENVIRONMENTAL SETTING

The survey area is located within the Southwestern California region of the California Floristic Province, primarily surrounded by relatively flat, urbanized areas. Specifically, the survey area consists of developed/ornamental landscaped lands, disturbed habitat, coastal sage scrub (dense restoration), and disturbed coastal sage scrub. The survey area consists of the Conveyance Sites (Segments 1 through 11) and the MUST Facility (refer to Figure 3).

3.1.1 Climate

The survey area, located on the coastal portion of the Los Angeles Basin, has a climate characterized as Mediterranean, with cool, mild winter rains and hot, dry summers. Average annual temperatures typically range from approximately 55 to 74 degrees Fahrenheit (°F), with highs in the summer reaching 84 °F and lows in the winter reaching 46 °F. Average annual precipitation for the Long Beach, California, area is approximately 12 inches (U.S. Climate Data 2017). Table 1 provides a monthly and annual precipitation and temperature averages summary.

Table 1: Climate Summary[1]

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Maximum Temperature (°F)	67	67	69	72	74	77	82	84	82	77	72	67	**74.2**
Average Minimum Temperature (°F)	46	48	51	53	58	61	65	65	63	58	51	46	**55.4**
Average Total Precipitation (inches)	2.60	3.07	1.85	0.59	0.20	0.08	0.04	0.04	0.20	0.63	0.98	1.97	**12.25**

3.1.2 Watershed

The survey area is located within the Los Angeles River Watershed (Hydrologic Unit Code 18070105, Los Angeles River Hydrologic Unit (HU 12.00) and Los Angeles Hydrologic Area (HA 12.10) of the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties. The

1 U.S. Climate Data, Long Beach, California (Accessed on March 8, 2017)

Los Angeles River Watershed covers a land area of 834 square miles, with eastern portions spanning from the Santa Monica Mountains to the Simi Hills and in the west from the Santa Susana Mountains to the San Gabriel Mountains. Major tributaries to the river in the coastal plain are Rio Hondo and Compton Creek. Within the project area, the Los Angeles River conveys flows south across the coastal plain into San Pedro Bay and the Pacific Ocean near Long Beach. The river is a trapezoidal channel entirely concrete-lined throughout the survey area, and tidally influenced at the southern end.

Michael Baker searched the Federal Emergency Management Agency (FEMA) – 100 Year Flood Zones for flood data within the survey area (FEMA 2017). Based on the FEMA – 100 Year Flood Zones map, the 100-year flood zone within the survey area is primarily confined to the Los Angeles River and Compton Creek channels (Zone A, flooding), with the exception of the area surrounding the conveyance segment located between East Pacific Coast Highway and East Anaheim Street (Zone AH, shallow flooding). The majority of the remainder of the survey area is located within the 50-year flood zone (Zone X, moderate flood hazard).

3.2 TOPOGRAPHY AND SOILS

The general area that the survey area is situated in is characterized by relatively flat coastal plains, with minimal elevation changes throughout. Elevations range from approximately 0 feet above mean sea level (amsl) within some of the existing basins to approximately 85 feet amsl at the southeastern end of Segment 5.

On-site and adjoining soils were reviewed prior to the field visit using the USDA, NRCS *Soil Survey of the San Diego Area, California* (USDA, NRCS 1973). The entire survey area has been mapped as Urban land (see Figure 4, *USDA Soils*), but more specifically as follows:

- Urban land-Hueneme, drained-San Emigdio complex, 0 to 2 percent slopes (1000)
- Urban land-Metz-Pico complex, 0 to 2 percent slopes (1001)
- Urban land, frequently flooded, 0 to 5 percent slopes (1261)
- Urban land-Thums-Windfetch complex, 0 to 5 percent slopes (1132)
- Urban land, 0 to 2 percent slopes, dredged fill substratum (1100)
- Urban land-Windfetch-Typic Haploxerolls complex, 0 to 2 percent slopes (1130)
- Urban land, 0 to 2 percent slopes (1202)

Michael Baker then reviewed the National Hydric Soils List (USDA, NRCS 2015) to identify soils mapped within the survey area that are considered to be hydric. According to the soils list, there are no hydric soils mapped within the survey area. Soil textures identified on-site were generally consistent with those mapped by the Soil Survey.

4/14/2017 JN M:\Mdata\158703\GIS\MXD\Figure 4a - USDA Soils.mxd

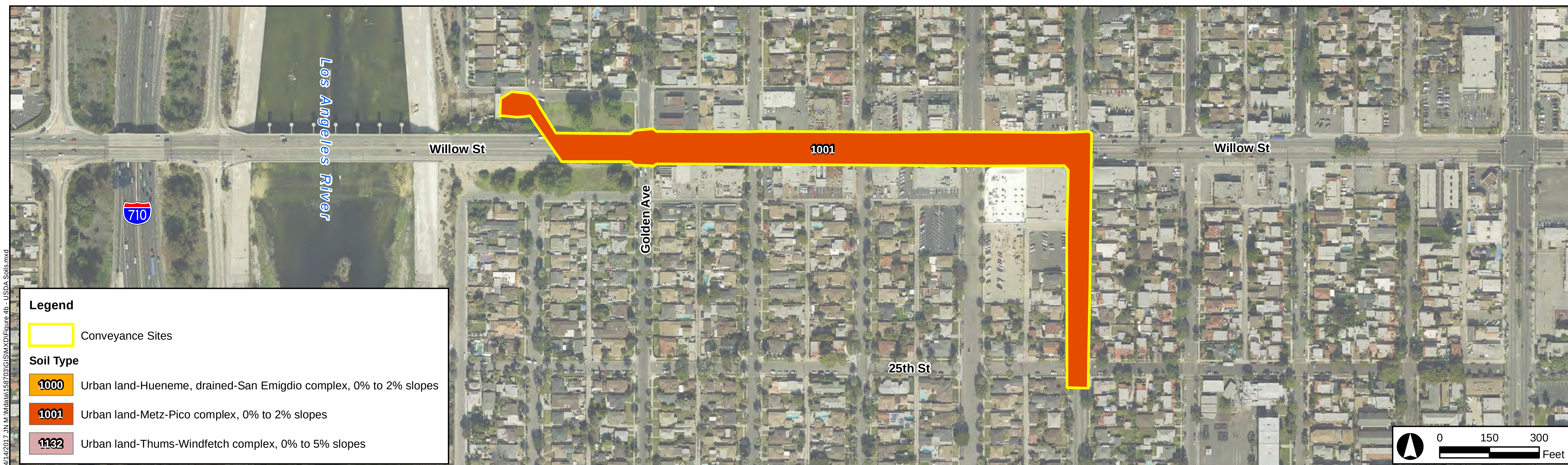
Michael Baker INTERNATIONAL

Source:

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY

USDA Soils

Figure 4a



4/14/2017 JN M:\Mdata\158703\GIS\MXD\Figure 4b - USDA Soils.mxd

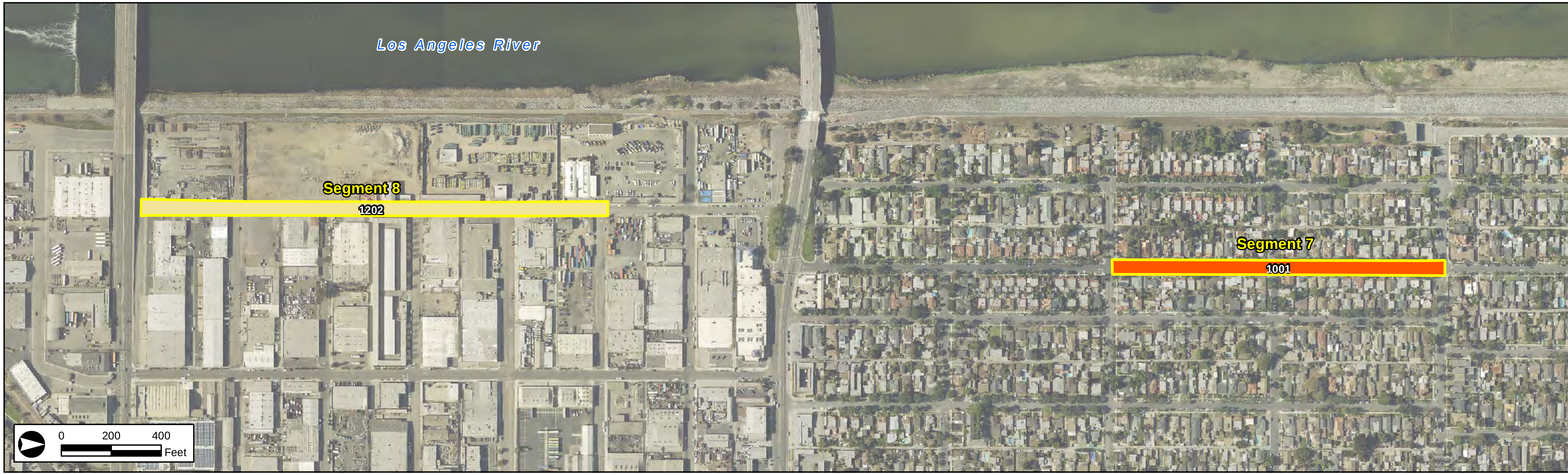
Michael Baker INTERNATIONAL

Source: USDA Soils

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY

USDA Soils

Figure 4b



4/14/2017 JN M:\Mdata\158703\GIS\MXD\Figure 4c - USDA Soils.mxd

Michael Baker INTERNATIONAL

Source: USDA Soils

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY

USDA Soils

Figure 4c

3.3 VEGETATION COMMUNITIES AND OTHER LAND USES

Three terrestrial vegetation communities and other land uses were identified on-site during the field survey. Vegetation classification was based on Holland (1986), and modifications were made based on Oberbauer (2008). A complete list of plant species observed during the survey is provided in Appendix B. A map that illustrates the extent of each vegetation community/land use is presented as Figure 5, *Vegetation Communities, Land Uses, and Special-Status Species*. Table 2 provides the acreages of the terrestrial vegetation communities and land uses observed within the survey area, each discussed in detail below.

Table 2. Vegetation Communities/Land Uses within the Survey Area

Vegetation Community/Land Use (Holland/Oberbauer Code)	Total*
Restored Coastal Sage Scrub (32500)	1.44
Disturbed Coastal Sage Scrub (32500)	1.00
Disturbed Habitat (11300)	10.04
Developed (12000)	34.80
TOTAL*	**47.29**

* Totals may not equal to sum due to rounding.

Restored Coastal Sage Scrub

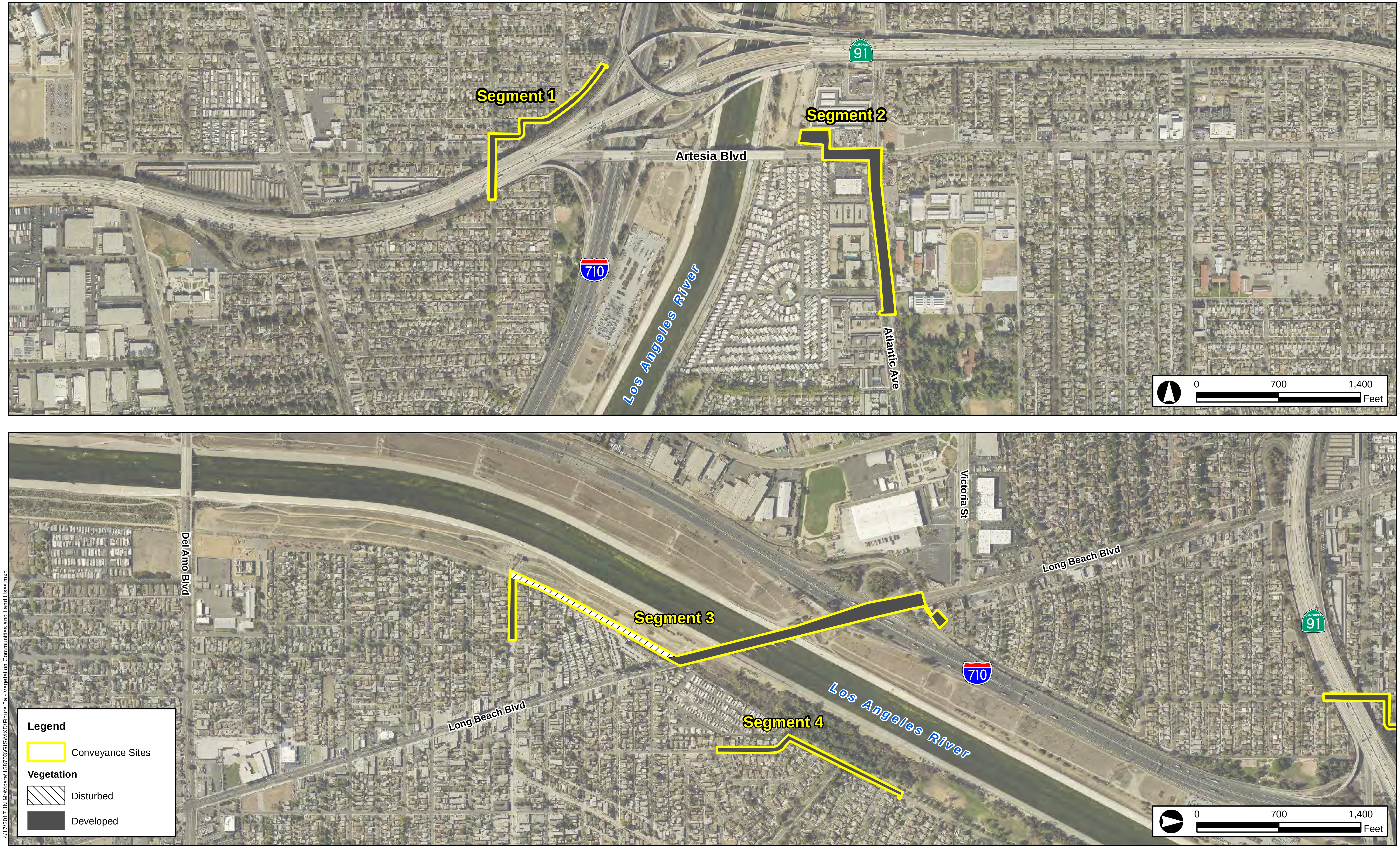
Within the survey for Segment 5, upland slopes surrounding existing ponds (Dominguez Gap Wetlands) adjacent to the Los Angeles River have been restored with coastal sage scrub vegetation, evident by an above-ground irrigation system and extreme density/maturation. Dominants include California encelia (*Encelia californica*), California sagebrush (*Artemisia californica*), bladderpod (*Peritoma arborea*), California buckwheat (*Eriogonum fasciculatum*), big saltbush (*Atriplex lentiformis*), white sage (*Salvia apiana*), purple sage (*S. leucophylla*), and black sage (*S. mellifera*).

Disturbed Coastal Sage Scrub

Across the trail to the east, adjacent to an existing golf course (Virginia Country Club), volunteers from the restoration described above, particularly California encelia and bladderpod, have established within areas otherwise dominated by black mustard (*Brassica nigra*) and nonnative grasses bordered by ornamental trees that line the golf course.

Disturbed Habitat

Disturbed habitat are areas that are frequently and repeatedly disturbed, and thereby dominated by opportunistic, nonnative species (or compacted, unpaved roadways) that often limit the reestablishment of native vegetation. Vegetation within disturbed areas primarily consists of nonnative, annual species including common ripgut grass (*Bromus diandrus*), cheeseweed



4/17/2017 JN M:\Mdata\15870\GIS\MXD\Figure 5a - Vegetation Communities and Land Uses.mxd

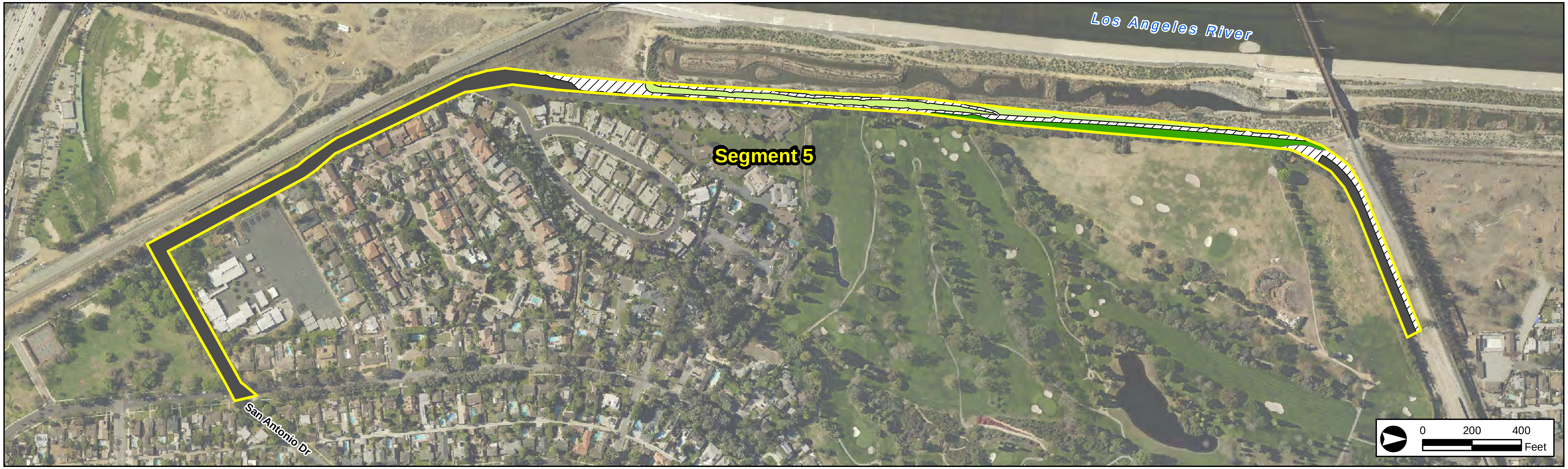
Michael Baker INTERNATIONAL

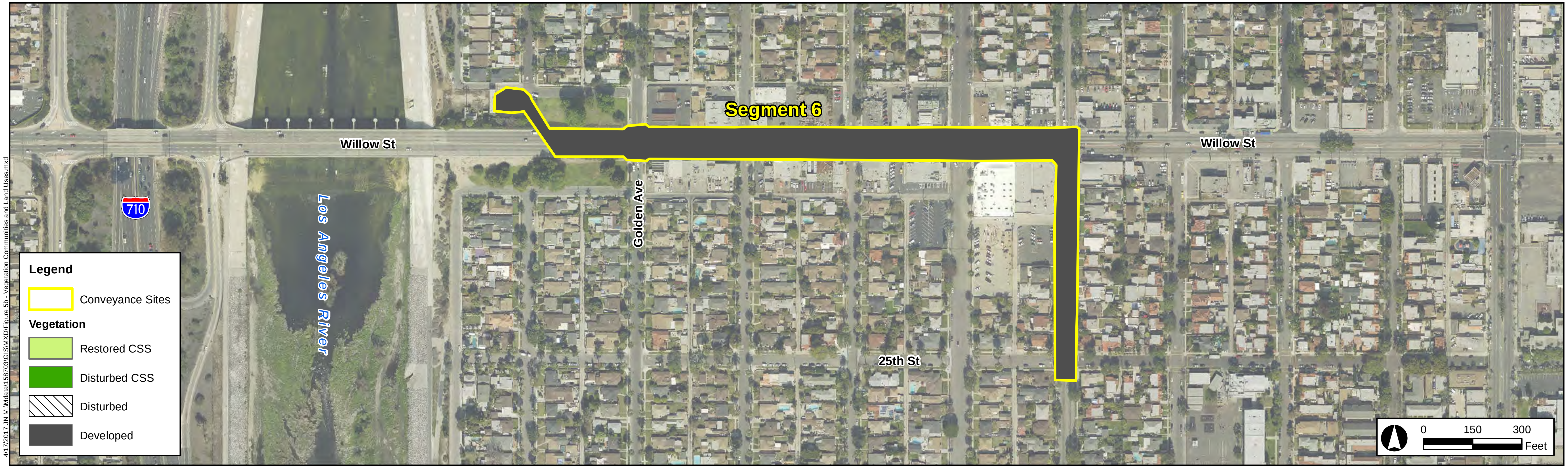
Source:

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY

Vegetation Communities and Land Uses

Figure 5a





4/17/2017 JN M:\Mdata\158703\GIS\MXD\Figure 5b - Vegetation Communities and Land Uses.mxd

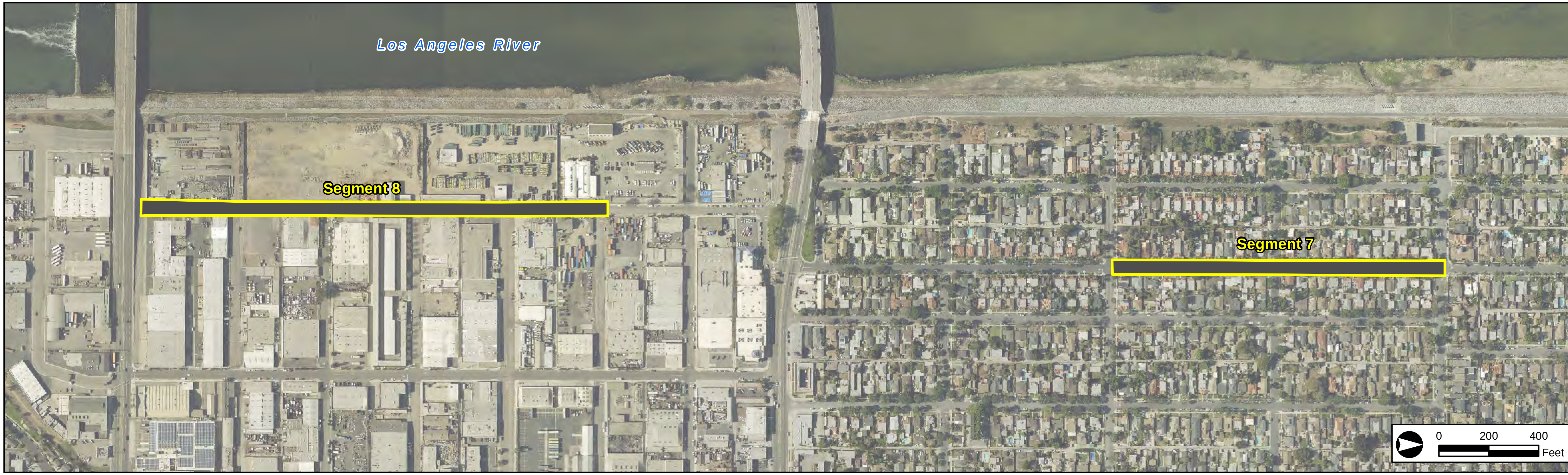
Michael Baker INTERNATIONAL

Source: USDA Soils

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY

Vegetation Communities and Land Uses

Figure 5b



4/17/2017 JN M:\Mdata\158703\GIS\MXD\Figure 5c - Vegetation Communities and Land Uses.mxd

Michael Baker INTERNATIONAL

Source: Eagle Aerial -- 2014

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY

Vegetation Communities and Land Uses

Figure 5c

(*Malva parviflora*), foxtail barley (*Hordeum murinum*), crown daisy (*Glebionis coronaria*), filaree (Erodium spp.), yellow sweetclover (*Melilotus indicus*), black mustard, wild radish (*Raphanus sativus*), wild oat (*Avena fatua*), and bur clover (*Medicago polymorpha*).

Developed

Developed portions of the survey area include buildings and paved roadways, including all associated landscaping that includes various ornamental trees, shrubs, ground cover, and lawns.

3.4 GENERAL WILDLIFE OBSERVATIONS

The survey area contains limited vegetation communities (described above) that are suitable to support native wildlife species. The survey area primarily consists of residential and commercial developments with ornamental landscaping that provide habitat for various urban dwelling species, including rock dove (*Columba livia*), house finch (*Haemorhous mexicanus*), house sparrow (*Passer domesticus*), and California ground squirrel (*Otospermophilus beecheyi*). Wildlife species associated with more natural areas, particularly along Segment 5, include Anna's hummingbird (*Calypte anna*), song sparrow (*Melospiza melodia*), hooded oriole (*Icterus cucullatus*), and desert cottontail (*Sylvilagus audubonii*). For a complete list of wildlife species observed during the surveys are provided in Appendix B.

Section 4 Special-Status Biological Resources

The following discusses the potential for special-status plant and wildlife species and special-status vegetation communities to occur within the survey area. ‘Potential to occur’ is based on the presence or absence of suitable habitat for each special-status species evaluated, as well as the general ecological requirements for each species and known occurrences within, and/or within the vicinity of, the survey area. All CNDDB occurrences documentation of special-status species within a 5-mile radius of the survey area are shown in Figure 6, *Special-Status Biological Resources Documented Within a 5-mile Radius*. No special-status vegetation communities or USFWS-designated critical habitats are located within 5 miles of the survey area. An evaluation of the potential for each species identified in the database records search to occur on-site is presented in Appendix C.

4.1 SPECIAL-STATUS SPECIES

The results of the database record searches (5-mile radius of the CNDDB, 1-quad search of the CNPS Online Inventory; and USFWS Species List) revealed documented occurrences for a total of fifteen (15) special-status plant species and a total of twenty (20) special-status wildlife species. Special-status species were determined to have a “Moderate” or “High” potential for occurring warrant further discussion.

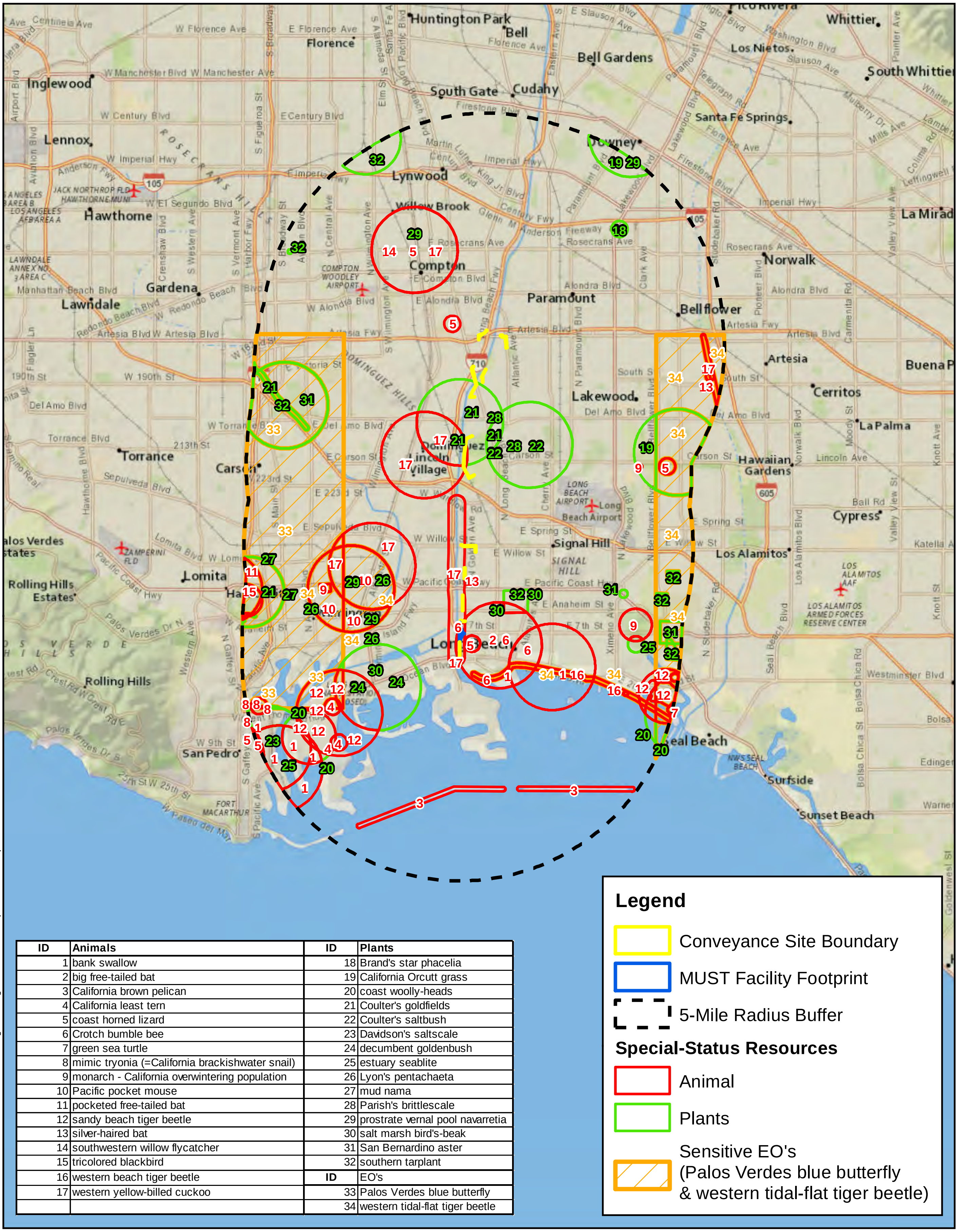
No special-status plant or wildlife species were observed during the April 2017 survey. Based on the database searches and on-site habitat suitability assessment, Michael Baker determined that all of the special-status species with documented occurrences have a “Low” or “Not Expected” potential for occurrence and are therefore not discussed further.

4.1.1 Special-Status Plant Species

No special-status plant species were observed during the survey. Of the fifteen (15) special-status plant species documented within 5 miles of the survey area, only southern tarplant (*Centromadia parryi* ssp. *australis*; CRPR 1B.1) was determined to a have a low potential to occur within the survey area. All other special-status plant species are not expected to occur within the survey area.

