California High-Speed Rail Authority

# Los Angeles to Anaheim Project Section

## Aquatic Resources Delineation Report

October 2025




CALIFORNIA High-Speed Rail Authority

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being or have been carried out by the State of California pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated July 22, 2024, and executed by the Federal