4.1.2 Special-Status Wildlife Species

No special-status wildlife species were observed during the survey. Of the twenty (20) special-status wildlife species documented within 5 miles of the survey area, only Crotch bumble bee (*Bombus crotchii*), monarch butterfly (*Danaus plexippus*), coast horned lizard (*Phrynosoma blainvillii*), coastal California gnatcatcher (*Polioptila californica californica*; Federally-listed as threatened [FT] and California Species of Special Concern [SSC]), and silver-haired bat



ID	Animals	ID	Plants
1	bank swallow	18	Brand's star phacelia
2	big free-tailed bat	19	California Orcutt grass
3	California brown pelican	20	coast woolly-heads
4	California least tern	21	Coulter's goldfields
5	coast horned lizard	22	Coulter's saltbush
6	Crotch bumble bee	23	Davidson's saltscale
7	green sea turtle	24	decumbent goldenbush
8	mimic tryonia (=California brackishwater snail)	25	estuary seablite
9	monarch - California overwintering population	26	Lyon's pentachaeta
10	Pacific pocket mouse	27	mud nama
11	pocketed free-tailed bat	28	Parish's brittlescale
12	sandy beach tiger beetle	29	prostrate vernal pool navarretia
13	silver-haired bat	30	salt marsh bird's-beak
14	southwestern willow flycatcher	31	San Bernardino aster
15	tricolored blackbird	32	southern tarplant
16	western beach tiger beetle	ID	EO's
17	western yellow-billed cuckoo	33	Palos Verdes blue butterfly
		34	western tidal-flat tiger beetle

4/12/2017 JN M:\Mdata\158703\GIS\MXD\Fig 06 Biological Resources Report CNDDB Map.mxd

Michael Baker INTERNATIONAL

0 1.5 3 Miles

Source: CNDDB, ArcGIS Online

LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) FACILITY

Special-Status Biological Resources Documented with a 5-Mile Radius

Figure 6

(*Lasionycteris noctivagans*) were determined to a have a low potential to occur within the survey area. All other special-status wildlife species are not expected to occur within the survey area.

4.2 SPECIAL-STATUS VEGETATION COMMUNITIES

No special-status vegetation communities occurrences have been mapped by CNDDB within a 5-mile radius of the survey area.

4.3 JURISDICTIONAL AQUATIC FEATURES

Jurisdictional features within the survey area are limited to a concrete-lined flood channel located in the northeastern most portion of Segment 5 and existing basins associated with the storm system facilities at the termini of many segments throughout the survey area. These features are likely subject to jurisdiction of the U.S Army Corps of Engineers (Corps) pursuant to Section 404 of the Federal Clean Water Act (CWA), CDFW pursuant to Sections 1600 *et seq.* of the CFGC, and Regional Water Quality Control Board (Regional Board) pursuant to CWA Section 401.

4.4 NESTING BIRDS AND WILDIFE MOVEMENT

The survey area provides a limited number of habitats suitable to support nesting opportunities for various bird species. Avian species are capable of using the survey area for nesting, and limited migration and dispersal amongst urban areas. Ground-moving wildlife are limited to an urban setting. Large mammals are not expected to use the survey area for foraging and migration. Urban areas pose a threat to ground-moving species, having a potential to cause mortalities from passing motorists.

4.5 CRITICAL HABITAT

No USFWS-designated critical habitats (proposed or final) are located within or surrounding the survey area. The nearest Critical Habitat is located over 6 miles to the west and 12 miles to the east designated for coastal California gnatcatcher, with Critical Habitat for western snowy plover (*Charadrius alexandrinus nivosus*; FT/SSC) approximately 9 miles to the southeast.

4.6 LOCAL POLICIES AND ORDINANCES

Long Beach Municipal Code Chapter 14.28 - Trees and Shrubs (Tree Maintenance Policy), provides guidelines for planting, maintenance, and removal of street trees located in the public rights-of-way (parkways and median islands).

Section 5 Conclusions and Recommendations

The following discusses the possible adverse impacts to biological resources that may occur from implementation of the proposed project, and suggests appropriate mitigation measures that would be necessary to achieve compliance with CEQA, and thereby reduce impacts to less than significant levels.

Permanent/direct impacts include the installation of new facilities associated with the conveyance sites (Segments 1 through 11) and the Long Beach MUST Facility as described in Section 1.2 above. Temporary impacts include construction access and staging of equipment and materials as necessary to complete the project. Indirect effects as a result of constructing the proposed project include, but are not limited to, noise, lighting, dust, and off-site sedimentation. Due to the overall low-impact of the proposed development and proper installation and maintenance of Best Management Practices (BMP) implements, the potential for indirect effects is considered low.

5.1 SPECIAL-STATUS SPECIES

No special-status plant or wildlife species were observed within the survey area. No special-status species known to occur within the vicinity of the survey area have a moderate or high potential to occur on-site. Therefore, impacts to special-status species as a result of the proposed project are considered less than significant.

5.2 SPECIAL-STATUS VEGETATION COMMUNITIES

No special-status vegetation communities have been mapped by CNDDB nor were observed within the survey area. Therefore, no impacts to special-status species are expected as a result of the proposed project.

Note: The restored coastal sage scrub located within the survey area for Segment 5 is not expected to be affected by the proposed project.

5.3 JURISDICTIONAL AQUATIC FEATURES

Proposed impacts (i.e., alteration and/or the discharge of dredge/fill material) to jurisdictional resources require notification to and subsequent permits/authorization from CDFW for lake or streambed alteration, Regional Board for water quality certification, and Corps for dredge and/or fill activities in wetland and non-wetland waters of the U.S. A formal jurisdictional delineation would be required to determine the limits (and total areas) of jurisdictional features within the survey area. Mitigation ratios, and thereby total mitigation required, will be negotiated with the regulatory agencies during the permitting process. With implementation of compensatory mitigation for jurisdictional hydrological features, impacts would be less than significant.

5.4 NESTING BIRDS AND WILDIFE MOVEMENT

Proposed project activities should avoid the general bird breeding season (typically January through July for raptors and February through August for other avian species), if feasible. If breeding season avoidance is not feasible, a qualified biologist should conduct a pre-construction nesting bird survey to determine the presence/absence, location, and status of any active nests on or adjacent to the survey area. The extent of the survey buffer area surrounding the site should be established by the qualified biologist to ensure that direct and indirect effects to nesting birds are avoided. To avoid the destruction of active nests and to protect the reproductive success of birds protected by MBTA and the CFGC, nesting bird surveys should be performed twice per week during the three weeks prior to the scheduled vegetation clearance. In the event that active nests are discovered, a suitable buffer (distance to be determined by the biologist or overriding agencies) should be established around such active nests and no construction within the buffer allowed until the biologist has determined that the nest is no longer active (i.e., the nestlings have fledged and are no longer reliant on the nest). No ground disturbing or vegetation clearing activities shall occur within this buffer until the biologist has confirmed that breeding/nesting is completed and the young have fledged the nest. Nesting bird surveys are typically not required for construction activities occurring September through December; however, hummingbirds (Family Trochilidae), for example, are known to nest year-round. With pre-construction surveys and nest monitoring implemented as applicable, impacts would be less than significant.

Because the project is in an urban setting with limited natural areas, impacts to wildlife corridors are not expected as a result of implementing the proposed project.

5.5 CRITICAL HABITAT

No USFWS-designated critical habitats (proposed or final) are located within or surrounding the survey area. No impacts to critical habitat are expected as a result of implementing the proposed project.

5.6 LOCAL POLICIES AND ORDINANCES

With adherence to the guidelines set forth in the Long Beach Tree Maintenance Policy (Municipal Code Chapter 14.28 - Trees and Shrubs), conflicts with local policies and ordinances are not expected as a result of implementing the proposed project.

Section 6 References

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Appendix A: Site Photographs

Photo 1 – View of northern end of Segment 1, facing northeast.

Photo 2 – View of southern portion of Segment 1, facing north.

Photo 3 – View of the existing basin at the northern end of Segment 2, facing west.

Photo 4 – View of the southern portion of Segment 2, facing north.

Photo 5 – View of the existing basin at the northern end of Segment 3, facing northeast.

Photo 6 – View of the northern portion of Segment 3, facing south.

Photo 7 – View of the southern portion of Segment 3, facing southwest.

Photo 8 – View of the north end of Segment 4, facing southwest.

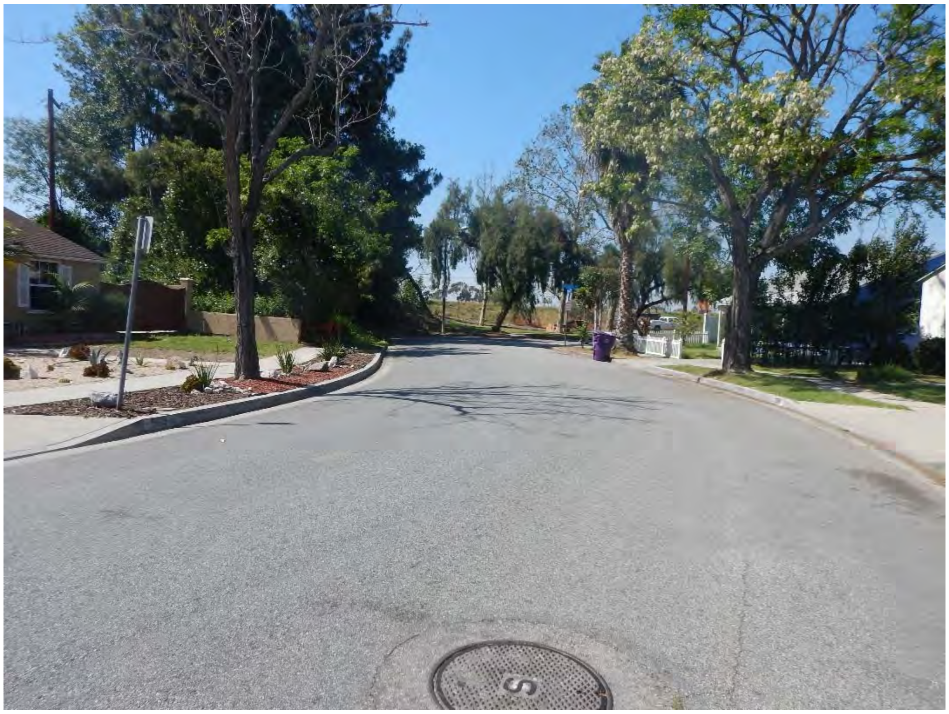

Photo 9 – View of the southern portion of Segment 4, facing northwest.

Photo 10 – View of the north end of Segment 5, facing northeast.

Photo 11 – View of the middle portion of Segment 5, facing north.

Photo 12 – View of the southern portion of Segment 5, facing north.

Photo 13 – View of the southern end of Segment 5, facing northwest.

Photo 14 – View of the existing basin at the western end of Segment 6, facing northeast.

Photo 15 – View of the middle portion of Segment 6, facing west.

Photo 16 – View of the southern portion of Segment 6, facing north.

Photo 17 – View of the Segment 7, facing south.

Photo 18 – View of Segment 8, facing north.

Photo 19 – View of the existing basin and Segment 9, facing east.

Photo 20 – View of the existing basin and the northern portion of Segment 10 (right), facing southwest.

Photo 21 – View of the middle portion of Segment 10 and the northern end of the MUST Facility Footprint, facing north.

Photo 22 – View of the southern end of Segment 10 and the MUST Facility Footprint, facing south.

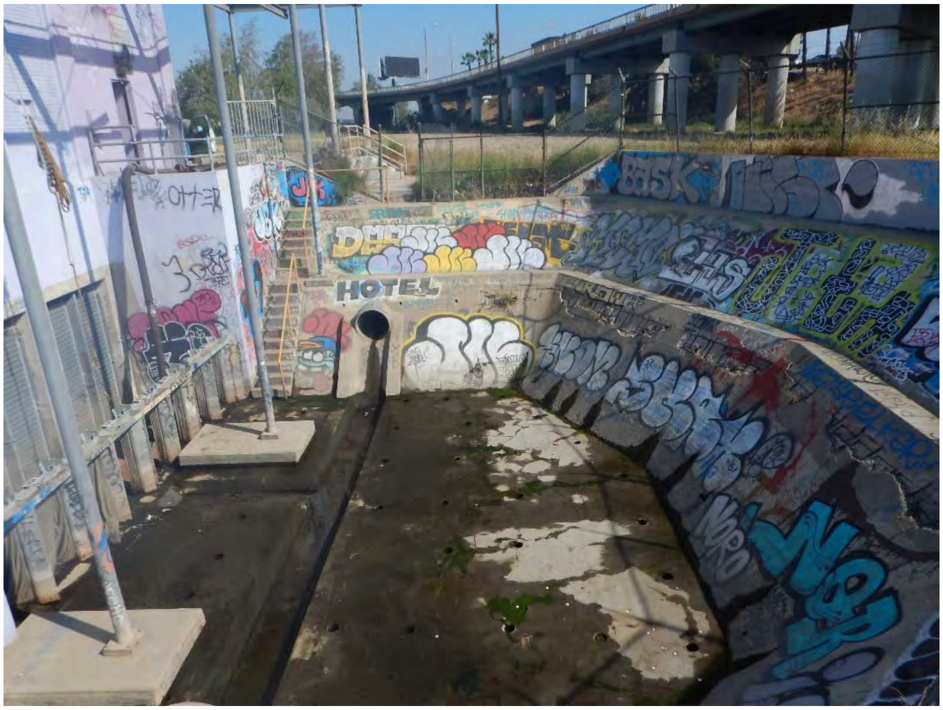

Photo 23 – View of the existing basin at the southern end of Segment 10, facing north.

Photo 24 – View of the southern portion of the MUST Facility Footprint, facing north.

Photo 25 – View of the southern end of the MUST Facility Footprint, facing south.

Photo 26 – View of the northern portion of Segment 11, facing south.

Photo 27 – View of the middle portion of Segment 11, facing north.

Photo 28 – View of the southern portion of Segment 11, facing south.

Photo 29 – View of the southern portion of Segment 11, facing south.

Photo 30 – View of the southern end of Segment 11, facing north.

Appendix B: Plant and Wildlife Species Observed List

Appendix B: Plants and Wildlife Species Observed List

Scientific Name *	Common Name	Cal-IPC Rating**
Plants		
Acacia sp.*	acacia	
Ambrosia psilostachya	western ragweed	
Artemisia californica	California sagebrush	
Atriplex lentiformis	big saltbush	
*Avena fatua**	wild oat	Moderate
Baccharis salicifolia	mule fat	
*Bassia hyssopifolia**	fivehook bassia	Limited
*Bougainvillea spectabilis**	bougainvillea	
*Brassica nigra**	black mustard	Moderate
*Bromus catharticus**	rescue grass	
*Bromus diandrus**	common ripgut grass	Moderate
*Bromus rubens**	foxtail chess	High
Camissoniopsis micrantha	Spencer primrose	
*Carpobrotus edulis**	Hottentot fig	High
*Chenopodium album**	lamb's quarters	
*Chenopodium murale**	nettle leaf goosefoot	
Encelia californica	California encelia	
Eriogonum fasciculatum	California buckwheat	
*Erodium cicutarium**	redstem filaree	
*Erodium moschatum**	whitestem filaree	
Eschscholzia californica	California poppy	
*Eucalyptus sideroxylon**	red iron bark	
*Festuca perennis**	Italian rye grass	Moderate
*Glebionis coronaria**	crown daisy	Moderate
*Hedera helix**	English ivy	High
*Hedypnois cretica**	Crete weed	
Helianthus annuus	common sunflower	
*Helminthotheca echioides**	bristly ox-tongue	Limited
*Hordeum murinum**	foxtail barley	Moderate
Isocoma menziesii var. *vernonioides*	coastal goldenbush	
*Lactuca serriola**	prickly lettuce	
*Malva parviflora**	cheeseweed	
*Medicago polymorpha**	bur clover	Limited
*Melilotus indicus**	yellow sweetclover	
*Mesembryanthemum nodiflorum**	slender leaved ice plant	
*Nicotiana glauca**	tree tobacco	Moderate

Scientific Name *	Common Name	Cal-IPC Rating**
*Pennisetum setaceum**	fountaingrass	Moderate
Peritoma arborea	bladderpod	
Pinus sp.*	pine	
*Phoenix canariensis**	Canary Island date palm	Limited
Platanus racemosa	western sycamore	
*Poa pratensis**	Kentucky blue grass	Limited
*Polygonum aviculare**	prostrate knotweed	
*Raphanus sativus**	wild radish	Limited
*Ricinus communis**	castor bean	Limited
Salvia apiana	white sage	
Salvia leucophylla	purple sage	
Salvia mellifera	black sage	
*Schinus molle**	Peruvian pepper tree	Limited
*Sisymbrium irio**	London rocket	Moderate
*Sonchus oleraceus**	common sow thistle	
*Spergularia bocconi**	Boccone’s sand spurry	
*Stipa miliacea**	smilo grass	
*Taraxacum officinale**	dandelion	
*Washingtonia robusta**	Mexican fan palm	Moderate - ALERT
Invertebrates		
Pieris rapae	common white	
Vanessa cardui	painted lady	
Reptiles		
Sceloporus occidentalis	western fence lizard	
Birds		
Calypte anna	Anna’s hummingbird	
Columba livia	rock dove	
Corvus corax	common raven	
Haemorhous mexicanus	house finch	
Icterus cucullatus	hooded oriole	
Larus occidentalis	western gull	
Melospiza melodia	song sparrow	
Mimus polyglottos	northern mockingbird	
Passer domesticus	house sparrow	
Petrochelidon pyrrhonota	cliff swallow	
Psaltriparus minimus	bushtit	
Sayornis nigricans	black phoebe	
Zenaida macroura	mourning dove	

Scientific Name *	Common Name	Cal-IPC Rating**
Mammals		
Otospermophilus beecheyi	California ground squirrel	
Sylvilagus audubonii	desert cottontail	

* Non-native species

** **California Invasive Plant Council (Cal-IPC) Ratings**

High — These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate — These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited — These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Appendix C: Special-Status Species Table

Appendix C: Special-Status Species Table

Scientific Name **Common Name**	**Status*** Federal / State CRPR *or* G-Rank / S-Rank	**Habitat Preferences and Distribution Affinities**	**Potential for Occurrence**
PLANTS			
Atriplex coulteri **Coulter's saltbush**	-- / -- 1B.2	Perennial herb. Blooms March through October. Generally associated with alkaline or clay soils that occur in grasslands and coastal bluff habitats. Known elevations range from 30 to 1,440 feet above mean sea level (amsl).	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.
Atriplex parishii **Parish's brittlescale**	-- / -- 1B.1	Annual herb. Blooms June through October. Usually found on drying alkali flats with fine soils in vernal pools, chenopod scrub, wet meadows, and playas. Known elevations range from 15 to 4,660 feet amsl.	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.
Atriplex serenana var. *davidsonii* **Davidson's saltscale**	-- / -- 1B.2	Annual herb. Blooms April through October. Occurs on alkaline soils in coastal bluff scrub and coastal scrub. Known elevations range from 30 to 660 feet amsl.	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.
Centromadia parryi ssp. *australis* **southern tarplant**	-- / -- 1B.1	Annual herb. Blooms March through October. Often found in disturbed sites near the coast at marsh edges; also in alkaline soils sometimes with saltgrass. Sometimes in grasslands and on vernal pool margins. Known elevations range from 0 to 3,200 feet amsl.	**Low.** Suitable habitat (disturbed sites) is marginally present within the survey area. However, this species was not observed during the survey.
Chloropyron maritimum ssp. *maritimum* **salt marsh bird's-beak**	FE / SE 1B.2	Annual herb. Blooms May through October. Limited to the higher zones of salt marsh habitat. Known elevations range from 0 to 35 feet amsl.	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.
Isocoma menziesii var. *decumbens* **decumbent goldenbush**	-- / -- 1B.2	Shrub. Blooms April through November. Found on sandy soils in coastal scrub and chaparral; often in disturbed sites. Known elevations range from 0 to 1,475 feet amsl.	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.

Scientific Name **Common Name**	**Status*** Federal / State CRPR *or* G-Rank / S-Rank	**Habitat Preferences and Distribution Affinities**	**Potential for Occurrence**
Lasthenia glabrata ssp. *coulteri* **Coulter's goldfields**	-- / -- 1B.1	Annual herb. Blooms February through June. Usually found in alkaline soils in marshes, playas, vernal pools, and valley and foothill grasslands. Known elevations range from 3 to 4,595 feet amsl.	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.
Nama stenocarpa **mud nama**	-- / -- 2B.2	Annual herb. Blooms March through May. Grows on the muddy embankments of ponds and lakes. Also reported to utilize river embankments. Known elevations range from 15 to 1,640 feet amsl.	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.
Navarretia prostrata **prostrate vernal pool navarretia**	-- / -- 1B.1	Annual herb. Blooms April through July. Occurs in mesic sites and on alkaline soils in coastal scrub, valley and foothill grassland, vernal pool, meadows, and seeps. Known elevations range from 5 to 4,055 feet amsl.	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.
Nemacaulis denudata var. *denudata* **coast woolly-heads**	-- / -- 1B.2	Annual herb. Blooms April through September. Found on coastal dunes. Known elevations range from 0 to 330 feet amsl.	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.
Orcuttia californica **California Orcutt grass**	FE / SE 1B.1	Annual grass. Blooms April through August. Occurs in vernal pools. Known elevations range from 30 to 2,165 feet amsl.	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.
Pentachaeta lyonii **Lyon's pentachaeta**	FE / SE 1B.1	Annual herb. Blooms March through August. Found along the edges of clearings in chaparral, valley and foothill grassland, and coastal scrub; usually at the ecotone between grassland and chaparral or edges of firebreaks. Known elevations range from 95 to 2,070 feet amsl.	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.
Phacelia stellaris **Brand's star phacelia**	-- / -- 1B.1	Annual herb. Blooms March through June. Occurs in open areas within coastal scrub and coastal dunes. Known elevations range from 0 to 1,315 feet amsl.	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.

Scientific Name **Common Name**	**Status*** Federal / State CRPR *or* G-Rank / S-Rank	**Habitat Preferences and Distribution Affinities**	**Potential for Occurrence**
Suaeda esteroa **estuary seablite**	-- / -- 1B.2	Perennial herb. Blooms May through October. Fund on clay, silt, and sand substrates in coastal salt marshes and swamps. Known elevations range from 0 to 395 feet amsl.	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.
Symphyotrichum defoliatum **San Bernardino aster**	-- / -- 1B.2	Perennial herb (rhizomatous). Blooms July through November. Grows in grasslands and disturbed areas in the San Gabriel and San Bernardino Mountains and Peninsular Range. Occurs in vernally wet sites including ditches, streams, and springs in many plant communities. Known elevations range from 5 to 6,695 feet in elevation amsl.	**Not Expected.** Suitable habitat is not present within the survey area. Further, this species was not observed during the survey.
INVERTEBRATES			
Bombus crotchii **Crotch bumble bee**	-- / -- G3G4 / S1S2	Found from coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include *Antirrhinum*, *Phacelia*, *Clarkia*, *Dendromecon*, *Eschscholzia*, and *Eriogonum*.	**Low.** Suitable habitat (food plant: *Eschscholzia*) is marginally present within the survey area.
Cicindela gabbii **western tidal-flat tiger beetle**	-- / -- G2G4 / S1	Inhabits estuaries and mudflats along the coast of Southern California. Generally found on dark-colored mud in the lower zone; occasionally found on dry saline flats of estuaries.	**Not Expected.** Suitable habitat is not present within the survey area.
Cicindela hirticollis gravida **sandy beach tiger beetle**	-- / -- G5T2 / S2	Inhabits coastal dunes and other areas adjacent to non-brackish water along the coast of California from San Francisco Bay to northern Mexico. Found in clean, dry, light-colored sand in the upper zone. Subterranean larvae prefer moist sand not affected by wave action.	**Not Expected.** Suitable habitat is not present within the survey area.
Cicindela latesignata latesignata **western beach tiger beetle**	-- / -- G2G4T1T2 / S1	Occurs on mudflats and beaches in coastal Southern California.	**Not Expected.** Suitable habitat is not present within the survey area.

Scientific Name **Common Name**	**Status*** Federal / State CRPR *or* G-Rank / S-Rank	**Habitat Preferences and Distribution Affinities**	**Potential for Occurrence**
Danaus plexippus pop. 1 **monarch - California overwintering population**	-- / -- G4T2T3 / S2S3	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts are located in wind-protected tree (e.g., eucalyptus, Monterey pine, and cypress) groves and closed-cone coniferous forests, with nectar and water sources nearby.	**Low.** Suitable habitat (wind-protected tree (groves) is marginally present within the survey area.
Glaucopsyche lygdamus palosverdesensis **Palos Verdes blue butterfly**	FE / -- G5T1 / S1	Restricted to the cool, fog-shrouded, seaward side of Palos Verdes Hills, Los Angeles County. Host plant is *Astragalus trichopodus* var. *lonchus* (locoweed).	**Not Expected.** Suitable habitat is not present within the survey area.
Tryonia imitator **mimic tryonia (=California brackishwater snail)**	-- / -- G2 / S2	Inhabits coastal lagoons, estuaries, salt marshes, and where creek mouths that join tidal marshes from Sonoma County south to San Diego County. Found only in permanently submerged areas in a variety of sediment types; able to withstand a wide range of salinities.	**Not Expected.** Suitable habitat is not present within the survey area.
REPTILES			
Chelonia mydas **green sea turtle**	FT / -- G3 / S1	Inhabits marine bays and nests on beaches. Completely herbivorous; needs adequate supply of seagrasses and algae.	**Not Expected.** Suitable habitat is not present within the survey area.
Phrynosoma blainvillii **coast horned lizard**	-- / SSC G3G4 / S3S4	Frequents a wide variety of habitats, including coastal sage scrub, annual grassland, chaparral, oak woodland, riparian woodland, and coniferous forest, along sandy washes with scattered low bushes. Prefers open areas for sunning, bushes for cover, patches of loose soil for burial, and an abundant supply of ants and other insects.	**Low.** Suitable habitat (coastal sage scrub) is marginally present within the survey area. However, its primary food source (ants) was not observed.
BIRDS			
Agelaius tricolor (Nesting colony) **tricolored blackbird**	-- / SCE, SSC G2G3 / S1S2	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers (km) of the colony.	**Not Expected.** Suitable habitat is not present within the survey area.

Scientific Name **Common Name**	**Status*** Federal / State CRPR *or* G-Rank / S-Rank	**Habitat Preferences and Distribution Affinities**	**Potential for Occurrence**
Coccyzus americanus occidentalis (Nesting) **western yellow-billed cuckoo**	FT / SE G5T2T3 / S1	Obligate willow-cottonwood riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods (*Populus* spp.), with the lower story dominated by blackberry, nettles (*Urtica* spp.), and/or wild grape (Vitis sp.).	**Not Expected.** Suitable habitat is not present within the survey area.
Empidonax traillii extimus (Nesting) **southwestern willow flycatcher**	FE / SE G5T2 / S1	Occurs in broad riparian woodlands in southern California. Typically requires large areas of willow thickets in broad valleys and canyon bottoms, or around ponds and lakes. These areas typically have standing or running water, or are at least moist.	**Not Expected.** Suitable habitat is not present within the survey area.
Pelecanus occidentalis californicus (Nesting colony & communal roosts) **California brown pelican**	FD / SD, FP G4T3 / S3	Colonial nester on coastal islands just outside the surf line. Nests on coastal islands of small to moderate size that afford immunity from attack by ground-dwelling predators. Roosts communally.	**Not Expected.** Suitable habitat is not present within the survey area.
Polioptila californica californica **coastal California gnatcatcher**	FT / SSC G4G5T2Q / S2	Obligate, permanent resident of coastal sage scrub below 2,500 feet amsl in Southern California. Occurs in low, coastal sage scrub in arid washes, and on mesas, bowls, and slopes lacking tall perching vegetation. Not all areas classified as coastal sage scrub are occupied.	**Low.** Suitable habitat (low coastal sage scrub) is marginally present within the survey area.
Riparia riparia (Nesting) **bank swallow**	-- / ST G5 / S2	Colonial nester in riparian scrub and woodlands; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, or the ocean to dig nesting hole.	**Not Expected.** Suitable habitat is not present within the survey area.
Sternula antillarum browni (Nesting colony) **California least tern**	FE / SE, FP G4T2T3Q / S2	Colonial breeder on bare or sparsely vegetated, flat substrates, including sand beaches, alkali flats, landfills, or paved areas. Prefers broad, level expanses of open sandy or gravelly beach, dredge spoil, and other open shoreline areas, and broad river valley sandbars. Nests along the coast from San Francisco Bay south to northern Baja California.	**Not Expected.** Suitable habitat is not present within the survey area.

Scientific Name **Common Name**	**Status*** Federal / State CRPR *or* G-Rank / S-Rank	**Habitat Preferences and Distribution Affinities**	**Potential for Occurrence**
MAMMALS			
Lasionycteris noctivagans **silver-haired bat**	-- / -- G5 / S3S4	Primarily a coastal and montane forest dweller that feeds over streams, ponds, and open brushy areas. Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes, and rarely under rocks. Needs drinking water.	**Low.** Suitable foraging habitat (ponds) is present adjacent to the survey area.
Nyctinomops femorosaccus **pocketed free-tailed bat**	-- / SSC G4 / S3	Inhabits rocky areas with high cliffs in a variety of arid areas in Southern California, including pine-juniper woodlands, desert scrub, palm oasis, desert wash, and desert riparian habitats; roosts in caves, tunnels, mines, rock crevices, under the roof tiles of buildings; usually found in large colonies.	**Not Expected.** Suitable habitat is not present within the survey area.
Nyctinomops macrotis **big free-tailed bat**	-- / SSC G5 / S3	Found in low-lying, arid areas of southern California. Needs high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	**Not Expected.** Suitable habitat is not present within the survey area.
Perognathus longimembris pacificus **Pacific pocket mouse**	FE / SSC G5T1 / S1	Inhabits the narrow coastal mesas from the Mexican border north to El Segundo, Los Angeles County. Seems to prefer soils of fine alluvial sands and sandy slopes of coastal scrub near the ocean, but much remains to be learned.	**Not Expected.** Suitable habitat is not present within the survey area.

* **California Rare Plant Rank (CRPR)**

1A	Plants presumed extirpated in California and either rare or extinct elsewhere
1B	Plants rare, threatened, or endangered in California and elsewhere
2A	Plants presumed extirpated in California, but common elsewhere
2B	Plants rare, threatened, or endangered in California, but more common elsewhere
3	Plants about which more information is needed - a Review List
4	Plants of limited distribution - a Watch List

Threat Ranks

.1	Seriously threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)
.2	Moderately threatened in California (20 to 80 percent occurrences threatened/moderate degree and immediacy of threat)
.3	Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known)

Federal Classifications

FE	Federally Endangered
FT	Federally Threatened
FD	Federally Delisted

State Classifications

SE	State Endangered
ST	State Threatened
SCE	State Candidate for Endangered
SD	State Delisted

SSC	California Species of Special Concern
FP	Fully Protected

G-Rank / S-Rank

Global Rank and State Rank as per NatureServe and CDFW's CNDDB RareFind5, ranging from critically imperiled (G1/S1) to demonstrably secure (G5/S5)

CULTURAL RESOURCES SURVEY REPORT FOR THE LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT (MUST) PROJECT, CITY OF LONG BEACH, LOS ANGELES COUNTY, CALIFORNIA

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Molly Valasik, MA, RPA

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Cogstone Project Number: 3993
Type of Study: Cultural Resources Technical Report
Sites: None
USGS Quadrangle: Long Beach and Southgate 7.5 minute
Area: 47 acres
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Federal Certifications 8(a), SDB, EDWOSB
State Certifications DBE, WBE, SBE, UDBE

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MANAGEMENT SUMMARY

The Long Beach Municipal Stormwater Treatment (MUST) Project encompasses a horizontal area of approximately 47 acres and is entirely within the City of Long Beach, generally extending along the Los Angeles River for a distance of approximately eight miles. The project is intended to improve the water quality of existing urban runoff to the Los Angeles River, and ultimately to the Long Beach Harbor.

The proposed project includes subgrade excavation for the construction of diversion and connection structures, and the MUST facility which will extend to a maximum vertical depth of 30 feet below surface. Ground disturbing work related to the construction of conveyance facilities will extend to a maximum vertical depth of 15 feet below surface.

The California Historical Information System records search revealed that all of the 16 prior studies that included portions of the Project Area were negative for cultural resources within the current project bounds. A total of 57 cultural resources have been previously documented outside project bounds but within the half-mile search radius. These consist of three prehistoric sites, one multicomponent site, one historic archaeological site and 52 historic built environment resources.

The Native American Heritage Commission reported no sacred lands within a half mile. The City of Long Beach is conducting Native American consultation and the results will be reported in the project environmental document.

Cogstone conducted an intensive pedestrian survey of all accessible portions of proposed project-related ground disturbance on March 29, 2017. One built environment resource was encountered, consisting of two segments of the Pacific Electric Railway, Long Beach Line, designated here as the Pacific Electric Railway Freight Line resource. The segments are part of a single track and are recommended as not eligible for listing on the California Register of Historic Resources (CRHR).

The results of the pedestrian survey cannot be considered conclusive due to the presence of heavy vegetation and artificial urban landscape. In the event of an unanticipated discovery of other cultural resources during project related activities, all work shall be suspended within 50 feet of the find until a qualified archaeologist evaluates it. In the unlikely event that human remains are encountered during project development, all work must cease near the find immediately and proper notifications under state law shall be made.

INTRODUCTION

PURPOSE OF STUDY

The purpose of this study is to identify cultural resources potentially present in the Municipal Stormwater Treatment (MUST) Project Area located in the City of Long Beach in Los Angeles County, California (Figure 1). The project extends eight miles adjacent to a section of the Los Angeles River.

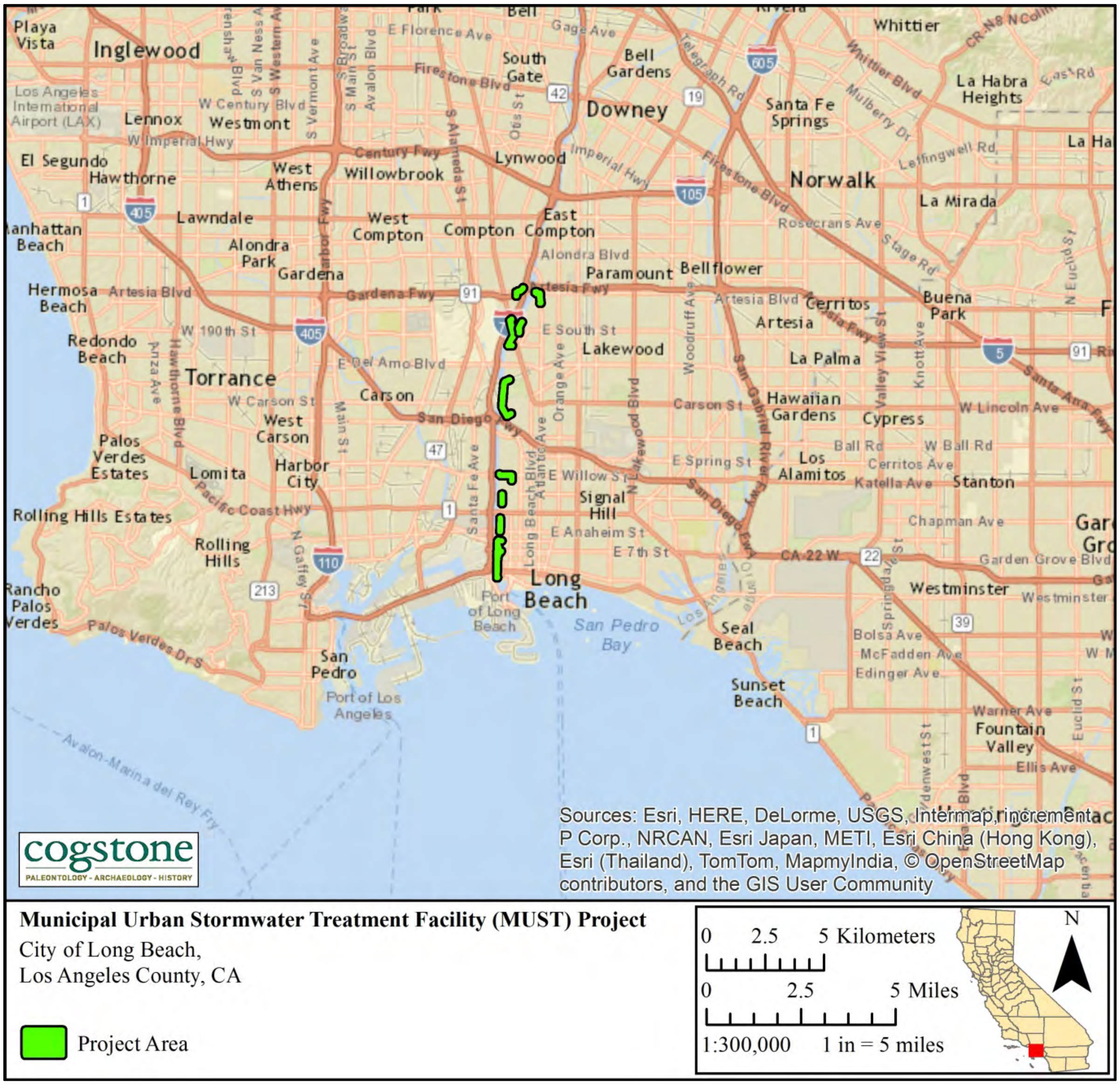

Figure 1. Project vicinity map

PROJECT LOCATION AND DESCRIPTION

The proposed MUST Project (project) is located entirely within the City of Long Beach, generally extending along the Los Angeles River for a distance of approximately eight miles. The approximate limits of the project site are from State Route 91 (SR-91) to the north to Ocean Boulevard to the south. The project is intended to improve the water quality of existing urban runoff to the Los Angeles River, and ultimately to the Long Beach Harbor. Currently, pollutants (metals, bacteria, hydrocarbons, pesticides, and trash) enter the Los Angeles River via urban runoff; the proposed project would divert flows from tributary areas immediately east and west of the river to the MUST facility for treatment prior to discharge, resulting in water quality benefits in the Project Area.

The proposed project would include two primary project components: 1) the MUST facility; and 2) conveyance facilities. A brief summary of these facilities is provided below:

- **MUST Facility:** The MUST facility would be sited in close proximity to the City's existing Pump Station No. SD-01, on the east side of the Los Angeles River near the existing Shoemaker Bridge. The MUST facility would include facilities related to solids removal, oxidation, filtration, and disinfection, followed by a treated water terminal storage pond. Project related ground disturbance at the MUST facility would extend to a maximum vertical depth of 30 feet below ground surface.

- **Conveyance Facilities:** The project would include conveyance facilities to carry stormwater from tributary areas to the MUST facility. Stormwater would be conveyed to the MUST facility via a combination of existing and proposed conveyance facilities. The project would include a total of 11 segments of new conveyance facilities that would provide the connections that would complete the approximately 8-mile conveyance system. Nine of these segments are located east of the Los Angeles River, one west of the river, and one within the Long Beach Boulevard Bridge. Two options exist for conveyance – as underground pipelines, or as open channel facilities that provide for biofiltration pre-treatment and open space/aesthetic opportunities. A combination of the two options would be implemented. Project related ground disturbance at all conveyance facilities would extend to a maximum vertical depth of 15 feet below ground surface.

It is anticipated that the project would occur entirely within existing public rights-of-way, and no right-of-way acquisition would be required for project implementation.

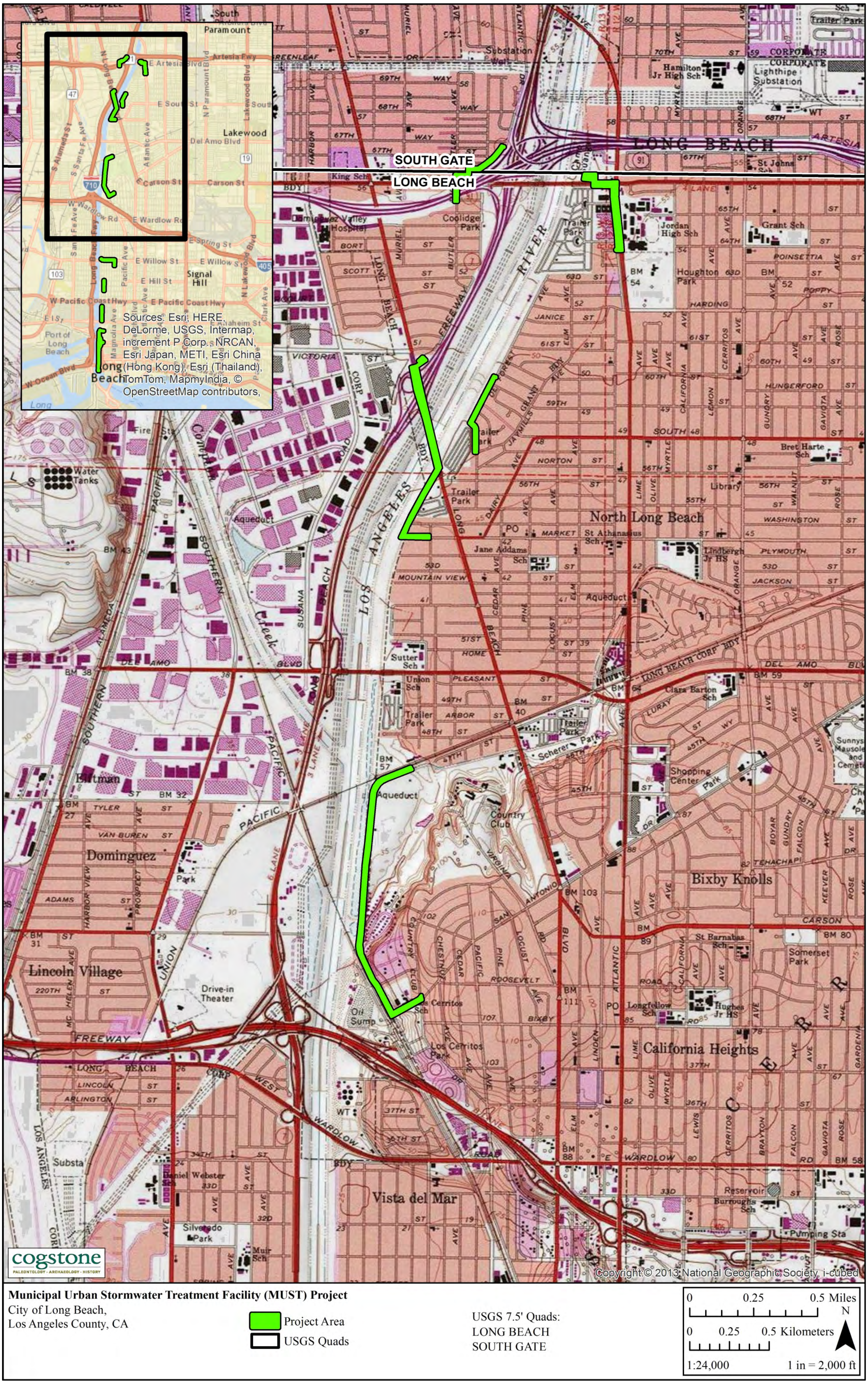

Figure 2a. Project Location Map 1

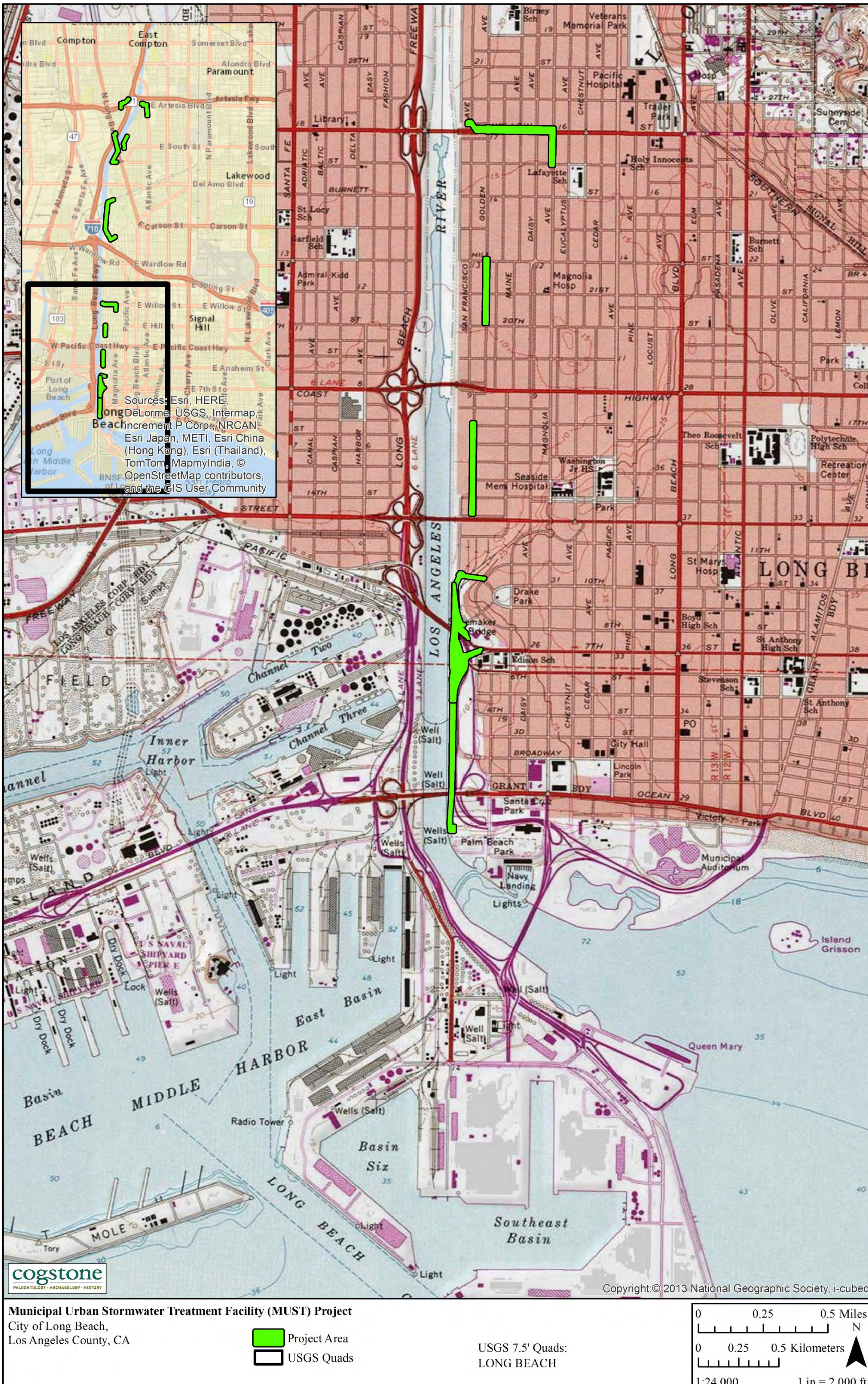

Figure 2b. Project Location Map 2

PROJECT PERSONNEL

Cogstone's key staff includes professionals with over 35 years of experience in cultural resources management. Molly Valasik, MA, RPA, who has over 8 years of professional and academic research experience in archaeology, served as Principal Investigator for Archaeology. Tim Spillane, MA, RPA, also with 8 years of experience in cultural resource management, authored the majority of the report. Lynn Furnis, MA, RPA, is an architectural historian and historical archaeologist with over 40 years of experience. Ms. Furnis recorded and evaluated the Pacific Electric Railway Freight Line resource for this report. Sherri Gust, MS, who has more than 38 years of experience in cultural resource management, provided QA/QC and wrote the regulatory setting and prehistoric setting. Megan Wilson, MA, RPA conducted the records search and Native American consultation. Archaeologist Holly Duke, BA, conducted the intensive pedestrian survey. Short resumes are appended.

REGULATORY ENVIRONMENT

STATE LAWS AND REGULATIONS

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 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” (Pub. 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 number 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 registers 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."

BACKGROUND

ENVIRONMENTAL SETTING

Los Angeles County is located on the coastal side of the Peninsular Range Province and is known for its semi-arid Mediterranean climate with hot summers and cool winters. The project alignment bisects the western part of the City of Long Beach, extending southward along the east side of the Los Angeles River for roughly eight miles from SR-91 in the north to Ocean Boulevard in the south. The Project Area lies entirely within the floodplain of the Los Angeles River which was channelized in the 1940s and is characterized today by dense urban development. As Palmer notes, "it is perhaps the most completely urbanized and channelized major stream in America" (Palmer 2012:241). The topography is mostly level and surface sediments consist of unconsolidated silt, sand, and gravel accumulated from recurrent flooding (Schoenherr 1992:313).

Native vegetation consists primarily of chaparral with riparian species present along the Los Angeles River and its tributary streams. Among the purple sage (*Salvia leucophylla*), Eastwood's manzanita (*Arctostaphylos glandulosa glandulosa*), Catalina ironwood (*Lyonothamnus floribundus*), California scrub oak (*Quercus dumosa*), big-leaf maple (*Acer macrophyllum*), and coast cholla (*Opuntia prolifera*) (Caughman and Ginsberg 1987:278; Wilson 2016). Other riparian woodland species include California laurel (*Umbellularia californica*), Western Sycamore (*Platanus racemosa*), and Black Willow (*Salix gooddingii*), Pacific Willow (*Salix lasiandra*), Fremont Cottonwood (*Populus fremontii*) as well as a variety of shrubs and grasses (Schoenherr 1992:393–395). Today, after approximately a century of urban and suburban development and the channelization, the vegetation of the area is instead typified by imported species of grasses such as slender wild oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), and Giant reed (*Arundo donax*); shrubs, such as saltcedar (*Tamarix ramosissima*) and blackwood acacia (*Acacia melanoxylon*); as well as trees including eucalyptus (*Eucalyptus globulus*), Brazilian pepper (*Schinus terebinthifolius*), and saltcedar (*Tamarix* spp.) (Cal-IPC 2006).

Native fauna of the region include mammals such as mule deer (*Odocoileus hemionus*), bighorn sheep (*Ovis canadensis cremnobates*), bobcat (*Lynx rufus*), coyote (*Cants latrans*), antelope, white-tailed jackrabbit (*Lepus townsendii*), mountain lion (*Felis concolor*), desert woodrat, (*Neotoma lepida*), and formerly, grizzly bear (*Ursus arctos*). Amphipian and reptile species include Monterey salamander (*Ensatina eschscholtzii eschscholtzii*), sagebrush lizard (*Sceloporus graciosus*), and common kingsnake (*Lampmpeltis getulus*). Among native bird species are California thrasher, (*Toxostoma redivivum*), California towhee (*Piplio crissalis*), and great horned owl (*Bubo virginianus*) (Schoenherr 1992). The Los Angeles River was once host to arroyo chub (*Gila orcuttii*), Santa Ana sucker (*Catostomus santaanae*), and speckled dace

(*Rhinichthys osculus*), which now survive only in the river's tributaries (Palmer 2012:242). In recent history, urban development has driven many of these species from the area.

PREHISTORIC SETTING

Review of archaeological data has resulted in a revised synthesis of cultural change as evidenced by material culture and archaeologically visible cultural practices. A large part of what was previously referred to as the Millingstone Period is now called the Topanga pattern of the Encinitas Tradition (Sutton and Gardner 2010; Table 1). This pattern is replaced in the Project Area by the Angeles pattern of the Del Rey Tradition later in time (Sutton 2010; Table 1).

Topanga Pattern groups were relatively small and highly mobile. Sites tend to be along the coast in wetlands, bays, coastal plains, near-coastal valleys, marine terraces and mountains. The Topanga toolkit is dominated by manos and metates with projectile points scarce (Sutton and Gardner 2010:9).

In Topanga Phase I, other typical characteristics include a few mortars and pestles, abundant core tools (scraper planes, choppers and hammerstones), relatively few large, leaf-shaped projectile points, cogged stones, and early discoidals (Table 1). Secondary inhumation under cairns was the common mortuary practice. In Orange County as many as 600 flexed burials were present at one site and dated 6435 radiocarbon years before present (Sutton and Gardner 2010:9, 13).

In Topanga Phase II, flexed burials and secondary burial under cairns continued. Adoption of the mortar and pestle is a marker of this phase. Other typical artifacts include manos, metates, scrapers, core tools, discoidals, charmstones, cogged stones and an increase in the number of projectile points. In Orange County, stabilization of sea level during this time period resulted in increased use of estuary, near shore, and local terrestrial food sources (Sutton and Gardner 2010:14-16).

In Topanga Phase III, there was continuing abundance of metates, manos, and core tools plus increasing amounts of mortars and pestles. More numerous and varied types of projectile points are observed along with the introduction of stone-lined earthen ovens. Cooking features such as these were possibly used to bake yucca or agave. Both flexed and extended burials are known (Sutton and Gardner 2010:17).

Table 1. Cultural Patterns and Phases

Pattern	Phase	Dates (BP)	Material Traits	Other Traits
Encinitas	Topanga I	8,500 to 5,000	Abundant manos and metates, many core tools and scraper s, few but large points, charmstones, cogged stones, early discoidals, bone gorge fishhooks, faunal remains rare; Olivella spire/end lopped beads appear	Estuary/lagoon shellfish and sharks/rays common, hunting important, secondary burials under metate cairns (some with long bones only), some extended inhumations, no cremations
	Topanga II	5,000 to 3,500	Abundant but decreasing manos and metates, adoption of mortars and pestles, smaller points, cogged stones, late discoidals, fewer scraper planes and core tools, some stone balls and charmstones; inhumations common; Olivella Grooved Rectangular beads introduced	Estuary/lagoon shellfish and sharks/rays common,, addition of acorns, reburial of long bones only, addition of flexed inhumations (some beneath metate cairns), cremations rare
Angeles	Angeles I	3,500 to 2,600	Appearance of Elko dart points and an increase in the overall number of projectile points from Encinitas components; beginning of large-scale trade in small steatite artifacts (effigies, pipes, and beads) and *Olivella* shell beads; appearance of single-piece shell fishhooks and bone harpoon points; Coso obsidian becomes important; appearance of donut stones; appearance of Mytilus beads	apparent population increase; fewer and larger sites along the coast; collector strategy; less overall dependence on shellfish but fishing and terrestrial hunting more important; appearance of flexed and extended inhumations without cairns, cremations uncommon
	Angeles II	2,600 to 1,600	Continuation of basic Angeles I material culture with the addition of mortuary features containing broken tools and fragmented cremated human bone; fishhooks become more common	Shellfish change to mudflat species, more emphasis on fish, birds and mammals, continuation of basic Angeles I settlement and subsistence systems; appearance of a new funerary complex
	Angeles III	1,600 to 1,250	Appearance of bow and arrow technology (e.g., Marymount or Rose Spring points); changes in *Olivella* beads; asphaltum becomes important; reduction in obsidian use; Obsidian Butte obsidian largely replaces Coso	larger seasonal villages; flexed primary inhumations but no extended inhumations and an increase in cremations; appearance of obsidian grave goods
	Angeles IV	1,250 to 800	Cottonwood points appear; some imported pottery appears; birdstone effigies at the beginning of the phase and "spike" effigies dropped by the end of the phase; possible appearance of ceramic pipes, *Mytilus* shell disks	change in settlement pattern to fewer but larger permanent villages; flexed primary inhumations continue, cremations uncommon
	Angeles V	800 to 450	Trade of steatite artifacts from the southern Channel Islands becomes more intensive and extensive, with the addition or increase in more and larger artifacts, such as vessels and comals; larger and more elaborate effigies; portable mortars and pestles	strengthening of ties, especially trade, with southern Channel Islands; expansion into the northern Santa Ana Mountains and San Joaquin Hills
	Angeles VI	450 to 150	Addition of Euroamerican material culture (e.g., glass beads and metal tools), locally made pottery, metal needle-drilled *Olivella* beads	change of settlement pattern, movement close to missions and ranches; use of domesticated species obtained from Euroamericans; flexed primary inhumations continue; apparent adoption of Chingichngish religion

The Angeles pattern generally is restricted to the mainland and appears to have been less technologically conservative and more ecologically diverse, with a largely terrestrial focus and greater emphases on hunting and nearshore fishing. In Angeles Phase I Elko points for atlatls or darts appear, small steatite objects such as pipes and effigies are found, shell beads and ornaments increase, fishing technologies increase including bone harpoons/fishhooks and shell fishhooks, donut stones appear, and hafted micro blades for cutting/graving wood or stone appear. In addition, several Encinitas traits, such as discoidals, cogged stones, plummet-like charm stones and cairn burials virtually disappear from the record. Mortuary practices changed to consist of primarily flexed primary inhumations, with extended inhumations becoming less common. Settlement patterns made a shift from general use sites being common to habitation areas separate from functional work areas. Subsistence shifted from mostly collecting to increased hunting and fishing (Sutton 2010).

The Angeles Phase II is identified primarily by the appearance of a new funerary complex, with other characteristics similar to Angeles I. The complex features killed (broken) artifacts plus highly fragmented cremated human bones and a variety of faunal remains. In addition to the cremains, the other material also often burned. None of the burning was performed in the burial feature (Sutton 2010).

The Angeles III Phase is the beginning of what has been known as the Late Period and is marked by several changes from Angeles I and II. These include the appearance of small projectile points, steatite shaft straighteners and increased use of asphaltum all reflecting adoption of bow and arrow technology, obsidian sources changed from mostly Coso to Obsidian Butte and shell beads from Gulf of California species began to appear. Subsistence practices continued as before and the geographic extent of the Angeles Pattern increased (Sutton 2010).

Angeles Phase IV is marked by new material items including Cottonwood points for arrows, *Olivella* cupped beads and *Mytilus* shell disks, birdstones (zoomorphic effigies with magico-religious properties) and trade items from the Southwest including pottery. It appears that populations increased and that there was a change in the settlement pattern to fewer but larger permanent villages. Presence and utility of steatite vessels may have impeded the diffusion of pottery into the Los Angeles Basin. The settlement pattern altered to one of fewer and larger permanent villages. Smaller special-purpose sites continued to be used (Sutton 2010).

Angeles V components contain more and larger steatite artifacts, including larger vessels, more elaborate effigies and comals. Settlement locations shifted from woodland to open grasslands.

The exploitation of marine resources seems to have declined and use of small seeds increased. Inhumations contained grave goods while cremations did not. [Sutton 2010]

The Angeles VI phase reflects the post-contact (i.e., post-A.D. 1542) period. One of the first changes after contact was undoubtedly population loss due to disease, coupled with resulting social and political disruption. Angeles VI material culture is essentially Angeles V augmented by a number of Euroamerican tools and materials, including glass beads and metal tools such as knives and needles (used in bead manufacture). The frequency of Euroamerican material culture increased through time until it constituted the vast majority of materials used. Locally produced brownware pottery appears along with metal needle-drilled *Olivella* disk beads. [Sutton 2010]

The subsistence system was based primarily on terrestrial hunting and gathering, although nearshore fish and shellfish played important roles. Sea mammals, especially whales (likely from beached carcasses), were prized. In addition, a number of European plant and animal domesticates were obtained and exploited. [Sutton 2010]

ETHNOGRAPHY

The Project Area was within the territory of the Tongva (Gabrielino) (McCawley 1996). The Tongva geographical territory includes large portions of Los Angeles County, the northern part of Orange County, small sections of Riverside and San Bernardino Counties as well as the southern Channel Islands of Santa Barbara, San Clemente, San Nicolas, and Santa Catalina. The name “Gabrielino” is Spanish in origin and was used in reference to the Native Americans associated with the Mission San Gabriel. Today community members call themselves “Tongva”, meaning “people of the earth” (Gabrielino/Tongva Tribal Council of San Gabriel 2015). At the time of European contact, there were an estimated 5,000 Tongva living at 31 known villages (McCawley 1996).

The Tongva language is classified as part of the Uto-Aztecan language family, under the Takic branch. It is now generally accepted that the Gabrielino language is a stand-alone Takic language, distinct from the Cupan sub-group (Mithun 1999:539).

Much of the southern California archaeological literature argues that the Gabrielino moved into southern California from the Great Basin around 4,000 Before Present (B. P.), “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 community’s knowledge about their history and origins. Oral tradition states that the Gabrielino have always lived in their traditional territory, with their emergence into this world occurring at Puvungna, located in Long Beach located on the Alamitos Plain (Martinez and Teeter 2015:26).

The Tongva are considered to have been one of the wealthiest of all Shoshonean tribes and to have greatly influenced tribes they traded with (Kroeber 1976:621). Houses were domed and circular structures thatched with tule or similar materials (Bean and Smith 1978:542). The best known artifacts were made of steatite and were highly prized. Many common everyday items were decorated with inlaid shell or carvings reflecting an elaborately developed artisanship (Bean and Smith 1978:542).

The main food zones utilized were marine, woodland, and grassland (Bean and Smith 1978). Plant foods were, by far, the greatest part of the traditional diet at contact. Acorns were the most important single food source. Villages were located near water sources necessary for the leaching of acorns, which was a daily occurrence. Grass seeds were the next most abundant plant food used along with chia. Seeds were parched, ground, and cooked as mush in various combinations according to taste and availability. Greens and fruits were eaten raw or cooked or sometimes dried for storage. Bulbs, roots, and tubers were dug in the spring and summer and usually eaten fresh. Mushrooms and tree fungus were prized as delicacies. Various teas were made from flowers, fruits, stems and roots for medicinal cures as well as beverages (Bean and Smith 1978:538-540).

The principal game animals were deer, rabbit, jackrabbit, woodrat, mice, ground squirrels, antelope, quail, dove, ducks and other birds. Most predators were avoided as food, as were tree squirrels and most reptiles. Trout and other fish were caught in the streams, while salmon were available when they ran in the larger creeks. Marine foods were extensively utilized. Sea mammals, fish and crustaceans were hunted and gathered from both the shoreline and the open ocean, using reed and dugout canoes. Shellfish were the most common resource, including abalone, turbans, mussels, clams, scallops, bubble shells, and others (Bean and Smith 1978:538-540). The nearest recorded Tongva village is located approximately 1.5 miles west of the Project Area. This village name was *Tevaaxa'anga*. The village's location was once within a forested and marshy area into which the Los Angeles River drained until a flood in 1825 caused it to cut a channel to the ocean (McCawley 1996:59).

HISTORIC SETTING

SPANISH AND MEXICAN ERA SETTING (1542-1847)

Juan Cabrillo was the first European to sail along the coast of California in 1542 and was followed in 1602 by Sebastian Vizcaino (Rawls and Bean 1993). Between 1769 and 1822 the Spanish had colonized California and established missions, presidios, and pueblos (Bean and Rawls 1993). In 1821, Mexico won its independence from Spain and worked to reduce the wealth, power, influence held by the missions since the earliest colonial settlement. The Secularization Act was passed in 1833 and the new government began awarding vast tracts of mission lands to private citizens (Robinson 1948:13).

Rancho Los Nieto

While widespread privatization began in earnest after 1833, certain large tracts of California land were granted to private citizens during the earlier Spanish Era, particularly to well-respected military men who had distinguished themselves in service to the Spanish throne (Figure 3). Nearly all of the lands now comprising the City of Long Beach were part of Rancho Los Nieto, a massive 300,000-acre allotment granted by Spanish governor Pedro Fages to soldier-rancheros, Manuel Pérez Nieto and José María Verdugo in 1784. A portion of the rancho was confiscated by the San Gabriel Mission in 1796 for use as tribal land, though Nieto retained a 167,000-acre portion which his family was cultivating, ranching, or otherwise actively utilizing by that time (Bancroft 1886:662). The much reduced plot nevertheless stretched all the way from the hills north of Whittier, Fullerton, and Brea, south to the Pacific ocean, and from today's Los Angeles River east to the Santa Ana River (Robinson 1966). Nieto died in 1804 and by 1834 the land was subdivided into five separate ranchos, the Santa Gertrudis, Las Bolsas, Los Coyotes, Los Cerritos, and Los Alamitos (Robinson 1948:50; Robinson 1966:29). The greater part of the modern City of Long Beach falls within bounds of the latter two (Garoogian 2013:194).

Rancho Los Cerritos which contained the Los Nietos Ranch was parceled off and gifted to Nietos' daughter, Manuela Cota, in 1834. Fewer than 10 years later an American named John Temple purchased Los Cerritos in full, building up a prosperous cattle ranch and constructing an adobe house, the Los Cerritos Ranch House, which still stands today (Robinson 1966:28) as a California Historic Landmark and located less than 0.5 miles east of the project alignment. Temple also purchased a part of the Rancho Palos Verdes in 1859 (Sapphos Environmental, Inc. 2009). Rancho Los Alamitos was inherited by Nieto's son, Juan José Nieto, and in 1834 was sold

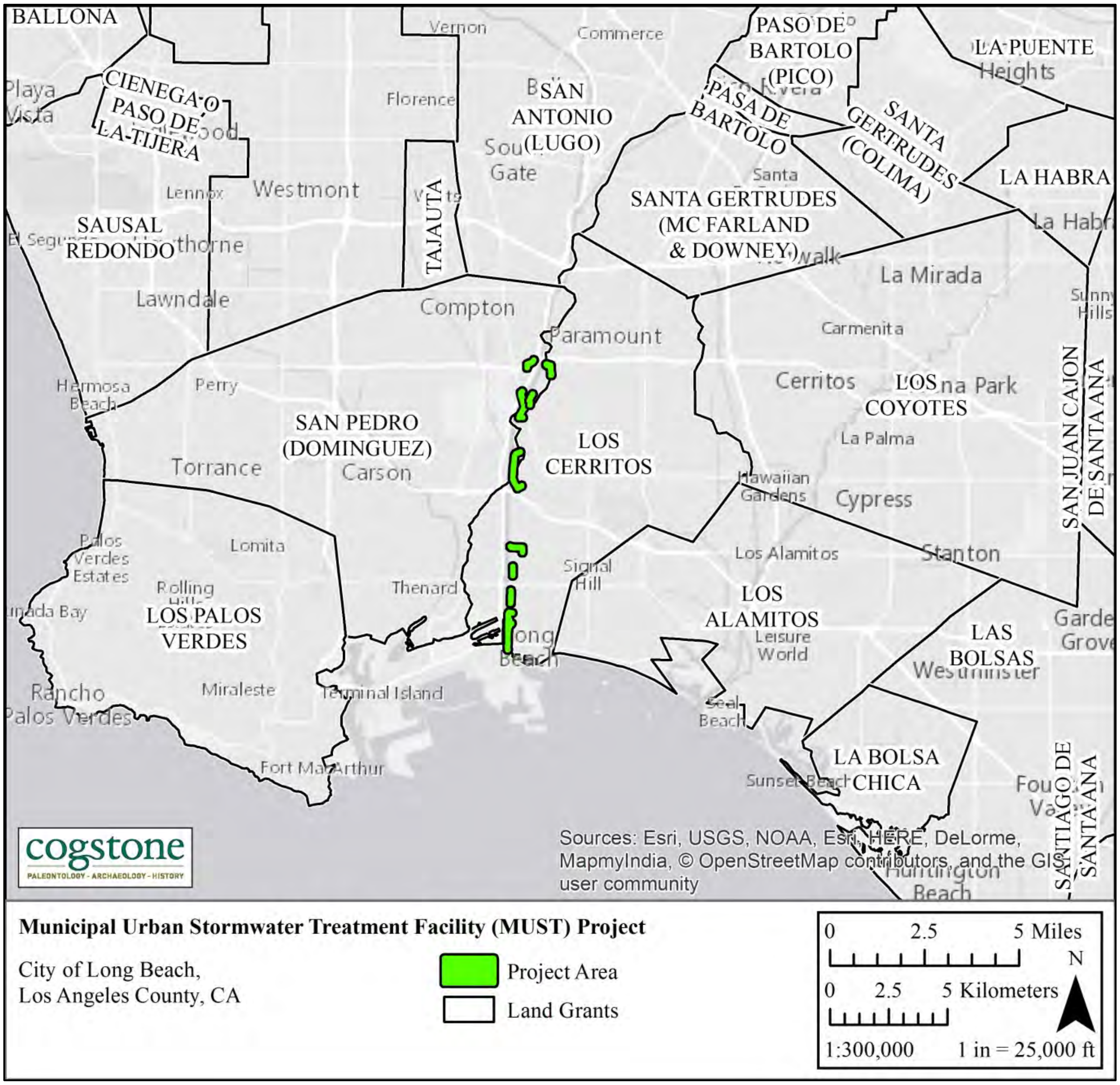

Figure 3. Map of Spanish/Mexican period Land Grants

to Mexican Governor José Figueroa at an unusually low price. By 1842, the property and its livestock were in the possession of Abel Stearns, an American born in Massachusetts. The severe draught which struck the Los Angeles area in the 1860s destroyed the viability of both Temple's and Stearns' ranching ventures, leading to the resale of Los Cerritos and Los Alamitos (Robinson 1966:28).

Rancho San Pedro/ Dominguéz

Portions of western Long Beach lie within the bounds of the smaller Spanish land grant, Rancho San Pedro or Rancho Dominguéz. Originally encompassing 75,000 acres, Rancho San Pedro was granted in 1784 to Juan José Domínguez, a soldier who served on the Portolà Expedition (Bancroft 1886; Gillingham 1961). The land was re-granted during the Mexican Period in 1822 to Cristóbal Dominguez, nephew of Juan José, and later, to Cristóbal's son, Manuel Domínguez. Complicating claims to ownership, Jose Dolores Sepúlveda was granted permission by the executor of the Domínguez estate to herd cattle in the southwestern portion of Rancho San Pedro in 1810. This later became grounds for the Sepúlveda's acquisition of a 31,629-acre segment of which became known as Rancho de los Palos Verdes. Other portions of the original Rancho San Pedro remained in the hands of the Domínguez family until the mid-twentieth century while others were leased or sold to farmers during the nineteenth century and earlier in the twentieth century. These agriculturalists settled on the land, building houses and raising grains, vegetables, and livestock. The area continued as a farming community through the end of the nineteenth century and remained so through the first two decades of the twentieth century and beyond. (Robinson 1948).

AMERICAN ERA SETTING (1848-1899)

Early in the American Era, John Temple sold the Rancho Los Cerritos to a sheep-raising firm from Northern California, Flint, Bixby & Company. For management purposes, the company at first elected personnel to oversee portions of the property. Prior to 1880 one of these managers, Jonathan Bixby, formed the Bixby Land Company and sold 4,000 acres of the rancho to William E. Willmore, who wanted but failed to create a farming community to be called Willmore City. Subsequent to this failure, he sold his acreage to the Long Beach Land and Water Company based in Los Angeles, who changed the community name to Long Beach, named for the area's long and wide beaches, and incorporated as a city in 1888 (Lewis Publishing Company 1889:792; Sapphos Environmental, Inc. 2009:36).

During the last decades of the nineteenth century, the former Rancho Los Cerritos was parceled off and sold for the establishment of farming communities focusing on dairy cattle and crops for the cows to eat, including barley and alfalfa. It was during this time that the-then farming communities surrounding what is now northern Long Beach were established, including Bellflower, Paramount, Signal Hill, and Lakewood (Wilson 1880:146; Sandul 2014).

Rancho San Pedro continued to decline in size throughout the century, as the original Dominguez family's children divided among themselves or sold parts of it. Two daughters of

Manuel Domínguez married prominent Anglo-Americans. Dolores was wed to James A. Watson, who went on to serve in the state legislature and form the Watson Land Company, which in the 1880s developed parts of the rancho. Another daughter, Victoria, married George Carson. Carson managed their part of the rancho as a farming enterprise for a number of years before, along with his brother-in-law James Watson and their children, dividing most of the land so that the married children could live on the family estate.

Other ranch partitions took the land out of family hands. A large part, over 30,000 acres, of the rancho was taken by the Mexican governor of California in 1834 to give as a land grant to the Sepulveda family. Twenty years later nearly 2,500 acres of land were sold to a developer to create the port of Wilmington. In 1867 a ten square mile tract of land was sold to a man named George Dickenson Compton, representing a number of interested families, to create a settlement within a mild climate. In 1887 the land that would become Redondo Beach was sold, and in 1911 the land now hosting the city of Torrance was also parceled off. The family members' need to pay high property taxes necessitated the land sales (Grenier 2015).

20TH CENTURY SETTING (1900- PRESENT)

At the beginning of the twentieth century, the Pacific Electric Trolley reached downtown Long Beach (1902), which resulted in the city's becoming both a resort and commercial hub. The trolley also played a part, along with the port's success, in Long Beach becoming the fastest growing city in the United States between 1902 and 1910. Another great commercial success of the city was the finding of oil at Signal Hill in 1921, in turn fueling a million-dollar-per-month building boom in the downtown area (Garoogian 2013:194). In addition to the Pacific Electric Trolley, there was, from the last decade of the nineteenth century, increasing competition between the rival Southern Pacific and Atchison, Topeka, & Santa Fe Railways to provide passenger and freight services all over southern California, including extensions to the new resort of Long Beach. Parallel to the railroad developments and encouraging them as well, the city of Los Angeles granted the new city of Long Beach the marshy lands and tidal mudflats at the mouth of the Los Angeles River. These were dredged, and breakwaters constructed, to develop the Port of Long Beach. The port grew in importance over time, with the next leaps coming in 1930, when oil was discovered in the harbor, and in 1940, when the U.S. Navy purchased land on Terminal Island and established a base there (Sapphos Environmental, Inc. 2009:159–160).

Increasing commerce brought by the railroads, the oil industry, the port, and eventually the U.S. military's expansion into Long Beach and the rest of the Los Angeles area increasingly changed all of Long Beach as well as surrounding towns from farming communities to suburbs. Long Beach was transformed first in the early twentieth century due to the arrival of the Pacific Electric Railway, which made commuting longer distances to work possible, the World War II development of Long Beach as a shipbuilding area for the military, which attracted workers who in turn needed housing, and finally the dual post-World War II developments of tract housing filled by returning veterans and families, along with the rise of the automobile. These industrial and transportation changes that affected Long Beach and California filled in what had been small and separate farming communities with almost endless suburbs (California Department of Transportation 2011:10, 58). The Project Area is typified by tract housing of various periods. Much of the north side of the Project Area is typified by suburban blocks filled with 1920s Spanish Revival homes through 1960s Ranch houses. Other portions are characterized by apartment buildings and additional postwar tract housing, as well as several recreational areas along the Los Angeles River, Houghton Park, the Virginia Country Club, and Drake Park. Along the shoreline on the south end of the Project Area upscale apartments are broken up with hotels, commercial and civic buildings, and entertainment facilities (Sapphos Environmental, Inc. 2009).

PROJECT SPECIFIC HISTORY (1902- 1981)

The presence of a railroad track within the southern portion of the Project Area, near W. Shoreline Drive Overpass/Bridge was first depicted on a 1942 USGS topographic map (NETR 1942), which extended north, then northeast, to a warehouse cluster, then north again to join the main Pacific Electric Railway, Long Beach Line. This 1942 line also extended south, to Ocean Boulevard, then east to Long Beach Boulevard (formerly American Avenue), where it turned north and ran through Dominguez Junction, Compton, Watts, and beyond, finally terminating in downtown Los Angeles (Crump 1970:98). Based on its location and association with warehouses, this north-south segment of the Pacific Electric Railway would appear to be a route used for freight service, rather than passenger service.

The Pacific Electric Railway (PERY), Long Beach Line began its passenger service to Long Beach in 1902 and terminated it in 1961 (Crump 1970:98). Ironically, these were the first and last actions of the PERY. In order to further compete with the dominant and rival Southern Pacific Railroad (SPRR) in the area, the PERY added freight service to its offerings early in its life. The particular line here, along the east flank of the Los Angeles River and north of Ocean Boulevard, does not appear to have been constructed until the beginning of World War II or a few years before that. During World War II, commuter and freight business increased dramatically for the PERY, due to the intense war effort and its focus on the Long Beach harbor for shipment of people and supplies to local and overseas destinations (Crump 1970:23). Based on topographic maps, the PERY freight line through the Project Area continued in place, with several spurs serving warehouses immediately south of Anaheim Street, between the river and Magnolia Avenue from 1949 to at least 1981 (NETR 1949, 1964, 1972, 1981, 2015). Though the PERY was out of business in 1961, it is possible the Project Area tracks were still in use after that, but by SPRR, as by 1964, a tall, wide loop railroad bridge crossed the Los Angeles River south of Shoreline Drive Overpass/Bridge which connected tracks on the west side of the river with those on the east (NETR 1964, 1972, 1981, 2015). Between 1994 and 2015, the loop bridge was removed.

The PERY freight line and its spurs on the east side of the river, up to Anaheim Street, are visible on aerial photographs as late as 1980 and may possibly have still been in use, as a few individual train cars appear to be standing on the tracks near the warehouses at that time (NETR 1980, 1994). By 1994, the tracks appear to have been mostly removed, though the location of the railbed can still be seen, clearly ending at Anaheim Street.

RECORDS SEARCH

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

A search for archaeological and historical records was completed by archaeologist Megan Wilson of Cogstone on February 27, 2017 at the South Central Coast Information Center (SCCIC), of the California Historical Resources Inventory System (CHRIS) located on the campus of the California State University, Fullerton. The record search covered a half-mile radius around the Project Area boundaries. The search included any previously recorded cultural resources and investigations within approximately 0.5-mile of the Project Area. The CHRIS search also included a review of the NRHP, the CRHR, the California Points of Historical Interest list, the California State Historical Landmarks list, the Archaeological Determinations of Eligibility list, the Historic Properties Directory, the Archaeological Determinations of Eligibility List, the California Inventory of Historic Resources, and local historic resources inventories.

Results of the CHRIS records search indicate that 16 prior studies included portions of the Project Area, while an additional 43 cultural resources investigations have been completed previously within a half-mile radius of the Project Area (Table 2). The previous studies within the half-mile radius included 19 completed between a 0-0.25-mile radius of the Project Area and 24 between a 0.25-0.5-mile radius.

The CHRIS records search also revealed that of the 16 studies that included portions of the Project Area, all were negative for cultural resources within the current project bounds. A total of 57 cultural resources have been previously documented within the half-mile search radius (Table 3). These consist of three prehistoric sites, one multicomponent site, one historic archaeological site and 52 historic resources.

Table 2. Previous Cultural Resource Studies

Report No.	Author(s)	Title	Year	Distance from PA	Quad
LA-00083	Rosen, Martin D.	Evaluation of the Archaeological Resources and Potential Impact of the Joint Outfall System's Improvements on Sewer Treatment Plants and Installation Routes for New Large Diameter Sewers, Los Angeles County	1975	Within	Long Beach and Southgate
LA-00358	Stickel, Gary E.	An Archaeological and Paleontological Resource Survey of the Los Angeles River,	1976	Within	Long Beach

Report No.	Author(s)	Title	Year	Distance from PA	Quad
		Rio Hondo River and the Whittier Narrows Flood Control Basin, Los Angeles, California			and Southgate
LA-00503	Dixon, Keith A.	Archaeological Resources and Policy Recommendations of Long Beach	1974	0.25-0.5	Long Beach
LA-01158	Desautels, Roger J.	Archaeological Test Report and Assessment on the Whiteman Airport Site Located in the Pacoima Area of the County of Los Angeles	1981	0.25-0.5	Long Beach
LA-01193	Singer, Clay A.	Cultural Resource Survey and Impact Assessment for 3.12 Acres Located Adjacent to 17339 Tramonto Drive, Pacific Palisades	1982	Within	Long Beach
LA-01228	Westermeier, John F.	Draft Environmental Impact Report for Acton Recreational Vehicle Park	1979	0-0.25	Long Beach
LA-02665	Cottrell, Marie G., James N. Hill, Stephen Van Wormer, and John Cooper	Cultural Resource Overview and Survey for the Los Angeles County Drainage Area Review Study	1985	0-0.25	Long Beach
LA-02882	McKenna, Jeanette A.	Cultural Resources Investigations, Site Inventory, and Evaluations, the Cajon Pipeline Project Corridor, Los Angeles and San Bernardino Counties, California	1993	Within	Long Beach
LA-02910	Stickel, Gary E.	A Literature Search for Shipwrecks in the Los Angeles - Long Beach Harbors and at the US Naval Facility at Terminal Island	1981	0-0.25	Long Beach
LA-02970	Chamberlaine, Pat and Jean Rivers-Council	Cajon Pipeline Project Draft Environmental Impact Statement Environmental Impact Report	1992	Within	Long Beach
LA-03102	McCawley, William, John Romani, and Dana Slawson	The Los Angeles County Drainage Area Subsequent Environmental Impact Report	1994	Within	Long Beach and Southgate
LA-03384	Bell, Daniel A. and Warren Riess	Final Report: Marine Archaeological Investigations of Berth 60 & 61, Port of Long Beach	1989	0.25-0.5	Long Beach
LA-03385	Farnsworth, Paul S.	A History of the Procter and Gamble Plant Long Beach, California 1931-1988	1990	0.25-0.5	Long Beach
LA-03422	Bissell, Ronald M.	Cultural Resources Research in Support of the Rancho Los Cerritos Seismic Upgrade, Long Beach, Los Angeles County, California	1996	0.25-0.5	Long Beach
LA-03508	Van Wormer, Stephen R.	Historical Resource Overview and Survey for the Los Angeles County Drainage Area Review Study	1985	0-0.25	Long Beach
LA-03576	Wlodarski, Robert J.	Phase I Archaeological Study: Glendale Senior Housing Project City of Glendale, County of Los Angeles	1997	0.25-0.5	Long Beach
LA-03707	Clewlow, C. William Jr.	Preliminary Report of the Potential Impact on Archaeological Resources of the Proposed Gas Transmission Pipeline From Los Angeles Harbor to Yorba Linda - Southern California Gas Co.: Environmental Analysis	1974	Within	Long Beach
LA-04025	King, Chester	Archaeological Reconnaissance at 30181 Cuthbert Road, Malibu, California	1988	Within	Long Beach
LA-04324	Unknown	Archaeological Resources Survey West Coast-	1977	0-0.25	Long

Report No.	Author(s)	Title	Year	Distance from PA	Quad
		midcontinent Pipeline Project Long Beach to Colorado River			Beach
LA-04512	Eggers, A.V.	Cultural Resources Inventory of the City of Carson, California	1977	0.25-0.5	Long Beach
LA-05078	Lapin, Philippe	Cultural Resource Assessment for Pacific Bell Wireless Facility La 010-03, County of Los Angeles, Ca	2000	0.25-0.5	Long Beach
LA-05402	Smith, Philomene C.	Negative Archaeological Survey Report: 07-la-91kp17.91-170-3n3401	2000	0.25-0.5	Long Beach
LA-05403	Moffatt, Nicole	Environmental Impact Report Queensway Bay Master Plan State Clearinghouse No. 94081033 EIR No. E-13-94	1994	Within	Long Beach
LA-05887	Duke, Curt	Cultural Resource Assessment AT&T Wireless Services Facility No. 05081a-01 Los Angeles County, California	2002	0.25-0.5	Long Beach
LA-06047	Duke, Curt	Cultural Resource Assessment AT&T Wireless Services Facility No. 05265 Los Angeles County, California	2002	0.25-0.5	Long Beach
LA-06051	Duke, Curt	Cultural Resource Assessment AT&T Wireless Services Facility No. 05311a Los Angeles County, California	2002	0-0.25	Long Beach
LA-06062	Sylvia, Barbara	Highway Project to Cold Plane and Overlay With Rubberized Asphalt Concrete Type G on the Mainline and Ramps Along Route 710 Between the Pico Avenue Northbound On-ramp and the Route 1 Separation.	2001	0-0.25	Long Beach
LA-07010	Gelgemaker, Gerhardt H.	6172-78 Long Beach Blvd, Long Beach, Painting Hud970926c	2000	0.25-0.5	Long Beach
LA-07162	Anonymous	Cultural Resource Assessment Santa Fe Pacific Pipeline Expansion Project, Los Angeles County, California	1997	Within	Long Beach
LA-07950	Harper, Caprice D.	Archaeological Survey Report for the Interstate 105 (I-105) Dewatering Wells Beneficial Re-use of Groundwater Project, in the Cities of Paramount, Compton, Long Beach, and Carson, Los Angeles County, California	2006	Within	Long Beach
LA-07984	Michalsky, Jay and Deborah McLean	Cultural Resource Assessment Seaside Park, City of Long Beach, Los Angeles County, California	2005	0.25-0.5	Long Beach
LA-08225	Maki, Mary K.	Phase I Archaeological Survey for the Altamira Canyon Drainage Control Project City of Rancho Palos Verdes, Los Angeles County, California	2001	0-0.25	Long Beach
LA-08312	Bonner, Wayne H.	Cultural Resources Records Search and Site Visit Results for Royal Street Communications, Llc Candidate La0576a (Video Verizon), 5901 Atlantic Avenue, Long Beach, Los Angeles County, California	2006	0.25-0.5	Long Beach
LA-08465	Bonner, Wayne H.	Cultural Resources Records Search Results and Site Visit for Sprint Candidate La70xc306b (Optometry/Clear Channel), 5290 Long Beach Boulevard, Long Beach, Los	2005	0.25-0.5	Long Beach

Report No.	Author(s)	Title	Year	Distance from PA	Quad
		Angeles County, California			
LA-08470	Bonner, Wayne H.	Cultural Resources Records Search Results and Site Visit for Sprint Telecommunications Facility Candidate La60xc358a (Vinotemp Warehouse), 17621 South Susana Road, Rancho Dominguez, Los Angeles County, California	2004	0.25-0.5	Long Beach
LA-08724	Bonner, Wayne H. and Kathleen A. Crawford	Cultural Resources Records Search and Site Visit Results for Royal Street Communications, LLC Candidate La2807a (Superfreezers), 625 West Anaheim Street, Long Beach, Los Angeles County, California	2006	0-0.25	Long Beach
LA-08725	Bonner, Wayne H.	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate La13128b (Coin Laundry), 2200 North Pacific Avenue, Long Beach, Los Angeles County, California	2007	0.25-0.5	Long Beach
LA-09129	Strudwick, Ivan	Cultural Resources Analysis for the Shoemaker Street Bridge Project in the City of Long Beach, Los Angeles County, California	2007	Within	Long Beach
LA-09213	Bonner, Wayne H.	Direct Project Area Historic Architectural Assessment for Royal Street Communications, LLC Candidate LA2838A (Long Beach Discount Center), 520 West Willow Street, Long Beach, Los Angeles County, California	2007	0-0.25	Long Beach
LA-09217	Bonner, Wayne H.	Cultural Resources Records Search and Site Visit Results for Royal Street Communications, LLC Candidate LA 2838A (Long Beach Discount Center), 520 West Willow Street, Long Beach, Los Angeles County, California	2007	0-0.25	Long Beach
LA-09344	Bonner, Wayne H.	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate LA13128C (Fisher Apartments), 2390 Cedar Avenue, Long Beach, Los Angeles County California	2008	0-0.25	Long Beach
LA-09456	Crawford, Kathleen	Direct Project Area Historic Architectural Assessment for T-Mobile Candidate LA13128C (Fisher Apartments), 2390 Cedar Avenue, Long Beach, Los Angeles County, California	2008	0-0.25	Long Beach
LA-09569	Wlodarski, Robert J.	Proposed Bechtel Wireless Telecommunications Site LA0176 (Sue's Corner), 5324 Long Beach Blvd., Long Beach, Los Angeles County, California.	2006	0-0.25	Long Beach
LA-09571	Fulton, Phil	Cultural Resource Assessment, Verizon Wireless Services, Compton College Facility, City of Compton, Los Angeles County, California.	2009	0.25-0.5	Long Beach
LA-10567	Hogan, Michael, Bai "Tom" Tang, Josh Smallwood, Laura Hensley	Identification and Evaluation of Historic Properties - West Basin Municipal Water District Harbor- South Bay Water Recycling Project Proposed Project Laterals	2005	0-0.25	Long Beach

Report No.	Author(s)	Title	Year	Distance from PA	Quad
	Shaker, and Casey Tibbitt				
LA-10864	Bonner, Wayne	Direct Project Area Historic Architectural Assessment for T-Mobile Candidate L:A13128B (Coin Laundry), 2200 North Pacific Avenue, Long Beach, Los Angeles County, California	2007	0.25-0.5	Long Beach
LA-11029	Wlodarski, Robert J.	Record Search and Proposed AT&T Wireless Telecommunications Site LAC072, Located at 800 West 15th Street, Long Beach, California 90813	2011	0-0.25	Long Beach
LA-11150	Maxwell, Pamela	West Basin Municipal Water District Harbor/ South Bay Water Recycling Project	2003	0.25-0.5	Long Beach
LA-11949	Bonner, Wayne	Cultural Resources Records Search and Site Visit Results for Sprint Nextel Candidate LA59XC301 (New Directions), 5870 Atlantic Avenue, Long Beach, Los Angeles County, California	2012	0.25-0.5	Long Beach
LA-12057	Bonner, Wayne	Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate LA13128C (LA3128 Fisher Apartments), 2390 Cedar Avenue, Long Beach, Los Angeles County, California	2012	0-0.25	Long Beach
LA-12329	Gibson, Heather, Kry, Linda, and Amaral, Adela	Archaeological Assessment for the New Long Beach Courthouse Project, City of Long Beach, California	2013	0.25-0.5	Long Beach
LA-12330	Slawson, Dana and Kay, Michael	Rancho Los Cerritos Visitor Center and Arroyo Restoration Project Cultural Resources Monitoring Report	2013	0.25-0.5	Long Beach
LA-12389	Chasteen, Carrie	Identification and Evaluation of Smokehouses Port of Long Beach Long Beach, Los Angeles County, California	2012	0-0.25	Long Beach
LA-12668	Brunzell, Dave	Cultural Resources Assessment of the Compton Project, Long Beach, Los Angeles County, California (BCR Consulting Project No. TRF1415)	2014	0-0.25	Long Beach
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	Within	Long Beach and Southgate
LA-12951a	Loftus, Shannon	Cultural Resource Records Search and Site Survey, AT&T Site LAR504	2012	Within	Long Beach
LA-12951b	Loftus, Shannon L.	Historical Architectural Resource-Inventory and Assessment AT&T Site LAR5O4	2012	Within	Long Beach
LA-12959	Carmack, Shannon and Kevin Hunt	City of Long Beach Civic Center Project, Cultural Resources Study	2015	0.25-0.5	Southgate
LA-12981	Haas, Hannah, Duane Vander Pluym, and Robert Ramirez	Archaeological Monitoring for the Agoura Hills Recreation Center Project, Agoura Hills, Los Angeles County, California	2014	Within	Long Beach

Table 3. Previously Recorded Cultural Resources

Primary Number (P-19-)	Other Identifier	Site Type	Site Description	Address	Year Recorded	Distance from the PA (miles)	Quad
000693	CA-LAN-693	Prehistoric Archaeological Site	Human remains, shell midden		1974	0-0.25	Long Beach
000695	CA-LAN-695	Prehistoric Archaeological Site	Shell midden, site speculated to be former location of *Abaungna*, a Gabrielino village site		1974	0-0.25	Long Beach
000696	CA-LAN-696H	Multicomponent site	Prehistoric: Cogstones, discoidal, pottery, lithic tools, groundstone. Historic: Adobe rubble, ceramics, glass, ceramics, buttons, metal pieces		1974	0-0.25	Long Beach
000697	CA-LAN-697	Prehistoric Archaeological Site	Human remains		1974	0-0.25	Long Beach
004313	4313H	Historic Archaeological Site	Historic refuse deposits		2011	0.25-0.5	Long Beach
150348	091901	Historic Resource	Single family residence, Mediterranean style, 1929	726 Maine Avenue	1996	0-0.25	Long Beach
150350	29608	Historic Resource	Multiple family residence, Craftsman style "Wolton Apartments: 1913	530 Chestnut Ave	1996	0.25-0.5	Long Beach
150352	086182	Historic Resource	Single family residence, Victorian style: 1903	535 Chestnut Ave	1996	0.25-0.5	Long Beach
150356		Historic Resource	Single family residence, Victorian style:1904	520 Chestnut Ave	1996	0.25-0.5	Long Beach
150361		Historic Resource	Multiple family residence, Mediterranean style: 1916	1916-18 Magnolia Avenue	1996	0.25-0.5	Long Beach
178682	NR No. 12000810 HRI 029362	Historic Resource	Religious building, Romanesque style, "First Congregational Church of Long	241 Cedar Avenue	2012	0.25-0.5	Long Beach

Primary Number (P-19-)	Other Identifier	Site Type	Site Description	Address	Year Recorded	Distance from the PA (miles)	Quad
			Beach": 1919				
178699	NRHP 05000002 (1S)/ CRHP/ HRI 029380	Historic Resource	Single family residence, Queen Anne Victorian style "Bembridge House": 1906	953 Park Circle Drive	2001, 2004	0-0.25	Long Beach
179099	029787	Historic Resource	Multiple family residence, Beaux-Arts influence: 1926	241 Cedar Avenue	2005	0.25-0.5	Long Beach
179270	696H CRHL No. 978	Historic Resource	Single family residences, Monterey style adobe ranch house, "Temple Residence/Rancho Los Cerritos Adobe": 1844. Also location of prehistoric site (CA-LAN-696H).	400 Virginia Road	1988, 1989, 1990		Long Beach
187501	NR No. 99000579-0001, HRI 086099	Historic Resource	Multiple family residence, Italian Renaissance style, "The Willmore/The Stillwell": 1927	315 West Third street	1999		Long Beach
187118		Historic Resource	Single family residence, Mission revival style: 1932	1980 Cedar Avenue	1996		Long Beach
187133		Historic Resource	Single family residence, Victorian style: 1922	2443-45 1/2 Elm Avenue	1999		Long Beach
187181	122849	Historic Resource	Single family residence, Bungalow: 1947	1444 W. 20th Street	1999		Long Beach
187204		Historic Resource	1-3 story commercial building. Modern style: 1924	5350 Long beach Blvd.	1997		Long Beach
187235	12346	Historic Resource	Single family residence, Bungalow: 1938	719 W. 19th Street	1999		Long Beach
188401		Historic Resource	Bridge, single-span, steel-riveted Warren truss bridge, "Long Beach Blvd. Under Union Pacific Railroad": 1932		2008		Long Beach
188912		Historic Resource	1-3 story commercial	2200 N. Pacific	2007		Long Beach

Primary Number (P-19-)	Other Identifier	Site Type	Site Description	Address	Year Recorded	Distance from the PA (miles)	Quad
			building, Modern style: 1951	Ave.			
189246		Historic Resource	Transmission Line, Southern California Edison: 1929		2007		Long Beach
189450	NR No. 190547 174435	Historic Resource	Unidentified, "Bradly and Smith Killingsworth": 1955	3827 Long Beach Blvd.	2009		Long Beach
186746		Historic Resource	Religious building, A-Frame Contemporary: 1939	6380 Orange Ave. Long Beach, 90805	2002	0.25-0.5	Long Beach
187005	NR 05000773 HRI No. 122929	Historic Resource	3+ story commercial building: Art Deco style, "Long Beach Professional Building": 1929	117 East 8th Street	2005	0.25-0.5	Long Beach
187122		Historic Resource	Single family residence, Bungalow style: 1939	319 E. Marker Lane Long Beach 90805	1997	0-0.25	South Gate
187137		Historic Resource	Single family residence : WWII Bungalow	34 E. 69th St. Long Beach 90805	1996	0-0.25	South Gate
187183		Historic Resource	Single family residence, Bungalow style: 1948	265 E 69th St. Long Beach 90805	1999	0.25-0.5	South Gate
187191		Historic Resource	1-3 story commercial building, unidentified style: 1940	5376-78 Long Beach Blvd. Long Beach 90805	1997	0-0.25	Long Beach
187192		Historic Resource	1-3 story commercial building, unidentified style: 1924	5382 Long Beach Blvd. Long Beach 90805	1997	0-0.25	Long Beach
187199		Historic Resource	Single family residence, Bungalow style: 1922	711-713 Loma Vista Avenue	1997	0-0.25	Long Beach
187200		Historic Resource	Single family residence, Bungalow style:	517 W. 9th Street	1997	0-0.25	Long Beach

Primary Number (P-19-)	Other Identifier	Site Type	Site Description	Address	Year Recorded	Distance from the PA (miles)	Quad
			1910				
187209		Historic Resource	Single family residence: Victorian style: 1927	344 E. 57th St. Long Beach 90805	1997	0.25-0.5	Long Beach
187215	122902	Historic Resource	Single family residence, Bungalow style: 1948	6851 Beechley Ave. Long Beach 90805	1999	0-0.25	Long Beach
187218		Historic Resource	Single family residence, Bungalow style: 1915/1923	1122 Crystal Court/1123 Magnolia Avenue	1997	0-0.25	Long Beach
187223	114740	Historic Resource	Single family residence, Eclectic style: 1921	508-514 W. 10th Street	1997	0-0.25	Long Beach
187224		Historic Resource	Single family residence, Colonial style: 1924	165 W. Market St.	1997	0-0.25	Long Beach
187228	123260	Historic Resource	Single family residence, Bungalow style: 1948	6875 White Ave.	1999	0-0.25	South Gate
187234	123247	Historic Resource	Single family residence, Bungalow style: 1922	1622-23 Rose Avenue	1997	0.25-0.5	Long Beach
187248	123252	Historic Resource	Single family residence, Bungalow style: 1939	331 Heath Lane	1999	0-0.25	Long Beach
190000	148057	Historic Resource	Theatre, Art Deco style with Streamline influence: 1940	5870-5874 Atlantic Ave.	2003	0.25-0.5	Long Beach
190716	148629	Historic Resource	1 story commercial building, Industrial style: 1952	1350 Daisy Avenue	2004	0-0.25	Long Beach
190717	148628	Historic Resource	1 story commercial building, Modern style: 1922	551 W. Anaheim	2004	0-0.25	Long Beach
190718	148622	Historic Resource	Industrial buildings, Spanish Colonial Revival style "Home Ice & Cold Storage Co.": 1914	625 West Anaheim St.	2004	0-0.25	Long Beach
190765		Historic Resource	Hotel/motel, unidentified: 1936	5151 N. Long Beach	1996	0.25-0.5	Long Beach

Primary Number (P-19-)	Other Identifier	Site Type	Site Description	Address	Year Recorded	Distance from the PA (miles)	Quad
				Blvd.			
190766		Historic Resource	Single family residence, Spanish Colonial style: 1925	14 Zane St.	1996	0.25-0.5	Long Beach
190767		Historic Resource	Single family residence, Spanish Colonial style: 1928	16 Zane St.	1996	0.25-0.5	Long Beach
190768		Historic Resource	Historic District (21 buildings)	5115-5151 N. Long Beach Blvd.	1996	0.25-0.5	Long Beach
190239	172599	Historic Resource	Multiple family residence, Spanish Eclectic style, "Fisher apartment": 1931	2390 Cedar Ave.	2008	0.25-0.5	Long Beach
190588		Historic Resource	Industrial buildings (multiple), "Port of Long beach Smokehouses": 1929-1952		2012	0-0.25	Long Beach
190723	86123	Historic Resource	Single family residence, Neoclassical cottage: 1905	226 W. 5th Street	2005	0.25-0.5	Long Beach
190725		Historic Resource	1-3 story commercial building, Vernacular: 1902	233-235 w. 4th Street	2005	0.25-0.5	Long Beach
190738		Historic Resource	Multiple family residence, Modern style, "Cedarhurst": 1956	436-438 Cedar Ave.	2005	0.25-0.5	Long Beach
190739		Historic Resource	Multiple family residence, Spanish Eclectic style: 1923	442 Cedar Ave	2005	0.25-0.5	Long Beach
190740		Historic Resource	Multiple family residence,/1-3 story commercial building, Vernacular style: 1902-1950	458 Cedar Ave.	2005	0.25-0.5	Long Beach
192337		Historic Resource	Urban Open Space/Recreational Facility, Minimal Traditional style, "Will J. Reid Scout Park": 1950's	4747 Daisy Ave.	2014	0-0.25	Long Beach

OTHER SOURCES

In addition to the records at the SCCIC, Megan Wilson consulted a variety of sources in March 2017 to obtain information regarding the cultural context of the Project Area (Table 4). Sources included the NRHP, the CRHR, CHRI, CHL, and CPH. Specific information about the Project Area, obtained from historic maps and aerial photographs, is presented in the Project Area History.

Table 4. Additional Sources Consulted

Source	Results
National Register of Historic Places (NRHP; 1979-2002 & supplements)	Negative
Historic USGS Topographic Maps	Negative
Historic US Department of Agriculture Aerial Photographs	Historic aerials indicate the PA was a heavily urban area in 1953.
California Register of Historical Resources (CRHR; 1992-2014)	Negative
California Historical Resources Inventory (CHRI; 1976-2014)	Negative
California Historical Landmarks (CHL; 1995 & supplements to 2014)	Negative
Local Historic Inventories	Positive, the southern boundary of the PA is located on the western boundary of the Drake Park/Wilmore City Historic District http://www.lbds.info/planning/historic_preservation/drake_park.asp
California Points of Historical Interest (CPHI; 1992 to 2014)	Negative
Bureau of Land Management (BLM) General Land Office Records	Positive (see Table 3)

NATIVE AMERICAN CONSULTATION

The Native American Heritage Commission (NAHC) was contacted on February 23, 2017 to perform a search of the Sacred Lands File (SLF) and provide a consultation list under AB52. The NAHC responded on February 27, 2017 stating there were no known sacred lands within a half mile of the Project Area. The NAHC also provided a list of six Native American individuals and organizations that may have knowledge of cultural resources within the Project Area. Two additional tribes contacted the City of Long Beach requesting that they be notified of project related activities that could impact resources within their respective tribal territories. The City is conducting Native American consultation and the results will be reported in the project environmental document.

SURVEY

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. Cogstone archaeologist Holly Duke conducted an intensive pedestrian survey of all accessible portions of proposed project-related ground disturbance on March 29, 2017 (Figures 4a – 4d). Given that the project extends several linear miles, is comprised of multiple parcels with different owners, and is within a highly developed area, ground surface visibility during the survey was variable but generally poor, ranging from 0 to 10 percent in most areas which were paved and heavily landscaped obscuring the ground almost entirely. The few unpaved locations offered limited surface visibility but was over 50 percent in some instances. A few locations were inaccessible due to fencelines and other obstructions, while a smaller number of locations in close proximity to freeway on-ramps were unsurveyed to ensure surveyor safety.

Generally, the northern portion of the Project Area had 0 percent visibility. This includes Proposed Conveyance Segments 1 to 11. Along the Segment 1 alignment, existing hardscape and ornamental vegetation obscured the surface entirely (Figure 10). The same was true for Segment 2, with the exception of an area immediately south of the connection structure which, while vegetated, provided a view of a small dirt path (Figure 5). The portion of Segment 3 on the west side of the Los Angeles River had 0 percent visibility where accessible, while a small unpaved path running south from Long Beach Boulevard was blocked by a secured chain-link fence, making visibility only possible from a distance. The portion of Segment 3 along Market Street on the east side of the river was entirely landscaped and paved providing 0 visibility, with the exception of the same unpaved pathway which was again fenced off and inaccessible. Hardscape and vegetation completely obscured the ground in Segments 4. At the Virginia Country Club on the north end of Segment 5 the alignment was largely unpaved, though covered in many areas with wood mulch (Figure 7). Surface visibility was at roughly 50 percent. The portion of Segment 5 south of the country club was paved with 0 percent ground visibility. The entire length of Segments 6 to 8 was covered in hardscape and ornamental vegetation (Figures 5-10). Ground visibility at these locations was 0.

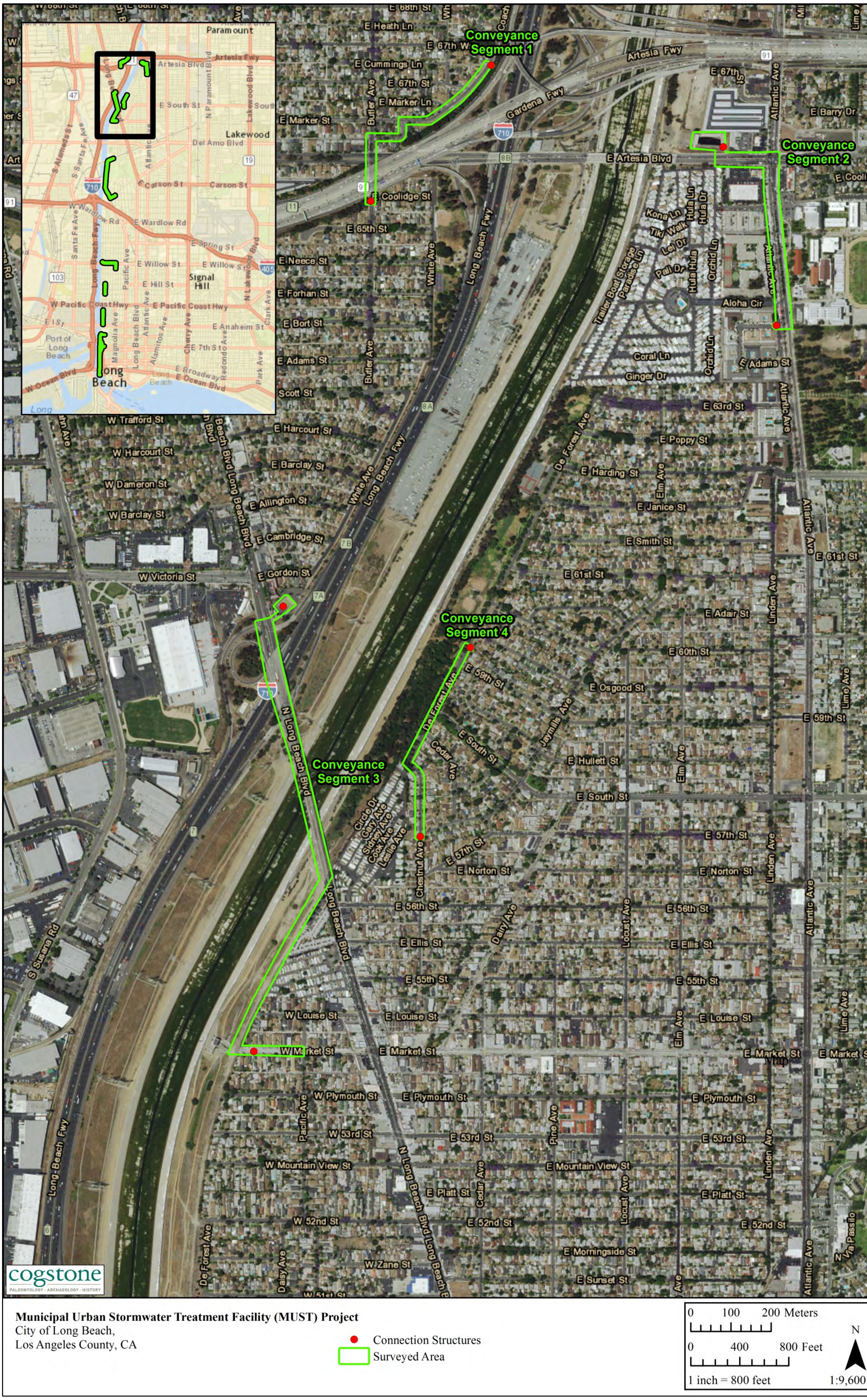

Figure 4a. Survey Map 1 of 4

Municipal Urban Stormwater Treatment Facility (MUST) Project
City of Long Beach,
Los Angeles County, CA

● Connection Structures
Surveyed Area

0 100 200 Meters
0 400 800 Feet
1 inch = 800 feet
N
1:9,600

Figure 4b. Survey Map 2 of 4

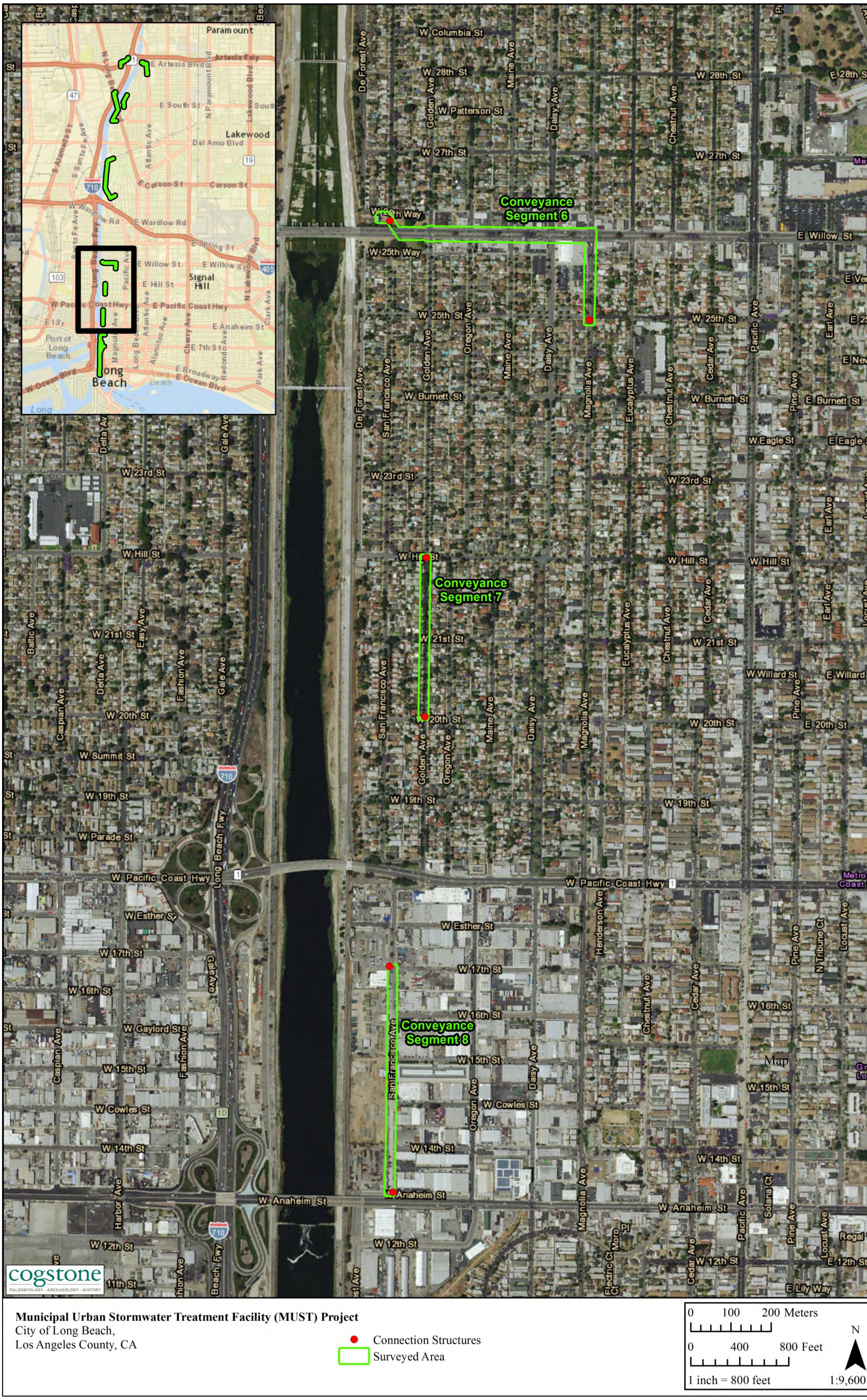

Figure 4c. Survey Map 3 of 4

Municipal Urban Stormwater Treatment Facility (MUST) Project
City of Long Beach,
Los Angeles County, CA

Connection Structures
Surveyed Area

0 100 200 Meters
0 400 800 Feet
1 inch = 800 feet
N
1:9,600

Figure 4d. Survey Map 4 of 4

On the far south side of the project alignment at Segments 9 to 11 and the site of the MUST facility south of Drake Park, visibility was better. An unpaved dirt road lines much of Segments 9 and 10 and provided more than 80 percent visibility, though vehicle and pedestrian traffic had disturbed soils along the path to some degree. Visibility in areas off the road was highly variable, averaging roughly 50 percent, while modern hardscape, modern refuse, homeless camps, and vegetation obscured the rest (Figure 8). The portion of Segment 9 located between De Forest Avenue and North Loma Vista Drive was inaccessible. Finally, the northern end of Segment 11 was located between and on an off-ramp for the 710 freeway and so was inaccessible. Roughly the remaining portion had up to 10 percent visibility through a chain link fence, though was obscured by hardscape and dense vegetation.

RESULTS

Cogstone conducted an intensive pedestrian survey of all accessible portions of proposed project-related ground disturbance on March 29, 2017. One built environment resource was encountered within the southernmost section (see Figure 4d), consisting of two segments of the Pacific Electric Railway, Long Beach Line, designated here as the Pacific Electric Railway Freight Line resource (Figures 11 and 12 and Appendix B).

The railroad segments recorded are thought to be at least 75 years old, possibly several years older. They are segments of the Pacific Electric Railway, but were most likely used for freight rather than for passengers and were added to the Pacific Electric Railway, Long Beach Line several decades after its founding. The two railroad segments observed on the ground surface at and near De Forest Avenue are short remnants of a much longer railroad track which was part of a PERY loop that began and ended just north of Long Beach. The segments retain their steel rails, spikes, and some other metal track hardware, and their wooden ties, though only the steel rails, a bit of wood, and a few spikes are visible on the northern segment that crosses De Forest Avenue.

The two segments of abandoned railroad track are located approximately 408 ft apart, but once were connected as part of one railroad track segment. The southernmost segment is located beneath the W. Shoreline Drive Overpass and is approximately 5 ft long, oriented northeast-southwest, and 8 ft wide (length of ties). The second, northern segment is visible on De Forest Avenue and on the ground surface immediately southwest of the street and is approximately 60 ft long and 5.25 ft wide (outer edge of rail to outer edge of rail). Current aerial photographs depict a trace of the track route on the northeast, then east flank of De Forest Avenue, paralleling the street for another 192 ft to the north. Presumably, the original track also ran between the observed surface segments. The total observable route, based on ground and aerial observations is approximately 680 ft (207m) long.

Figure 3. Direct path cover in wood mulch at 6th St.

Figure 4. Dirt path with modern refuse at south end of Segment 10

Figure 5. Highly developed area at San Francisco Ave. between Anaheim and 17th

Figure 6. High developed suburban area at 20th and Golden Avenue

Figure 7. Highly developed and paved area of DeForest Avenue

Figure 8. Overpass at Butler Avenue view to Artesia

The two discontinuous segments are devoid of ballast, signage, signals, and all other possible structures that might be found on a mid-twentieth century railroad track. The majority of this freight line, at least between Anaheim Avenue and Ocean Boulevard, has been removed.

The PERY freight line first appeared on a map in 1942, but may have been constructed a few years before that (post-1934). It may have been built to facilitate movement of people and supplies to and from the Long Beach community as well as to the harbor during World War II. By 1949, a portion of the line continued to function for freight, but only as far north as Anaheim Avenue. It was still connected along the south, where it turned east at Ocean Boulevard, at its storage yards, then headed north along American Street (now Long Beach Boulevard).

Figure 11. Northern track segment on DeForest Ave., overpass in background, view to southwest

Figure 12. Southernmost railroad track segment, under the W. Shoreline Drive Overpass/Bridge, view to east.

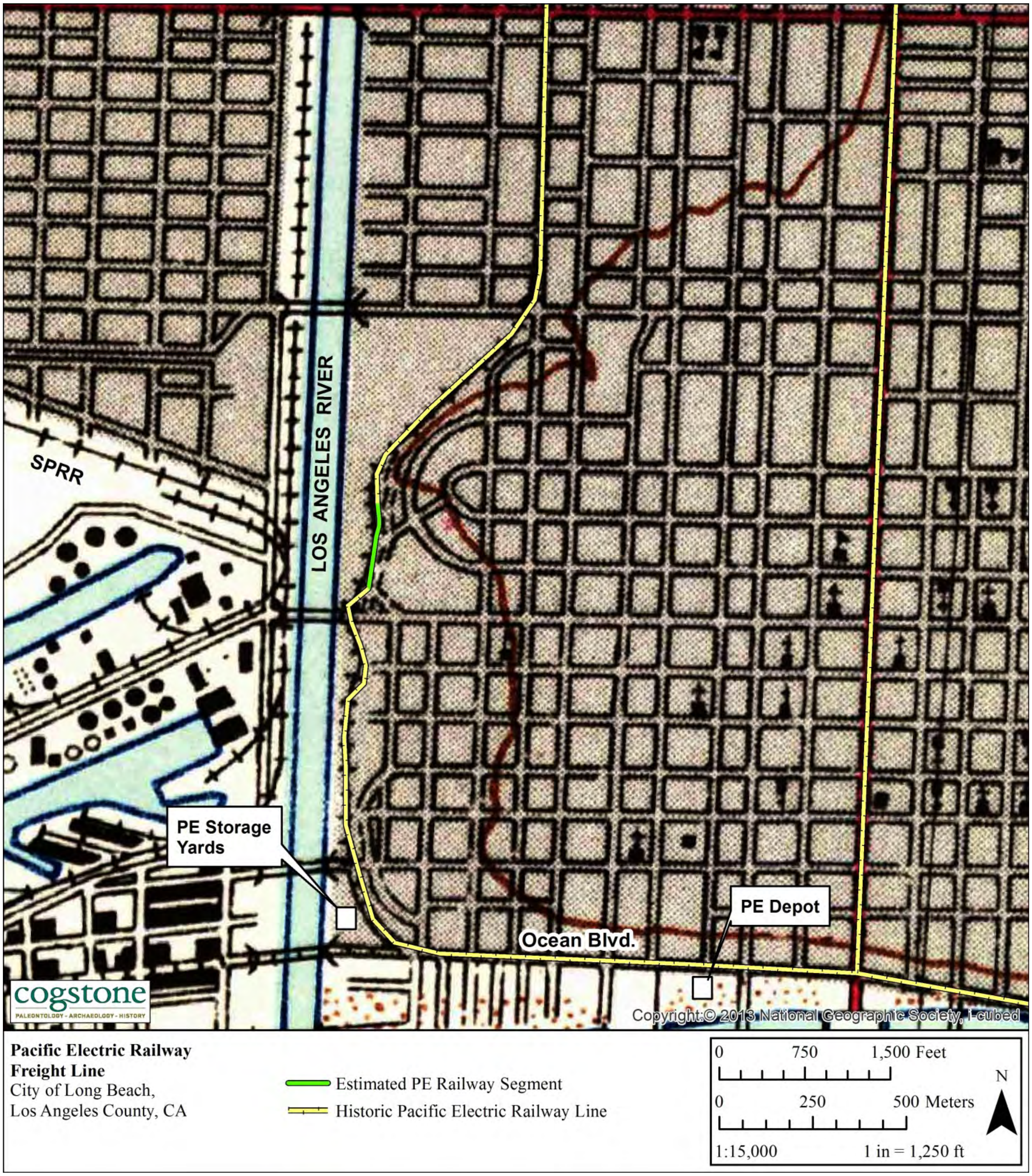

Figure 13. 1942 topographic map showing PERY Long Beach loop.

EVALUATION AND RECOMMENDATIONS

One built environment resource was encountered during the intensive Project Area survey, consisting of two segments of the Pacific Electric Railway, Long Beach Line, designated here as the Pacific Electric Railway Freight Line resource (Appendix B). The railroad segments recorded are thought to be at least 75 years old, possibly several years older. They are historic in age. They are segments of the Pacific Electric Railway that were used for freight rather than for passengers and were added to the Pacific Electric Railway, Long Beach Line several decades after its founding.

They are evaluated here according to the California Register of Historic Resources (CRHR) criteria for significance.

Criterion 1: The railroad line in question first appeared on a map in 1942, but may have been constructed a few years before that (post-1934). It may have been built to facilitate movement of people and supplies to and from the Long Beach community as well as to the harbor during World War II. By 1949, a portion of the line continued to function for freight, but only as far north as Anaheim Avenue. This freight line appears to be associated with events that have made a significant contribution to the broad patterns of our local and regional history, i.e., the World War II war effort in southern California. The site, therefore, appears to be eligible for listing on the CRHR under Criterion 1.

Criterion 2: While a significant person in the history of southern California – Henry Huntington – directly was associated with the founding and operating of the Pacific Electric Railway in 1902, and during ensuing years until 1910, he was not involved with the PERY during the period that the newly-recorded segments were in existence. By then, they were under Southern Pacific Railroad (SPRR) ownership, though still PERY in name. The SPRR was a significant force in the area in the 1870s to the early 1900s. This site is not known to be associated with persons important in our history during its years of existence and, therefore, is not eligible for listing on the CRHR under Criterion 2.

Criterion 3: The two segments of railroad track do not represent the work of a master craftsman or possess high artistic values, nor do they embody distinctive characteristics of mid-twentieth century railroad tracks. They are, therefore, not eligible for listing on the CRHR under Criterion 3.

Criterion 4: Since the resource is a built environment resource and not an archaeological resource, Criterion 4 is not applicable.

Integrity: The two railroad segments observed on the ground surface at and near De Forest Avenue are short remnants of a much longer railroad track which was part of a PERY loop that began and ended just north of Long Beach. As shown on Figure 13, our 680 ft long segment (when the two observed segments are combined with estimated route in between them) is a small part of the PERY loop of 1942. The segments retain their steel rails, spikes, and some other metal track hardware, and their wooden ties, though ties and most metal hardware are not visible on the northern segment that crosses De Forest Avenue. The two segments are discontinuous and are devoid of ballast, signage, signals, and all other possible structures that might be found on a mid-twentieth century railroad track. The majority of this freight line, at least between Anaheim Avenue and Ocean Boulevard, has been removed. The two segments retain their integrity of materials, workmanship, design, and location, but have lost their integrity of feeling, setting, and association. Though the PERY Freight Line is eligible for listing under Criterion 1 for its association with World War II, it lacks sufficient integrity and, therefore, is recommended as not eligible for CRHR listing.

Due to the poor ground visibility in much of the Project Area, it is possible that additional segments of the PERY freight line may be encountered within the southern portion of the Project Area during construction. The tracks may well have been located for a long way within this Project section. In the event of an unanticipated discovery of cultural resources during project related activities, all work must be suspended within 50 feet of the find until a qualified archaeologist evaluates it.

In the unlikely event that human remains are encountered during project development, all work must cease near the find immediately. In accordance with California 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. Work may not resume in the vicinity of the find until all requirements of the health and safety code have been met.

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APPENDIX A. QUALIFICATIONS

TIM SPILLANE, MA, RPA
Project Manager/Principal Investigator I

EDUCATION

2010 Master of Arts in Text and Material Culture (Archaeological Approaches), Roehampton University, London

2008 Dual Bachelor of Arts in Anthropology (Archaeology Emphasis) & English Literature San Francisco State University.

SUMMARY QUALIFICATIONS

Tim Spillane is a Registered Professional Archaeologist with more than eight years of experience working with agencies in the public and private sectors on cultural resource management projects. He has developed particular expertise in the historic and prehistoric archaeology of the San Francisco Bay Area and larger Northern California region, and has a thorough understanding of Section 106, NEPA, and CEQA compliance. He is a cross-trained paleontologist with more than 40 hours of training focused on the identification and collection of paleontological resources and associated data. He has carried out a wide range of management work for the Golden Gate National Recreation Area, the San Francisco Planning Department, the Golden Gate National Parks Conservancy, the California State Parks, PG&E and numerous other agencies.

SELECTED PROJECTS

Golf Course Replacement Project, Veteran's Affairs, Long Beach, CA. Project Manager/Principal Investigator I. Conducted analysis of historical archaeological features and artfacts dating late 19th to mid 20th century. Also conducted analysis of prehistoric artifacts recovered. Prepared artifact analysis sections of report and evaluated features to National Register criteria. Report co-author. 2016-2017

Purple Line Extention Project, Metro/FTA, Los Angeles, CA. Project Manager/Principal Investigator I. Conducted analysis of historical archaeological features and artfacts dating late 19th to mid 20th century. Prepared artifact analysis section of report and evaluated features to National Register criteria. Prepared majority of report. 2016-2017

Presidio Parkway Project, San Francisco County, California. Project Manager/Principal Investigator I. Currently managing monitoring of the numerous prehistoric and historic archaeological sites. Catalogs all artifactual recoveries; composes weekly and semi-annual project reports summarizing monitoring activities and critically examining archaeological discoveries; and develops archaeological treatment and testing plans when necessary. Prepares semiannual reports. 2014-present.

Phase I Archaeological Testing of the Building 83 Garden Site, Alcatraz Island, San Francisco County, California. Project Manager/Principal Investigator I. Assisted National Park Service Archaeologists in Phase I testing of the Building 83 Garden Site, a historic deposit of refuse associated with the Occupation of Alcatraz by American Indians of All Tribes between 1969 and 1971. Spillane carried out site reconnaissance and surface collection of artifacts, assisted in site mapping, placed a series of test excavation units, screened and collected diagnostic resources, and contributed to site documentation. 2016

Embarcadero & Livingston HPR Project, Oakland, Alameda County, California. Archaeologist. Monitored construction activities related to gas line replacement at the Oakland Embarcadero and in an area of high prehistoric and moderate historic archaeological sensitivity, working to identify archaeological features and diagnostic artifacts on site; composing daily monitoring reports; collecting GPS data; photographing discoveries; and coordinating with contractors and the client regarding ground-disturbing activities and monitoring schedules. 2015

555 Fulton Retail-Residential Project, San Francisco County, California. Archaeologist. Monitored the construction of a large retail and residential development in Hayes Valley in San Francisco. He identified numerous historic artifacts and features; composed daily monitoring reports; collected GPS data on resources identified; produced daily project maps in ArcGIS; completed DPR forms for the project site and associated resources; and contributed to the final monitoring report. 2014

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

MOLLY VALASIK
Project Manager and Principal Archaeologist II

EDUCATION

2009 M.A., Anthropology, Kent State University, Kent, Ohio
2006 B.A., Anthropology, Ohio State University, Columbus, Ohio

EXPERIENCE

Ms. Valasik is a Registered Professional Archaeologist with eight years of professional experience. She is a skilled professional who is well-versed in the compliance procedures of CEQA and Section 106 of the NHPA and regularly prepares cultural resources assessment reports for a variety of federal, state, and local agencies throughout California. She has managed local assistance projects involving sidewalk, road, interchange, and bridge improvements with Caltrans/FHWA as the lead agency. In addition, she has prepared cultural resources reports for CEQA/EIR compliance documents for project-level and program-level Specific Plans, General Plans, Master Plans, and Zoning Amendments for mixed-use, residential, commercial and industrial developments. She meets the qualifications required by the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation*
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SELECTED PROJECTS

Old Town Streetscape, Phase 2, Caltrans District 3, City of Elk Grove, Sacramento County, CA. The City proposed construction of bump outs, sidewalk widening, bus lanes, etc. within a National Register-listed historic district. Managed cultural studies including record search, Sacred Lands File search, Native American consultation, intensive-level pedestrian archaeological and architectural surveys, as well as coordination and approval by District 3 of an APE map. The District record was updated. Author of Archaeological Survey Report and Historic Properties Survey Report. Sub to Michael Baker/PMC. Project Manager/Principal Investigator. 2016

SR-138 Palmdale Boulevard PA/ED (Sierra Highway), Caltrans District 7, City of Palmdale, Los Angeles County, CA. The project involved widening State Route 138 and Sierra Highway. Managed cultural studies including record search, Sacred Lands File search, Native American consultations, and intensive-level pedestrian archaeological survey, as well as coordinated approval by District 7 of an APE map. Co-author of the Archaeological Survey Report and Historic Properties Survey Report. Sub to Parsons Transportation. Project Manager/Principal Investigator. 2016

Paradise Valley Specific Plan, County of San Bernardino, near Indio, CA. The proposed project, encompassing 5,411 acres, consists of the construction of a planned community. Directed archaeological survey and extended Phase I activities. Lead author of assessment report. Managed subsequent supplemental survey and updated report. Sub to Envicom. Field Director and GIS Manager. 2011-2013; 2014; 2016

Arlington Avenue Widening, Caltrans District 8, City of Riverside Public Works, Riverside County, CA. The City proposed widening Arlington Avenue one linear mile in order to construct safety improvements. Managed cultural studies including record search, Sacred Lands File search, Native American consultations, and intensive-level pedestrian archaeological survey of the 5-acre site with negative results, as well as coordinated approval by District 8 of an APE map. Co-author of the Archaeological Survey Report and Historic Properties Survey Report. Sub to Michael Baker. Project Manager/Co-Principal Investigator. 2015

Folsom Boulevard Streetscape Enhancement, Caltrans District 3, City of Rancho Cordova, Sacramento County, CA. The City proposed to construct sidewalks, bike lanes, medians, safety fencing, and street and pedestrian lighting along Folsom Boulevard. Managed cultural studies including record search, Sacred Lands File search, Native American consultations, and intensive-level pedestrian archaeological survey, as well as coordination and approval by District 3 of an APE map. Author of Archaeological Survey Report and Historic Properties Survey Report. Sub to Michael Baker/PMC. Project Manager/Principal Archaeologist. 2015

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

LYNN FURNIS, RPA
Principal Archaeologist/Architectural Historian

EDUCATION

1999	M.A., Anthropology, University of Nevada, Reno
1972	B.A., Anthropology, University of California at Davis

SUMMARY QUALIFICATIONS

Ms. Furnis is a Registered Professional Archaeologist, historical archaeologist and architectural historian with 45 years of experience in the western United States. She has experience working in California (15 years), Nevada (25 years) and Alaska. She meets the qualifications required by the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation*. Ms. Furnis is a skilled professional who is well-versed in the compliance procedures of CEQA, Section 106 of the NHPA and in working with a variety of federal, state, and local agencies. As an architectural historian, she has recorded hundreds of historic buildings and authored major architectural survey reports. Coursework completed in World Architecture, Anthropology of Architecture, Vernacular Architecture, and a workshop on The Identification of Mid-Twentieth Century Buildings. As a historical archaeologist, she has supervised crews, conducted surveys and excavations as part of research and CRM projects. Ms. Furnis has supervised large and small artifact processing labs for historic and prehistoric collections; conducted extensive historic research; written reports for inventory, test excavation, and data recovery projects; and analyzed historic artifacts. She has experience evaluating and recommending historic properties for inclusion on the National Register of Historic Places.

SELECTED PROJECTS

Lake Gregory Dam Rehabilitation EIR MMRP, County of San Bernardino Special Districts Department, Crestline, San Bernardino County, CA. Supported a cultural resources assessment for this rehabilitation project consisting of physical improvement to the dam, earthen material hauling and process, relocation of utilities, and traffic detour routes. Services included a review of existing literature and historic maps, a search of records conducted at the SBAIC, and intensive pedestrian survey of the 28.08 acre Project Area. As a result of the survey, two cultural resources were identified and recorded on Department of Parks and Recreation 523 site forms. Prepared a report documenting historic age buildings. The Dam was recommended as not eligible for listing in the CRHR. Sub to Aspen Environmental Group. Principal Archaeologist/Architectural Historian. 2015

Historical Sites Preservation, Veterans Affairs Long Beach Healthcare System, Long Beach, Los Angeles County, CA. The undertakings involve eleven projects, divided into two construction phases for improvements to the campus. Cogstone reviewed prior reports and site records, conducted Section 106 Native American consultation, conducted consultation to develop a NAGPRA POA for all the projects and updated survey and evaluation of 19 buildings. One National Register-listed prehistoric archaeological site, the Puvungna Indian Village, is known on the campus. Cogstone's review of prior documents and updated building survey resulted in the findings that six historic-age buildings at Site P19-187656 had been determined not eligible for the NRHP in 2006, that one more was determined to be not eligible in 2013, and that six additional buildings previously evaluated had not been reviewed by SHPO. During the architectural survey, it was found that 13 more buildings not previously recorded on site forms or evaluated would be directly or indirectly impacted by the proposed projects. The appropriate Department of Parks and Recreation, Primary Record forms, along with the Building, Structure, and Object Record forms were filled out for the 13 buildings, and updated forms were provided. 2014-Present

Purple Line Extension (Westside Subway), Segment 1, Los Angeles Metropolitan Transportation Authority, Beverly Hills, Los Angeles County, CA. On-call responsibility for issues relating to archaeological resources and historic buildings. Served as a subject matter expert on the Ace Gallery Working Group. Coordinating with the historic preservation subconsultant and Metro for completion of the HABS assessment and photo documentation of the Ace Gallery building, now owned by Metro. Managed monitoring of construction that involved removal of flashing from the historic Beverly Hills Porsche dealership building, which is eligible for listing on the National Register of Historic Places. During advanced utility relocation activities, conducted monitoring of construction close to the Fox Wilshire (Saban) Theater, which is a historic building listed in the National Register of Historic Places. A Sub to WEST. Architectural Historian and Historical Archaeologist. 2015-ongoing

APPENDIX B. DPR 523 SITE FORMS

State of California — The Resources Agency **DEPARTMENT OF PARKS AND RECREATION**	**Primary #** **HRI #**	
PRIMARY RECORD	**Trinomial** **NRHP Status Code**	
Other Listings **Review Code**	**Reviewer**	**Date**

 *__Resource Name or #:__ Pacific Electric Railway Freight Line

P1. Other Identifier: Pacific Electric Railway, Long Beach Line

***P2. Location:** ☒ **Not for Publication** ☐ **Unrestricted** ***a. County:** Los Angeles

***b. USGS 7.5' Quad:** Long Beach, Calif. **Date:** 1964 **T** 4S: **R** 13W; **¼ of ¼ of Sec** 2**; SB B.M.**

c. Address: **City:** Long Beach **Zip:**

d. UTM: Zone: 11 S; North endpoint: 0388517**mE/** 3738191 **mN** South endpoint: 0388491**mE/** 3737985 **mN**

e. Other Locational Data: AIN 7278-012-906. The site can be reached by proceeding west on West 7th Street in the city of Long Beach, from Alamitos Avenue. Proceed approximately one mile west and turn right (north) onto Maine Avenue. Proceed approximately 400 ft, to W. 8th Street and turn left (west) onto N. Loma Vista Drive. Proceed to the first cross street which is W. Chester Place. Turn left and proceed to De Forest Avenue. Turn right onto De Forest Avenue, then find a place to park off this end of the road. The site is adjacent to De Forest Avenue as well as under the Shoreline Drive Overpass, located southwest of De Forest Avenue approximately 175 ft. **Elevation:** 12 ft amsl

***P3a. Description:** The site consists of two segments of abandoned railroad track which are located approximately 408 ft apart, but which once were connected as part of one railroad track segment. The southernmost segment is located beneath the W. Shoreline Drive Overpass and is approximately 5 ft long, oriented northeast-southwest, and 8 ft wide (length of ties). The second, northern segment is visible on De Forest Avenue and on the ground surface immediately southwest of the street and is approximately 60 ft long and 5.25 ft wide (outer edge of rail to outer edge of rail). Current aerial photographs depict a trace of the track route on the northeast, then east flank of De Forest Avenue, paralleling the street for another 192 ft to the north. Presumably, the original track also ran between the observed surface segments. The total observable route, based on ground and aerial observations is approximately 680 ft (207m) long. (See attached Continuation Sheet for additional description).

***P3b. Resource Attributes:** AH7: railroad grade/track

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other

P5b. Description of Photo: Northern segment of track, on DeForest Avenue, overpass in background, view to southwest,

***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
Between 1934 and 1942 (NETR 1934, 1942)

***P7. Owner and Address:**
City of Long Beach
333 W. Ocean Blvd.
Long Beach, CA 90802

***P8. Recorded by:**
Holly Duke
Cogstone Resources Management, Inc.
1518 W. Taft Avenue
Orange, CA 92865

***P9. Date Recorded:** March 29, 2017

***P10. Survey Type:** Intensive Pedestrian

***P11. Report Citation:** *Cultural Resources Survey Report for the Long Beach Municipal Urban Stormwater Treatment (Must) Project, City of Long Beach, Los Angeles County, California* (Duke 2017)

***Attachments:** ☐NONE ☒Location Map ☒Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☒Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other:

BUILDING, STRUCTURE, AND OBJECT RECORD

 ***Resource Name or #** Pacific Electric Railway Freight Line ***NRHP Status Code** 6Z

B1. Historic Name: Pacific Electric Railway, Long Beach Line
B2. Common Name: Pacific Electric Railway, Long Beach Line
B3. Original Use: railroad freight transportation **B4. Present Use:** abandoned
***B5. Architectural Style:** railroad utilitarian
***B6. Construction History:** The Pacific Electric Railway (PERY) established its Long Beach Line to Long Beach in 1902 and terminated it in 1961 (Crump 1970:98). The freight line and spurs that comprised the line of which the recorded segments are a part appear to have been constructed between 1934 and 1942 and to have remained in service to at least 1980 (NETR 1934, 1942, 1964, 1972, 1980, 1994, 2015). Since the PERY was out of business in 1961, if the tracks were still in use until 1980, they must have been used by the Southern Pacific Railroad (SPRR) at that time.By 1994, most of the tracks had been removed from this freight segment.
***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown Date:** **Original Location:**
***B8. Related Features:** steel rails, wooden ties
B9a. Architect: N/A **b. Builder:** Pacific Electric Railway
***B10. Significance: Theme:** Freight Rail Transportation **Area:** Long Beach
Period of Significance: 1935-1970 **Property Type:** railroad track **Applicable Criteria:** A

The railroad segments recorded are thought to be at least 75 years old, possibly several years older. They are historic in age. They are segments of the Pacific Electric Railway, but were used for freight rather than for passengers and were added to the Pacific Electric Railway, Long Beach Line several decades after its founding.

Criterion 1: The property first appeared on a map in 1942, but may have been constructed a few years before that. It may have been built to facilitate movement of people and supplies to and from the Long Beach community as well as to the harbor during World War II. By 1949, a portion of the line continued to function for freight, but only as far north as Anaheim Avenue. It was still connected along the south, where it turned east at Ocean Boulevard, at its storage yards, then headed north along American Street (now Long Beach Boulevard). This freight line appears to be associated with events that have made a significant contribution to the broad patterns of our local and regional history, i.e., the World War II war effort in southern California. The site, therefore, appears to be eligible for listing on the CRHR under Criterion 1. (See Continuation Sheet for additional text).

B11. Additional Resource Attributes: none
***B12. References:**

Crump, Spencer
1970 *Henry Huntington and the Pacific Electric*, Trans-Anglo Books, Los Angeles, CA.

NETR (Nationwide Environmental Title Research, LLC)
1934 USGS Long Beach, Calif. 7.5 min quad, accessed online at www.historicaerials.com on May 4, 2017
1942 USGS Long Beach, Calif. 7.5 min quad, accessed online at www.historicaerials.com on May 4, 2017
1964 USGS Long Beach, Calif. 7.5 min quad, accessed online at www.historicaerials.com on May 4, 2017
1972 USGS Long Beach, Calif. 7.5 min quad, accessed online at www.historicaerials.com on May 4, 2017
1980 Aerial photograph, accessed online at www.historicaerials.com on May 4, 2017
1994 Aerial photograph, accessed online at www.historicaerials.com on May 4, 2017
2015 USGS Long Beach, Calif. 7.5 min quad, accessed online at www.historicaerials.com on May 4, 2017

B13. Remarks:
***B14. Evaluator:** Lynn Furnis
***Date of Evaluation:** May 5, 2017

LINEAR FEATURE RECORD

 Resource Name or #: Pacific Electric Railway Freight Line

L1. Historic and/or Common Name: Pacific Electric Railway, Long Beach Line
L2a. Portion Described: ☐ Entire Resource ☒ Segment ☐ Point Observation **Designation:**
b. Location of point or segment: UTMs: Zone: 11 S; North endpoint: 0388517**mE/** 3738191 **mN**
South endpoint: 0388491**mE/** 3737985 **mN**

Legal Description: T 4S: **R** 13W; **¼ of ¼ of Sec** 2**; SB B.M.** The segment is located between the Los Angeles River on the west and De Forest Avenue on the east, and between W. Chester Place and vacant land to the north.

L3. Description: The site consists of two segments of abandoned railroad track which are located approximately 408 ft apart, but which once were connected as part of one railroad track segment. The southernmost segment is located beneath the W. Shoreline Drive Overpass and is approximately 5 ft long, oriented northeast-southwest, and 8ft wide (length of ties). The second, northern segment is visible on De Forest Avenue and on the ground surface immediately southwest of the street and is approximately 60 ft long and 5.25ft wide (outer rail to outer rail width). It is also oriented northeast-southwest. The southern segment consists of one track, with two parallel steel rails, spikes, and other track hardware, and wooden ties. These could not be measured as they were fenced off and were close to homeless people living under the overpass. The northern segment consists of two parallel steel rails, the tops of which are exposed at ground and street level, where they cross De Forest Avenue. No wooden ties are exposed on this segment, though wood parallel to the rails, with some hardware is apparent in one place (see photo on Continuation Sheet). This is an unusual construction, possibly made because the rail is in the roadbed.

L4. Dimensions:
a. Top Width: 63 inches between outer edges of rails on northern segment (60 inches center to center)
b. Bottom Width: 8 ft estimated tie length
c. Height or Depth: estimated 6 inches
d. Length of Segment: North segment is approximately 60 ft long.
South segment is approximately 5 ft long

L4e. Facing:

The segments recorded are both flat, lying directly on current ground surface, with no ballast visible. The northern segment (see photo) appears slightly banked in its modest curve where it crosses De Forest Avenue. No cross-section is given.

L5. Associated Resources: none
L6. Setting: The segments are located close to the Los Angeles River, on its east flank, along a narrow strip of flat, open dirt ground. To the east are industrial buildings, beyond which is a residential neighborhood. To the south and the west are Long Beach Harbor facilities.
L7. Integrity Considerations: The two railroad segments observed on the ground surface at and near De Forest Avenue are short remnants of a much longer railroad track which was part of a PERY loop that began and ended just north of Long Beach. The segments retain their steel rails, spikes, and some other metal track hardware, and their wooden ties, though only the steel rails are visible on the northern segment that crosses De Forest Avenue. But the two segments are discontinuous and are devoid of ballast, signage, signals, and all other possible structures that might be found on a mid-twentieth century railroad track. The majority of this freight line, at least between Anaheim Avenue and Ocean Boulevard, has been removed. No other segments of it were observed during the survey to the north and south of Shoreline Drive Overpass. The two segments retain their integrity of materials, workmanship, design, and location, but have lost their integrity of feeling, setting, and association. The segments lack sufficient integrity and, therefore, are recommended as not eligible for CRHR listing.

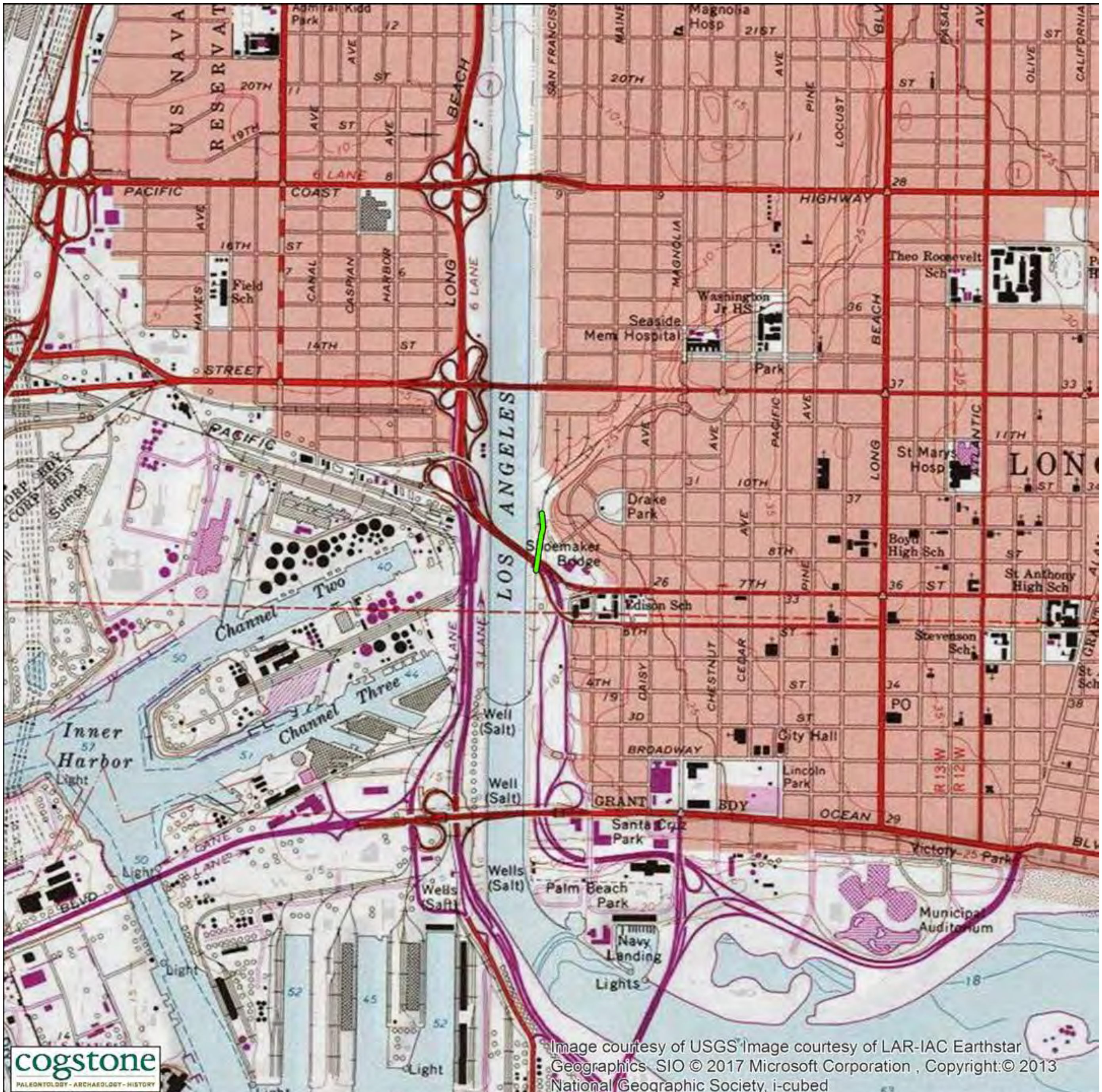
L8a. Photograph, Map or Drawing

L8b. Description of Photo, Map, or Drawing Northern segment of track, on Fairbanks Avenue, overpass in background, view to southwest, frame 2017_03_29_HAD MUST 1 (17).
L9. Remarks:
L10. Form Prepared by: Lynn Furnis
L11. Date: May 5, 2017

State of California — The Resources Agency **DEPARTMENT OF PARKS AND RECREATION**	**Primary #** **HRI#**
LOCATION MAP	**Trinomial**

Page 4 **of** 7 ***Resource Name or #:** Pacific Electric Railway Freight Line

***Map Name:** Long Beach, CA ***Scale:** 1:24,000 ***Date of Map:** 1964, photorevised 1972



Pacific Electric Railway
Freight Line
City of Long Beach,
Los Angeles County, CA

PE Railroad Segment

USGS 7.5' Quads:
LONG BEACH

0 0.25 0.5 Miles

N

0 0.25 0.5 Kilometers

1:24,000 1 in = 2,000 ft

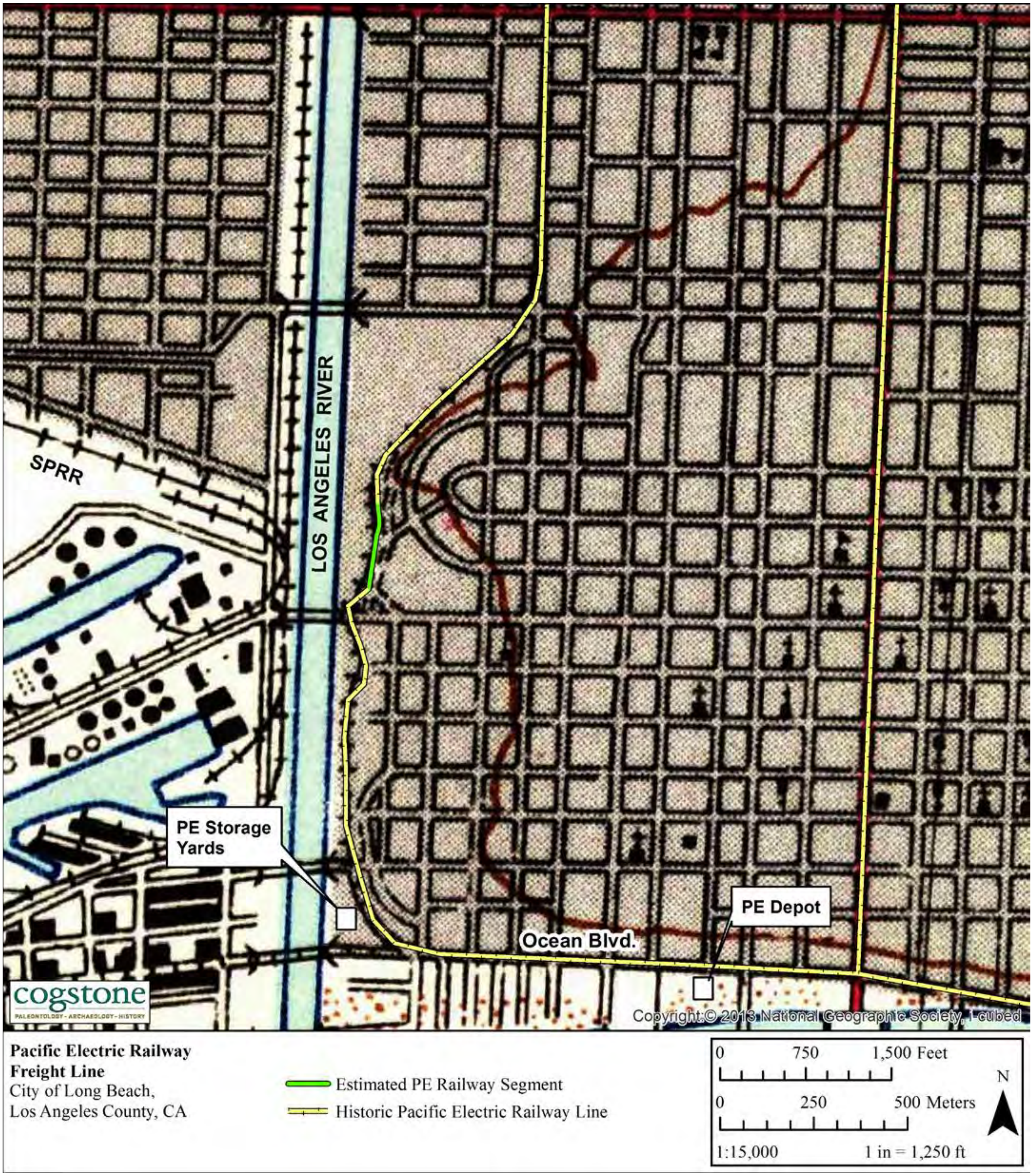
Primary #
HRI#

SKETCH MAP

Trinomial

Page 5 **of** 7

***Resource Name or #** Pacific Electric Railway Freight Line



***Drawn By:** Megan Wilson

***Date:** May 5, 2017

***Recorded by:** Holly Duke ***Date:** March 29, 2017

***P3a. Description (continued)**: The presence of a railroad track at this location was first depicted on a 1942 USGS topographic map (NETR 1942), which extended north, then northeast, to a warehouse cluster, then north again to join the main Pacific Electric Long Beach Line. From the observed track segments, this 1942 line also extended south, to Ocean Boulevard, then east to Long Beach Boulevard (formerly American Avenue), where it turned north and ran through Dominguez Junction, Compton, Watts, and beyond (Crump 1970:98). Based on its location, this north-south segment of the Pacific Electric Railway would appear to be a route used for freight service, rather than passenger service.

The Pacific Electric Railway (PERY), Long Beach Line began its passenger service to Long Beach in 1902 and terminated it in 1961 (Crump 1970:98). In order to further compete with the dominant and rival Southern Pacific Railroad (SPRR) in the area, the PERY added freight service to its offerings early in its life. The particular line here, along the east flank of the Los Angeles River and north of Ocean Boulevard, does not appear to have been constructed until the beginning of World War II. During World War II, commuter and freight business increased dramatically for the PERY, due to the intense war effort and its focus on the Long Beach harbor for shipment of people and supplies to local and overseas destinations (Crump 1970:23). Based on topographic maps, the PERY freight line through the site area continued in place, with several spurs serving warehouses immediately south of Anaheim Street, between the river and Magnolia Avenue from 1949 to at least 1981 (NETR 1949, 1964, 1972, 1981, 2015). Though the PERY was out of business in 1961, it is possible the site area tracks were still in use after that, but by SPRR, as by 1964, a tall, wide loop railroad bridge crossed the Los Angeles River south of Shoreline Drive overpass/Bridge which connected tracks on the west side of the river with those on the east (NETR 1964, 1972, 1981, 2015). Between 1994 and 2015, the loop bridge was removed.

The PERY freight line and its spurs on the east side of the river, up to Anaheim Street, are visible on aerial photographs as late as 1980 and may possibly have still been in use, as a few individual train cars appear to be standing on the tracks near the warehouses at that time (NETR 1980, 1994). By 1994, the tracks appear to have been mostly removed, though the location of the railbed can still be seen, clearly ending at Anaheim Street.

***B10. Significance (continued):**
Criterion 2: While a significant person in the history of southern California – Henry Huntington – directly was associated with the founding and operating of the Pacific Electric Railway in 1902, and during ensuing years until 1910, he was not involved with the PERY during the period that the newly-recorded segments were in existence. By then, they were under Southern Pacific Railroad (SPRR) ownership, though still PERY in name. The SPRR was a significant force in the area in the 1870s to the early 1900s. This site is not known to be associated with persons important in our history during its years of existence and, therefore, is not eligible for listing on the CRHR under Criterion 2.

Criterion 3: The two segments of railroad track do not represent the work of a master craftsman or possess high artistic values, nor do they embody distinctive characteristics of mid-twentieth century railroad tracks. They are, therefore, not eligible for listing on the CRHR under Criterion 3.

Criterion 4: Since the resource is a built environment resource and not an archaeological resource, Criterion 4 is not applicable.

Integrity: The two railroad segments observed on the ground surface at and near De Forest Avenue are short remnants of a much longer railroad track which was part of a PERY loop that began and ended just north of Long Beach. As shown on the large sketch map (attached), our 680 ft long segment (when the two observed segments are combined with estimated route in between them) is a small part of the PERY loop of 1942. The segments retain their steel rails, spikes, and some other metal track hardware, and their wooden ties, though ties and metal hardware are not visible on the northern segment that crosses De Forest Avenue. But the two segments are discontinuous and are devoid of ballast, signage, signals, and all other possible structures that might be found on a mid-twentieth century railroad track. The majority of this freight line, at least between Anaheim Avenue and Ocean Boulevard, has been removed. The two segments retain their integrity of materials, workmanship, design, and location, but have lost their integrity of feeling, setting, and association. Though the PERY Freight Line is eligible for listing under Criterion 1 for its

***Recorded by:** Holly Duke ***Date:** March 29, 2017

association with World War II, it lacks sufficient integrity and, therefore, is recommended as not eligible for CRHR listing.

L7. Integrity Considerations (continued):

Photographs:

Southernmost observed railroad track segment, located under the W. Shoreline Drive Overpass/Bridge, view to east.

Northernmost segment of track, located on De Forest Avenue, aerial view of rails and wood

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

PALEONTOLOGICAL RESOURCES ASSESSMENT FOR THE LONG BEACH MUNICIPAL URBAN STORMWATER TREATMENT PROJECT, CITY OF LONG BEACH, LOS ANGELES COUNTY, CALIFORNIA

Prepared for:
Michael Baker International

Author and Principal Investigator:
Kim Scott, Qualified Principal Paleontologist

April 2017

Cogstone Project Number: 3993-00
Type of Study: Paleontological Assessment
Sites: none within the project boundaries
USGS Quadrangle: Long Beach and Southgate
Length: about 8 miles
Key Words: modern artificial fill- very low (PFYC 1); Holocene sediments which may be only 5 feet thick- low (PFYC 2); undifferentiated Pleistocene sediments, Palos Verdes Sand, and San Pedro Formation - moderate but patchy (PFYC 3a)

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SUMMARY OF FINDINGS

The purpose of this document is to assess the potential for impacting paleontological resources resulting from construction of the proposed Long Beach Municipal Urban Stormwater Treatment Project, City of Long Beach, Los Angeles County, California. The project is intended to improve the water quality of existing urban runoff to the Los Angeles River, and ultimately to the Long Beach Harbor. This project area is approximately 8 miles long and is located both east and west of the Los Angeles River. Project excavations are planned to be 15 feet to 30 feet deep.

The project is mapped as modern artificial fill, Holocene and late Pleistocene alluvium and alluvial fans, and late to middle Pleistocene non-marine and nearshore marine deposits. At the eastern edges of the project, is an outcrop of the old marine to non-marine deposits. In the area of the Palos Verdes Hills, both the late to middle Pleistocene Palos Verdes Sand and the early Pleistocene San Pedro Formation are present adjacent to and beneath the old marine to non-marine deposits.

Results of the record search indicate that no previous fossil localities have been recorded within the project boundaries. Three of the ten project segments will affect sedimentary rocks known to produce fossils including Pleistocene alluvium, Palos Verdes Sand and San Pedro Formation.

The surface survey had poor ground visibility, from 0% to 10%, and the only sediments observed were artificial fill or Holocene sediments. No fossils were observed during the survey.

The modern artificial fill is assigned a very low (PFYC 1) fossil potential. The Holocene portions of the alluvium and alluvial fans are assigned a low (PFYC 2) fossil potential. Pleistocene deposits can be encountered in the alluvium and alluvial fans more than 5 feet below the surface. There the sensitivity is raised to moderate but patchy (PFYC 3a). Both the late to middle Pleistocene Palos Verdes Sand and the early Pleistocene San Pedro Formation are ranked as moderate but patchy sensitivity (PFYC 3a).

The linear project alignment is paleontologically sensitive for all excavations more than five feet in depth. Planned excavations range from 15 to 30 feet below the current surface. A Paleontological Resources Management Plan is recommended for this project and should consider subsurface information from geotechnical testing if available.

INTRODUCTION

PURPOSE OF STUDY

The purpose of this document is to assess the potential for impacting paleontological resources resulting from construction of the proposed Long Beach Municipal Urban Stormwater Treatment Project, City of Long Beach, Los Angeles County, California (Figures 1, 2).

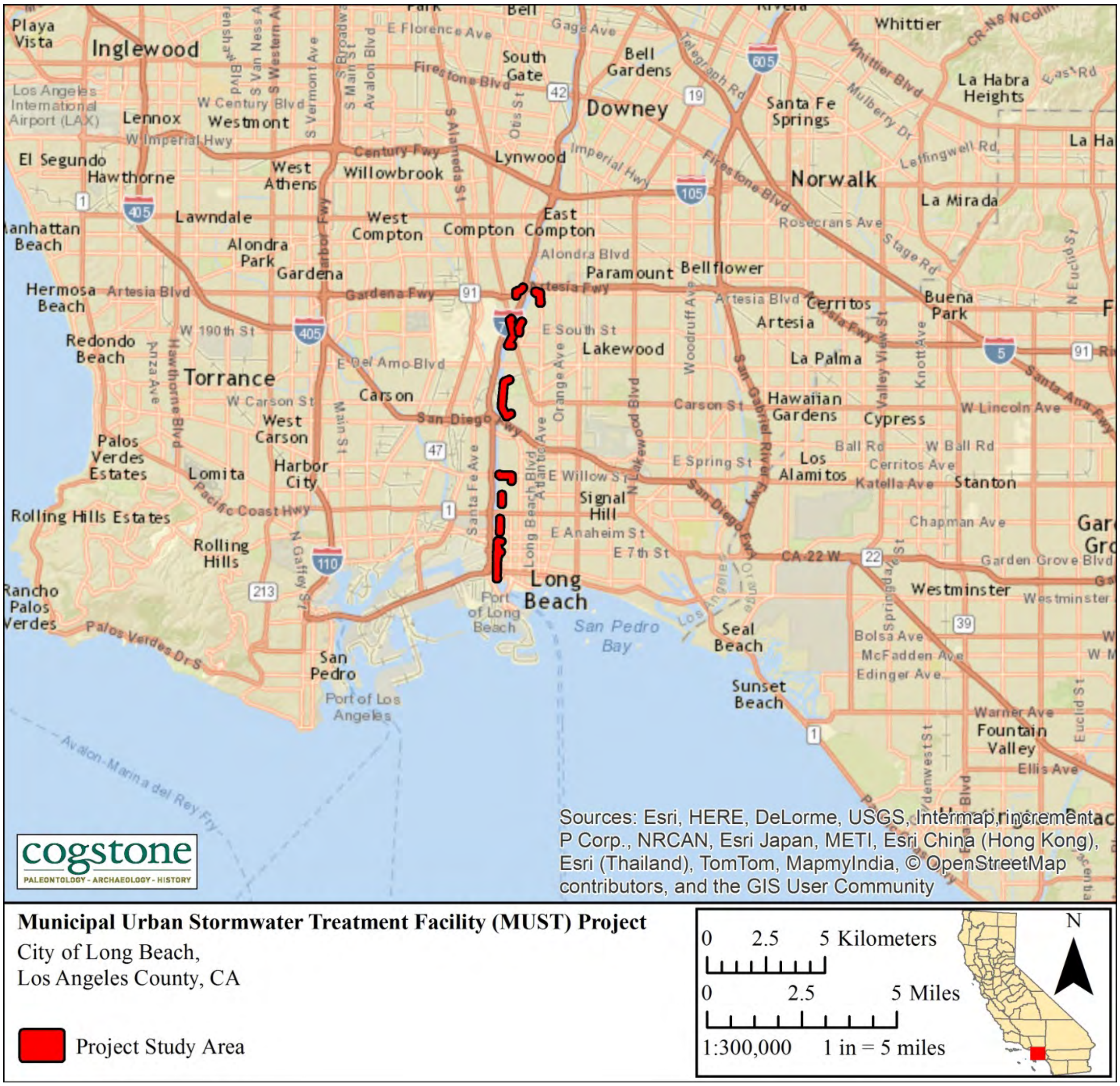


Figure 1. Project vicinity map

PROJECT LOCATION AND DESCRIPTION

The proposed Long Beach Municipal Urban Stormwater Treatment (MUST) Project (project) is located entirely within the City of Long Beach, generally extending along the Los Angeles River for a distance of approximately eight miles (Figure 2). The approximate limits of the project site are from State Route 91 (SR-91) to the north to Ocean Boulevard to the south. The project is intended to improve the water quality of existing urban runoff to the Los Angeles River, and ultimately to the Long Beach Harbor. Currently, pollutants (metals, bacteria, hydrocarbons, pesticides, and trash) enter the Los Angeles River via urban runoff; the proposed project would divert flows from tributary areas immediately east and west of the river to the MUST facility for treatment prior to discharge, resulting in water quality benefits in the project area.

The proposed project would include two primary project components: 1) the MUST facility; and 2) conveyance facilities. A brief summary of these facilities is provided below:

- **MUST Facility:** The MUST facility would be sited in close proximity to the City's existing Pump Station No. SD-01, on the east side of the Los Angeles River near the existing Shoemaker Bridge. The MUST facility would include facilities related to solids removal, oxidation, filtration, and disinfection, followed by a treated water terminal storage pond.

- **Conveyance Facilities:** The project would include conveyance facilities to carry stormwater from tributary areas to the MUST facility. Stormwater would be conveyed to the MUST facility via a combination of existing and proposed facilities. The project would include 11 segments of new conveyance facilities that would provide the connections that would complete the approximately 8-mile conveyance system. 9 of these segments are located east of the Los Angeles River, one west of the river, and one within the Long Beach Boulevard Bridge. Two options exist for conveyance – as underground pipelines, or as open channel facilities that provide for biofiltration pre-treatment and open space/aesthetic opportunities. A combination of the two options would be implemented.

It is anticipated that the project would occur entirely within existing public rights-of-way, and no right-of-way acquisition would be required for project implementation.

PROJECT STUDY AREA

The conveyance facility excavations are planned to be a maximum of 15 feet below surface. Areas where excavation could reach 30 feet would be at the diversion structures, connection structures, and the MUST facility (Figure 2). At present no cut exhibit is available for this project.

Figure 2. Project Study Area Map

Cogstone

This project is mapped on the Long Beach and Southgate 7.5' United States Geological Survey quadrangles (Table 1).

Table 1. USGS 7.5' maps, Township Ranges, and Sections

7.5' Topographic Quadrangle	Map year, year photo revised	Township	Range	Section(s)
Southgate	1964, photo revised 1984	3 South	13 West	25
Long Beach	1964	3 South	13 West	36
Long Beach		4 South	13 West	01, 12, 13, 14, 23, 24, 25, 26 and 36
Long Beach		5 South	13 West	02 and 11

PROJECT PERSONNEL

Cogstone conducted the paleontological resources studies and a brief resume of the principal investigator is appended (Appendix A). Additional qualifications of key Cogstone staff are available at http://www.cogstone.com/key-staff/

- Kim Scott served as the Principal Paleontologist for the project and wrote this report. Scott has a M. S. in Biology with an emphasis in paleontology from California State University, San Bernardino, a B.S. in Geology with an emphasis in paleontology from the University of California, Los Angeles, and over 20 years of experience in California paleontology and geology.
- Sherri Gust reviewed this report for quality control. Gust has a M.S. in Anatomy (Evolutionary Morphology) from the University of Southern California, a B.S. in Anthropology from the University of California at Davis and over 35 years of experience in California.
- André Simmons prepared the Geographic Information System (GIS) maps throughout this report. Simmons has a M.A. in Anthropology from California State University Fullerton, a GIS certification, and over eight years of experience in California archaeology and paleontology.
- Holly Duke of Cogstone performed a joint archaeological and paleontological field evaluation. She has a double B.A. in Archaeology and History from Simon Fraser University, Canada, and over four years of experience in California archaeology and paleontology.

REGULATORY ENVIRONMENT

STATE LAWS AND REGULATIONS

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 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.

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 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."

BACKGROUND

GEOLOGICAL SETTING

The project lies at the western edge of the broad coastal plain of Orange County, 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, 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. The Peninsular Ranges Geomorphic Province is located in the southwestern corner of California and is bounded by the Transverse Ranges Geomorphic Province to the north and the Colorado Desert Geomorphic Province to the east (Wagner, 2002).

SURFACE STRATIGRAPHY

The project is mapped as Holocene (modern to 11,700 years old) and late to middle Pleistocene (11,700 to 500,000 years old) non-marine and nearshore marine deposits (Figure 3; Saucedo et al. 2016). At the eastern edges of the project, adjacent to and beneath the old marine to non-marine deposits is the late to middle Pleistocene Palos Verdes Sand and the early Pleistocene (500,000 years to 2.6 million years old) San Pedro Formation. Aside from the artificial fill, all sediments were deposited by the Los Angeles River and the Pacific Ocean.

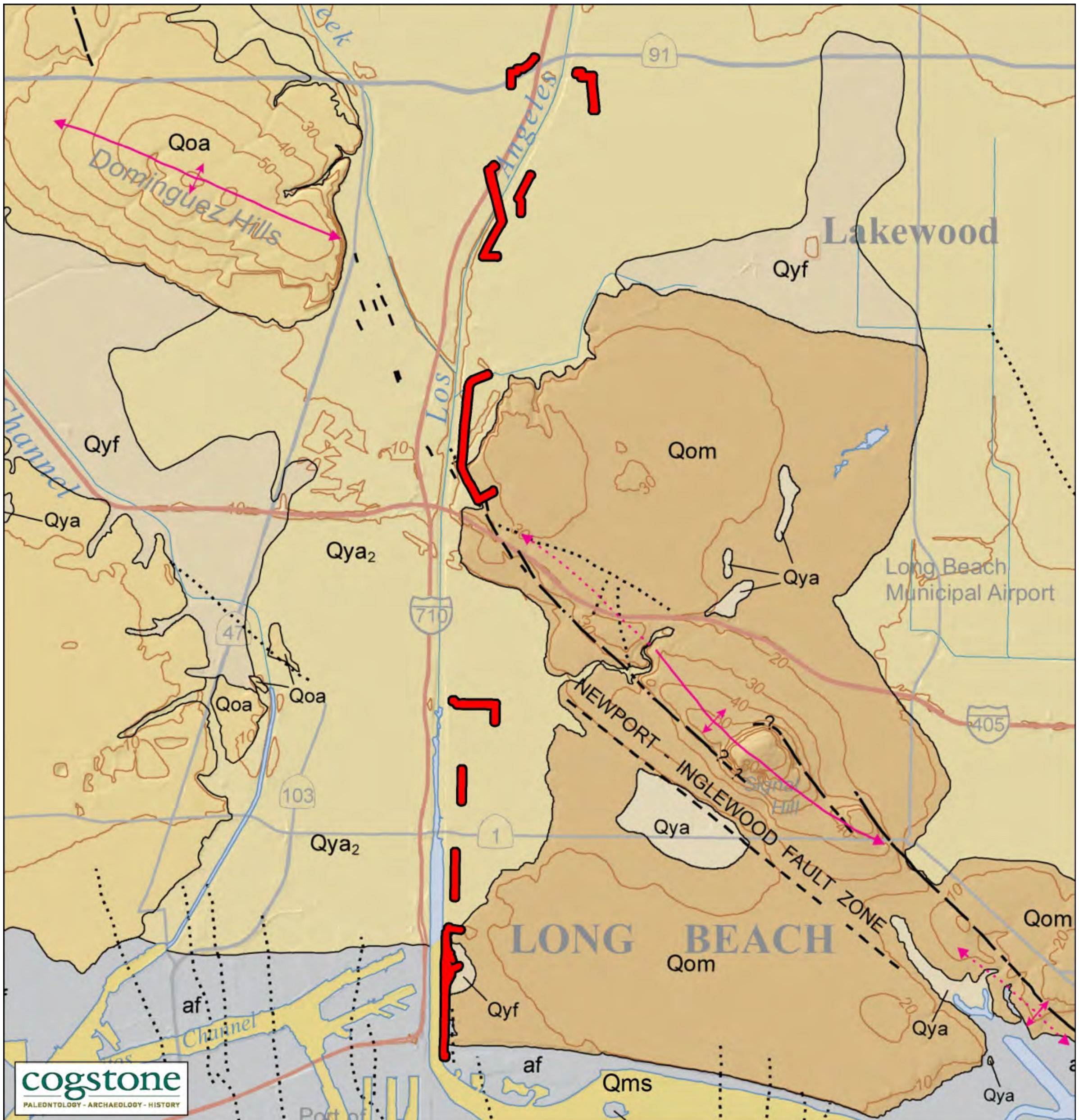
Both the fossiliferous Pleistocene deposits of the Palos Verdes Sand and the San Pedro Formation are present nearby at the surface, while fossiliferous Pleistocene alluvium is present in some nearby areas at 5 feet below the surface (Figure 4).

MODERN ARTIFICIAL FILL

Modern artificial fill (af) from construction activities is present at the southern end of the project. Most fill in California is less than 200 years old and is associated with all construction and mining activities. These sediments will not contain scientifically significant fossils if any are present. Only large areas of fill are typically mapped (Saucedo et al. 2016).

YOUNG ALLUVIUM UNIT 2, HOLOCENE AND LATE PLEISTOCENE

Holocene to late Pleistocene (Qya_2) flood plain deposits consist of poorly sorted, permeable clays to sands. Deposits are poorly consolidated and may be capped by poorly to moderately developed soils. These sediments were deposited by streams and rivers on canyon floors and in the flat flood plains of the area (Saucedo et al. 2016).



Municipal Urban Stormwater Treatment Facility (MUST) Project

City of Long Beach,
Los Angeles County, CA

Project Study Area

0 3,500 7,000 Feet

0 750 1,500 Meters

N

1:84,000 1 in = 7,000 ft

Geology Legend: modified from Saucedo et al., 2016

- af: artificial fill (late Holocene)
- Qms: unconsolidated shelf sediment (late Holocene)
- Qya: young alluvium, undivided (Holocene and late Pleistocene)
- Qya2: young alluvium, unit 2 (Holocene and late Pleistocene)
- Qyf: young alluvial fan deposits, undivided (Holocene and late Pleistocene)
- Qoa: old alluvium, undivided (late to middle Pleistocene)
- Qom: old shallow marine deposits on wave-cut surface (late to middle Pleistocene)

Figure 3. Project geology map

YOUNG ALLUVIAL FAN DEPOSITS, HOLOCENE AND LATE PLEISTOCENE

Holocene to late Pleistocene (modern to 120,000 years old), young alluvial fans have been deposited downslope of canyons by streams, flash floods, and debris flows. During periods of non-deposition, soils could form in the environment. Nearer to the mountains, these sediments are coarse-grained, but farther from the mountains the sediments are finer and are more likely to contain fossils. Although the surficial sediments are less than 11,700 years old and too young to contain fossils, deeper sediments might contain fossils (Qyf; Saucedo et al. 2016).

OLD MARINE TO NON-MARINE DEPOSITS, LATE TO MIDDLE PLEISTOCENE

These late to middle Pleistocene (11,700 to 500,000 years old), which interfinger near shore marine and non-marine sediments, were deposited along the ancient coast. Beach, estuarine, and reddish-brown alluvial deposits of clays to sands and conglomerates are now frequently present as wave cut platforms brought to the surface by uplift (Qom; Saucedo et al. 2016).

OTHER STRATIGRAPHY

Both the late to middle Pleistocene (11,700 to 500,000 years old) Palos Verdes Sand and the early Pleistocene (500,000 to 2.6 million year old) San Pedro Formation are poorly exposed at the surface and are mapped at more than 100 feet below the surface along the center of the Los Angeles channel valley area. However these two units appear at the margins of the late to middle Pleistocene old marine to non-marine deposits (Saucedo et al. 2016) and will likely be present sub-surficially near the border of this unit.

PALOS VERDES SAND, LATE TO MIDDLE PLEISTOCENE

Woodring et al. (1946) mapped the late to middle Pleistocene Palos Verdes Sand just under the sediments that Saucedo et al. (2016) label as late to middle Pleistocene old marine to non-marine deposits (Qom). However, Poland and Piper (1956) included the Palos Verdes Sand in with the deposits that Saucedo et al. (2016) label as late to middle Pleistocene old marine to non-marine deposits.

The Palos Verdes Sand consists of near shore marine sands to pebbles with some silts and clays. These sediments locally occur on the first marine terrace and can range from a few inches to 15 feet thick around the Palos Verdes Peninsula. On Reservation Point near the southwestern end of the Terminal Island, the Palos Verdes Sand was measured to be between 2 and 5 feet thick, while in San Pedro the deposits range from 2.25 feet to 7.75 feet. These sediments were exposed at the surface typically underlying non-marine terrace deposits and overlying the San Pedro Formation (Woodring et al. 1946).

San Pedro Formation, early Pleistocene

Underlying the Palos Verdes Sand is the San Pedro Formation. This marine deposit consists of poorly sorted fine- to medium-grained sands, silty sands, and thin pebble lenses from a nearshore marine environment (Saucedo et al. 2016). The sands are cross-bedded or normally bedded and this formation can be as much as 300 feet thick (Woodring et al. 1946).

RECORDS SEARCH

Cogstone requested a records search from the Natural History Museum of Los Angeles County, Department of Vertebrate Paleontology that covered the project area as well as a 1 mile radius (McLeod 2017; Appendix B). In addition, online and print resources including the University of California Museum of Paleontology Database (UCMP 2017), and Woodring et al. (1946) were reviewed. Results of the record search indicate that no previous fossil localities have been recorded within the project boundaries. However, 117 localities with almost 3900 fossil specimens were identified within 5 miles of the proposed project area (Appendix C).

UNDIFFERENTIATED QUATERNARY LOCALITIES

Terrestrial mammal fossils documented from the Quaternary (Holocene and Pleistocene) deposits are most likely from the late Pleistocene alluvium. McLeod (2017), UCMP (2017), and Woodring et al. (1946) identified 25 localities that produced over 1360 fossil specimens, and 16 of these localities contained the remains of fossil vertebrates. Extinct taxa include mammoths, bison, camels, horse and two species of clams. Sea lion, whale, bird, eagle rays, and bony fish were also recovered from these deposits (Appendices B, C). In addition, Bishop pine was recovered from one locality. The rest of the fossils consisted of marine bivalves, snails, scaphopods, bryozoans, and stony coral (Appendix C). Of particular note is that McLeod (2017) indicated that some fossils of extinct animals were present as shallow as 5 feet below the surface (Figure 4).

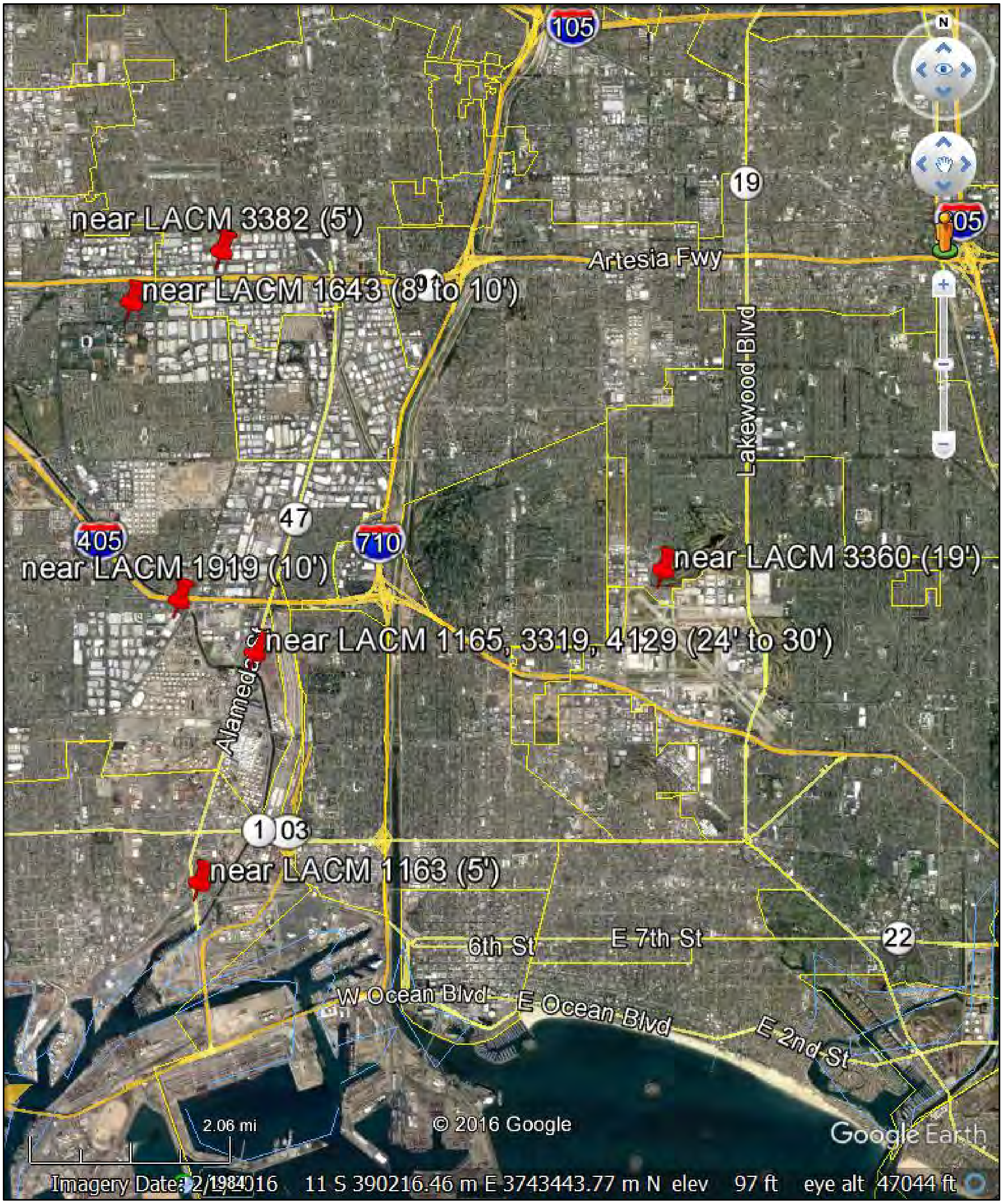


Figure 4. Pleistocene localities where depth of fossils was recorded

PALOS VERDES SAND

The Palos Verdes Sand is present at and near the surface and may occur under the deposits mapped as late to middle Pleistocene old marine to non-marine deposits (Qom; Figure 3). UCMP (2017) identified 77 localities that produced over 400 fossil specimens from the Palos Verdes Sand near to the project. Three of these localities contained the remains of fossil vertebrates. A specimen of the now extinct Law's flightless sea duck was recovered from these sediments. Eared seal, harbor seal, gopher, eagle rays, shark and bony fish were also recovered from these deposits. Most of the marine invertebrates recovered from Pleistocene deposits are still living today and included bivalves, snails, scaphopods, decapods, and echinoderms (Appendix C).

SAN PEDRO FORMATION

The San Pedro Formation is present at and near the surface and may occur under the deposits mapped as late to middle Pleistocene old marine to non-marine deposits (Qom; Figure 3). The UCMP (2017), and Woodring et al. (1946) identified 15 localities that produced over 2100 fossil specimens. At the most important locality, the San Pedro Lumberyard, produced the remains of 550 terrestrial and non-marine vertebrates. Extinct taxa from the San Pedro Lumberyard included ground sloth, dire wolf, sabre-toothed cat, American lion, mammoth, horse, dwarf pronghorn, bison, camels, Law's flightless sea duck, and a harlequin duck. Still living taxa recovered include cougar, sea otter, sea lion, eared seals, dolphins, whales, mule deer, rabbits, rodents, birds, snakes, turtles, amphibians, fish, and decapods. The other 14 localities produced fossils of the Law's flightless sea duck as well as over 1900 specimens of bivalves, snails, scaphopods, shrimp, and crabs (Appendix C).

SURVEY

METHODS

The survey stage is an important part of the project's environmental assessment phase. Its purpose is to confirm that field observations conform to the geological maps of the project area . Sediments are assessed for their potential to contain fossils. Additionally, if there are known paleontological resources the survey will verify the exact location of those resources, the condition or integrity of each resource, and the proximity of the resource to the project area. All undeveloped ground surface areas within the ground disturbance portion of the project area were examined. 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.

Holly Duke of Cogstone performed a joint archaeological and paleontological field survey of the project area on March 29, 2017. Overall ground visibility ranged from 0% to 10% due to extensive hardscaping.

RESULTS

Due to the poor ground visibility from construction and vegetation throughout the survey area, the only sediments observed consisted of artificial fill or Holocene sediments (Figures 5, 6). No fossils were observed during the survey.

Figure 5. A path in younger alluvial sediments northwest of Artesia Blvd and Atlantic Ave.

Figure 6. Younger alluvial sediments along Fairbanks Ave.

PALEONTOLOGICAL SENSITIVITY

The Potential Fossil Yield Classification (PFYC) utilizes a multi-level scale for fossiliferous sensitivity (BLM 2008; Appendix D). Knowledge of the geological formations gleaned from geological maps, the survey, and records of previous fossils recovered from the area provide the basis for determining the paleontological sensitivity of the sediments found within the project area. In general, invertebrate localities are less sensitive for fossils than vertebrate localities.

The project is mapped as modern artificial fill, Holocene and late Pleistocene alluvium and alluvial fans, and late to middle Pleistocene non-marine and nearshore marine deposits. The latter deposits crop out at the eastern edges of the project. In the area of the Palos Verdes Hills, the late to middle Pleistocene Palos Verdes Sand and the early Pleistocene San Pedro Formation are present adjacent to and beneath the old marine to non-marine deposits.

The modern artificial fill is assigned a very low (PFYC 1) fossil potential. The Holocene portions of the alluvium and alluvial fans are assigned a low (PFYC 2) fossil potential. Pleistocene deposits can be encountered in the alluvium and alluvial fans more than 5 feet below the surface (Figure 4; McLeod 2017). There the sensitivity is raised to moderate but patchy (PFYC 3a). Both the late to middle Pleistocene Palos Verdes Sand and the early Pleistocene San Pedro Formation are ranked as moderate but patchy sensitivity (PFYC 3a).

Table 2. Sensitivity of various formations within the project area

Formation	Very high (PFYC 5)	High (PFYC 4)	Moderate, patchy (PFYC 3a)	Low (PFYC 2)	Very low (PFYC 1)
artificial fill, modern					X
alluvium, Holocene and late Pleistocene			X (starting at 5' deep)	X (surface deposits)	
alluvial fans, Holocene and late Pleistocene			X (starting at 5' deep)	X (surface deposits)	
old marine to non-marine deposits, late to middle Pleistocene			X		
Palos Verdes Sand, late to middle Pleistocene			X		
San Pedro Formation, early Pleistocene			X		

STUDY FINDINGS AND RECOMMENDATIONS

Numerous fossils of extinct animals are known from the undifferentiated Pleistocene sediments, the Palos Verdes Sand, and the San Pedro Formation near the planned project. Planned excavations range from 15 to 30 feet below the current surface. The entire project alignment is sensitive for fossils at depths of five feet or more.

A Paleontological Resources Management Plan is recommended for this project and should consider subsurface geotechnical information if available. The plan shall detail paleontological resources awareness training for earthmoving personnel, provide a rationale for spot-checking to determine when sediments suitable for fossil preservation have been reached in each location and implement monitoring at that point. The plan shall also provide a framework for evaluating fossils recovered for significance under CEQA. Fossils meeting significance criteria shall be prepared, identified by experts and submitted for curation at an accredited museum such as the Natural History Museum of Los Angeles County. The plan should include a curation agreement with the museum so that the museum’s data requirements are part of the plan.

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McLeod, S. (Natural History Museum of Los Angeles County)
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APPENDIX A: QUALIFICATIONS

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

KIM SCOTT
Principal Investigator for Paleontology
Field & Lab Director for Paleontology

EDUCATION

2013 M.S., Biology with a paleontology emphasis, California State University, San Bernardino
2000 B.S., Geology with paleontology emphasis, University of California, Los Angeles

SUMMARY QUALIFICATIONS

Scott has more than 20 years of experience in California paleontology. She is a qualified geologist and field paleontologist with extensive survey, monitoring and fossil salvage experience. In addition, she has special skills in fossil preparation (cleaning and stabilization) and preparation of stratigraphic sections and other documentation for fossil localities. Scott serves as company safety officer and is the author of the company safety and paleontology manuals.

SELECTED PROJECTS

Coto de Caza EIR Subdivision, Coto de Caza, Orange County, CA. The project proposes the subdivision of an existing large estate for development of 28 new residential lots on approximately 50-57 acres of land. Proposed residential lots will be a minimum of one acre in size. Prepared a Paleontological Assessment Report. Contracted to Bill Lyon. Co-Principal Paleontologist/Report Co-author. 2015.

Little Corona, Newport Beach, Orange County, CA. The project is part of the Newport Coast Watershed Management Plan and proposes the diversion of water from Buck Gully Creek into a subsurface infiltration gallery in which the Creek water will be percolated through the sand in order to improve beach conditions. Prepared the Archaeological and Paleontological Assessment Report. Contracted to Michael Baker RBF. Co-Principal Paleontologist/Report Co-author. 2015.

Center Avenue, Huntington Beach, Orange County, CA. The project consisted of constructing an underground parking structure. Sub to Avalon Bay. Supervised archaeological and paleontological field work and prepared the Archaeological and Paleontological Monitoring report. Field and Laboratory Director/ Report Co-author. 2014.

Gene Autry Way, Caltrans District 12, Anaheim, Orange County, CA. Project consisted of extending Gene Autry Way westward from 2,400 feet east of Interstate 5 to Haster Street (6 lanes wide), widening approximately 1,575 feet of Haster Street (520 feet south of Katella Avenue to 600 feet north of Orangewood Avenue) from 4 to 6 lanes plus a center turn lane, and completion of the Gene Autry Way overpass. Prepared a Paleontological Monitoring Report. Contracted to C. C. Myers. Field and Laboratory Director/Report Co-author. 2011-2012.

State Route 57 Northbound Widening Project, Caltrans District 12/ Orange County Transportation Authority (OCTA), Fullerton, Orange County, CA. Caltrans widening to State Route 57 between Lambert and Yorba Linda Avenue. Supervised paleontological monitoring and prepared the Paleontological Monitoring report. Under contract to CC Myers. Field and Laboratory Supervisor/Report Co-author. 2011-2012.

Interstate 5 and Ortega Highway Interchange, San Juan Capistrano, Orange County, CA. The project consisted of reconfiguring the interchange. Sub to ECORP Consulting. Co-authored Paleontological Literature Review. Field and Laboratory Director/ Report Co-author. 2006.

Central Park West Project, Irvine, Orange County, CA. The project consisted of building a housing development with underground parking. Supervised archaeological and paleontological field work and co-authored the Archaeological and Paleontological Assessment and monitoring reports. Sub to Lennar Communities. Field and Laboratory Director/ Report Co-author. 2005-2010.

APPENDIX B. RECORD SEARCH

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

NATURAL HISTORY MUSEUM
LOS ANGELES COUNTY

Vertebrate Paleontology Section
Telephone: (213) 763-3325

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9 March 2017

Cogstone Resource Management, Inc.
1518 West Taft Avenue
Orange, CA 92865-4157

Attn: Megan Wilson, Archaeologist & GIS Technician

re: Vertebrate Paleontology Records Check for paleontological resources for the proposed MUST Facility Project, Cogstone Project # 3993, in the City of Long Beach, Los Angeles County, project area

Dear Megan:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed MUST Facility Project, Cogstone Project # 3993, in the City of Long Beach, Los Angeles County, project area as outlined on the portions of the South Gate and Long Beach USGS topographic quadrangle maps that you sent to me via e-mail on 22 February 2017. We do not have any vertebrate fossil localities that lie directly within the proposed project area boundaries, but we do have localities nearby from the same sedimentary deposits that occur in the proposed project area, either at the surface or at depth

Almost all of the proposed project area has surface deposits composed of younger Quaternary Alluvium, derived as fluvial deposits from the floodplain of the Los Angeles River that currently flows in a concrete channel either through or adjacent to the proposed project area. These younger Quaternary deposits usually do not contain significant fossil vertebrate remains, at least in the uppermost layers, but the underlying older Quaternary deposits found at varying depths may well contain significant vertebrate fossils. In the middle portion of the proposed project area, just east of the interchange between the San Diego Freeway (I-405) and the Long Beach Freeway (I-710), there are surface deposits of older Quaternary Alluvium of lacustrine and estuarine origin. At it's very southern end the proposed project area might cross surface deposits of the same older Quaternary Alluvium, although it appears from the geologic mapping that this portion of the proposed project area mostly occurs within surface material composed of artificial fill.

Almost due west of the northern-most portion of the proposed project area, on the northern flank of the Dominguez Hills west of the Long Beach Freeway(I-710), east of Wilmington Avenue and north of Artesia Boulevard, our older Quaternary vertebrate fossil locality LACM 3382 produced a specimen of fossil mammoth, *Mammuthus*, at a depth of only five feet below the surface. A little further south and west, on the southwest flank of the Dominguez Hills near the intersection of 190th Street and Annalee Avenue, our older Quaternary locality LACM 1643 produced another fossil specimen of mammoth, *Mammuthus*, at a depth of 8-10 feet below the surface.

West of the middle portion of the proposed project area, west of the Long Beach Freeway (I-710) both sides of Alameda Street from Carson Street on the north to Sepulveda Boulevard on the south we have localities LACM 1165, 3319 and 4129 from older Quaternary deposits. From these localities fossil mammoth, *Mammuthus*, was recovered 30 feet below the surface, fossil camel, Camelidae, was found 24 feet down a bore hole and fossil bison, *Bison*, was discovered at unknown depth. Just west of these localities, just west of Wilmington Avenue south of 223rd Street, our fossil vertebrate locality LACM 1919 produced a specimen of fossil mammoth, *Mammuthus*, from about 10 feet below the surface.

To the east of the middle portion of the proposed project area, south of Carson Street along Cover Street between Pixie Avenue and Paramount Boulevard, our older Quaternary locality LACM 3660 produced a specimen of fossil mammoth, *Mammuthus*, at a depth of 19 feet below the surface. Further to the southwest of the proposed project area we have locality LACM 6802, near Bixby Road between Atlantic Avenue and Orange Avenue, that produced fossil specimens of undetermined vertebrates at a depth of 16 feet below the surface. Further south, near the intersection of Spring Street and Cherry Avenue south of the of the San Diego Freeway (I-405), our older Quaternary locality LACM 1021 produced fossil specimens of bird, Aves, and mammoth, *Mammuthus*, at unknown depth.

To the east of the southern portion of the proposed project area we have two vertebrate fossil localities from these older Quaternary deposits: LACM 1144, south of Anaheim Street near the intersection of Loma Vista Drive and Crystal Court, that produced fossil specimens of sea lion, *Zalophus*, camel, *Camelops*, and bison, *Bison*, from a depth of less than 48 feet below the surface; and LACM 6896, further south near the intersection of Magnolia Avenue and Ocean Boulevard, that produced a specimen of fossil whale, Cetacea, from pile driving activities at a depth of less than 100 feet.

To the west of the southern portion of the proposed project area, west of the Terminal Island Freeway (SR 103) along Anaheim Street near the intersection with Henry Ford Avenue, our older Quaternary locality LACM 1163 produced a specimen of fossil bison, *Bison*, at a depth of only five feet below the surface.

Surface grading or shallow excavations in the younger Quaternary Alluvium exposed in almost all of the proposed project area, or in the artificial fill in the southern-most portion of the proposed project area, probably will not uncover any significant vertebrate fossils. Deeper excavations in the those areas, as well as any excavations in the older Quaternary Alluvium exposed in the eastern middle portion of the proposed project area, may well encounter significant vertebrate fossils. Any substantial excavations below the uppermost layers in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

APPENDIX C. FOSSILS IN THE VICINITY OF THE ALIGNMENT

Extinct animals are noted by †; Possibly extinct animals are noted by ‡; * indicates that the locality was referenced in Woodring et al. (1946)

Common Name	Taxon	Depth	Formation	Locality	Location	Reference
mammoth	†*Mammuthus* sp.	5 feet	Quaternary deposits	LACM 3382	near Dominguez Hills: west of the I-710, east of Wilmington Ave., north of Artesia Blvd.	McLeod 2017
mammoth	†*Mammuthus* sp.	8-10 feet	Quaternary deposits	LACM 1643	near Dominguez Hills: near E Victoria and Annalee Ave.	
mammoth	†*Mammuthus* sp.	30 feet	Quaternary deposits	LACM 1165, 3319, 4129	west of the I-710 along Alameda St between Carson St and Sepulveda Blvd.	
camel	†Camelidae	24 feet				
bison	†*Bison* sp.	unknown				
mammoth	†*Mammuthus* sp.	10 feet	Quaternary deposits	LACM 1919	west of Wilmington Ave., south of 223rd St	
mammoth	†*Mammuthus* sp.	19 feet	Quaternary deposits	LACM 3360	south of Carson St; along Cover St between Pixie Ave and Paramount Blvd	
mammoth	†*Mammuthus* sp.	unknown	Quaternary deposits	LACM 1021	south of I-405; near the Spring St and Cherry Ave intersection	
bird	Aves					
bison	†*Bison* sp.	5 feet	Quaternary deposits	LACM 1163	west of SR 103; near the Anaheim St and Henry Ford Ave intersection	
sea lion	*Zalophus* sp.	less than 48 feet	Quaternary deposits	LACM 1144	south of Anaheim St; near the Loma Vista Dr and Crystal Court intersection	
camel	†Camelidae					
bison	†*Bison* sp.					
whale	Cetacea	less than 100 feet	Quaternary deposits	LACM 6896	near the Magnolia Ave and Ocean Blvd intersection	
indeterminate vertebrates	Vertebrata	unknown	Quaternary deposits	LACM 6802	near Bixby Rd between Atlantic Ave and Orange Ave	
horse	†*Equus* sp.	unknown	Quaternary deposits	V65109	Signal Hill	UCMP 2017
bony fish	Osteichthys	unknown	Quaternary deposits	V92101	Timms Point Bleifus Collection	
eagle ray	*Myliobatis* sp.	unknown	Quaternary deposits	IP10763	Wilmington-San Pedro Rd.	
bivalves, snails, scaphopods, and bryozoans	215 specimens of marine invertebrates	unknown	Quaternary deposits	A1483	*Signal Hill	
bony fish	Osteichthys	unknown	Quaternary deposits	A3421	*Signal Hill	
bivalves, snails, scaphopods, and echinoderms	356 specimens of marine invertebrates					
crassinella clams	†*Crassinella branneri*, †*C. nuculiformis*	unknown	Quaternary deposits	E9653, E9657	San Pedro	
bivalves and snails	95 specimens of marine invertebrates	unknown	Quaternary deposits	A1493	*Crawfish Georges	
bivalves, snails and scaphopods	113 specimens of marine invertebrates	unknown	Quaternary deposits	IP5022	Harbor Lot/ Shipyard	
bivalves and snails	82 specimens of marine invertebrates	unknown	Quaternary deposits	A1484, D1627	San Pedro Bluffs	
mollusks	Mollusca	unknown	Quaternary	A226	*Graham Bros. Quarry 1	
stony coral	Caryophylliidae	unknown	Quaternary deposits	A8470	*Hilltop Quarry	
Bishop pine	*Pinus muricata*	unknown	Quaternary deposits	PA606	*Bixby Slough II	
Law's flightless sea duck	†*Chendytes lawi*	unknown	Palos Verdes Sand	V63583	Harbor Blvd.	UCMP 2017
harbor seal	*Phoca vitulina*	unknown	Palos Verdes Sand	V7004	Union 76 Refinery 1	
eared seal	Otariidae	unknown	Palos Verdes Sand	V7027	Union Oil Refinery 2	
pocket gopher	*Thomomys* sp.	unknown				
eagle ray	Myliobatidae	unknown				
shark	Carcharhiniformes	unknown				
bony fish	Osteichthyes	unknown				
Pacific gaper clam	*Tresus nuttalli*	unknown	Palos Verdes Sand	E8143	Pacific Ave & Bonita St.	

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Common Name	Taxon	Depth	Formation	Locality	Location	Reference
decapod	Decapoda	unknown	Palos Verdes Sand	D6331	San Pedro Lumberyard	UCMP 2017
red foot algae snail	*Norrisia norrisi*					
bivalves and snails	34 specimens of marine invertebrates	unknown	Palos Verdes Sand	E7393, E7393, E7572, E7604, E7637, E7641, E7661, E700, E7802, E7952, E7068, E8251, E8256, E8411, E8430, E8511, E8512, E8663, E8699, E8778, E8779, E8939, E8959, E8981, E9796	Gaffey St Bridge	
marine worms, barnacles, decopods, bivalves, snails, scaphopods, and echinoderms	302 specimens of marine invertebrates	unknown	Palos Verdes Sand	D390, E7994, E8112, E9006, E9214, E9222, E9245, E9284, E9306, E9319, E9332, E9334, E9346, E9357, E9367, E9415, E9418. E9515, E9538, E9540, E9544, E9563, E9564, E9568, E9603, E9608, E9626, E9647, E9650, E9652, E9654, E9655, E9689, E9724, E9730, E9797	San Pedro	
bivalves and snails	48 specimens of marine invertebrates	unknown	Palos Verdes Sand	E7876, E7918, E8046, E8074, E8313, E8410, E8429, E8501, E8698, E8761, E8948	Vermont & Sepulveda, San Pedro	
Shasta's ground sloth	†*Nothrotheriops shastensis*	unknown	San Pedro	-2047	*****San Pedro Lumber Co	UCMP 2017
ground sloth	†*Megalonyx* sp.					
dire wolf and canid	†*Canis dirus*, ‡Canidae					
sabre-toothed cat	†*Smilodon fatalis*					
American lion	†*Felis atrox*					
couger	*Felis concolor*					
sea otter	*Enhydra lutris*					
sea lion and eared seals	*Zalophus* sp., Otariidae					
dolphins and whales	Delphinidae, Cetacea					
mammoth	†*Mammuthus* sp.					
horse	†*Equus* sp.					
diminutive pronghorn	†*Capromeryx* sp.					
bison	†*Bison latifrons*, †*Bison* sp.					
camel	†*Camelops* sp., Camelidae					
mule deer	*Odocoileus hemionus*					
brush rabbit	*Sylvilagus bachmani*					
hare	*Lepus* sp.					
voles	*Microtus californicus*, *Microtus* sp.					
dusky-footed woodrat	*Neotoma fuscipes*					
pocket gophers	*Thomomys bottae*, *Thomomys* sp.					
squirrels	*Spermophilus beecheyi*, *Spermophilus* sp.					
rodent	Rodentia					
mammal	Mammalia					
ducks, geese, and scoters	*Anas americana, A. clypeata, A. crecca, A. platyrhynchos, Anas sp.; Anser albifrons, Branta canadensis, Bucephala albeola,* †*Chendytes lawi,* †*Chendytes sp.,* †*Histrionicus carolinensis; Melanitta deglandi, M. perspicillata; Oidemia deglaudi,*					

	Anatidae					

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Common Name	**Taxon**	**Depth**	**Formation**	**Locality**	**Location**	**Reference**
American coot	*Fulica americana*	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
grebes	*Aechmophorus occidentalis, Podiceps auritus*	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
auks and murrelet	*Ptychoramphus aleuticus, Synthliboramphus antiquus, Synthliboramphus* sp.	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
loons	*Gavia arctica, G. immer*	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
cormorants	*Phalacrocorax auritus, P. penicillatus, Phalacrocorax* sp.	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
glaucous-winged gull	*Larus glaucescens*	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
albatrosses	*Diomedea albatrus, D. nigripes, Diomedea* sp.	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
shearwaters	*Puffinus griseus, P. opisthomelas*	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
American kestral	*Falco sparverius*	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
California quail	*Callipepla californica*	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
vultures	*Cathartes aura, Coragyps* sp.	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
sandpiper	*Tringa* sp.	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
unidentifiable birds	Aves	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
common kingsnake	*Lampropeltis getulus*	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
gopher snake	*Pituophis melanoleucus*	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
rattlesnakes	*Crotalus viridis, Crotalus* sp.	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
snakes	Serpentes	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
turtles	*Clemmys marmorata, Clemmys* sp.	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
turtle or tortoise	Testudines	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
toads, frogs, and salamanders	*Bufo* sp., *Rana* sp., *Tarchia* sp., Amphibia	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
three-spined stickleback (fish)	*Gasterosteus aculeatus*	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
bony fishes	Osteichthyes	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
rays	*Urolophus* sp., Mylobatidae, Batoidea	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
sharks	*Carcharhinus* sp., Carcharhiniformes, *Hexanchus* sp., *Carcharodon* sp., Selachii	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
shrimps and crabs	70 specimens of decapods	*unknown*	*San Pedro*	*-2047 - continued*	*******San Pedro Lumber Co - continued*	UCMP 2017
Law's flightless sea duck	†*Chendytes lawi*, †*Chendytes* sp.	unknown	San Pedro	V2508, E8821	Long Wharf Canyon	UCMP 2017
miter snail	*Mitra fultoni*	unknown	San Pedro	V2508, E8821	Long Wharf Canyon	UCMP 2017
shrimp, bivalves, snails and scaphopods	664 specimens of marine invertebrates	unknown	San Pedro	2113-, 4030-, 7102-, A3484, A1489, A2542	*Reservation Point (Deadman Island)	UCMP 2017
bivalves, snails, scaphopods, shrimp and crabs	985 specimens of marine invertebrates	unknown	San Pedro	A1503	*Nob Hill	UCMP 2017
shrimp, bivalves, snails and scaphopods	273 specimens of marine invertebrates	unknown	San Pedro	2112-, A217, D4733, IP428	San Pedro	UCMP 2017
bivalves and snails	34 specimens of marine invertebrates	unknown	San Pedro	D5440	San Pedro Hill	UCMP 2017

APPENDIX D. SENSITIVITY RANKING CRITERIA

PFYC Description (BLM, 2008)	PFYC Rank
Very Low. The occurrence of significant fossils is non-existent or extremely rare. Includes igneous or metamorphic and Precambrian or older rocks. Assessment or mitigation of paleontological resources is usually unnecessary.	1
Low. Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant nonvertebrate fossils. Includes rock units too young to produce fossils, sediments with significant physical and chemical changes (e.g., diagenetic alteration) and having few to no fossils known. Assessment or mitigation of paleontological resources is not likely to be necessary.	2
Potentially Moderate but Undemonstrated Potential. Units exhibit geologic features and preservational conditions that suggest fossils could be present, but no vertebrate fossils or only common types of plant and invertebrate fossils are known. Surface-disturbing activities may require field assessment to determine appropriate course of action.	3b
Moderate Potential. Units are known to contain vertebrate fossils or scientifically significant nonvertebrate fossils, but these occurrences are widely scattered and of low abundance. Common invertebrate or plant fossils may be found. Surface-disturbing activities may require field assessment to determine appropriate course of action.	3a
High. Geologic units containing a high occurrence of significant fossils. Fossils must be abundant per locality. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. If impacts to significant fossils can be anticipated, on-the-ground surveys prior to authorizing the surface disturbing action will usually be necessary. On-site monitoring or spot-checking may be necessary during construction activities.	4
Very High. Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils. Vertebrate fossils or scientifically significant invertebrate fossils are known or can reasonably be expected to occur in the impacted area. On-the-ground surveys prior to authorizing any surface disturbing activities will usually be necessary. On-site monitoring may be necessary during construction activities.	5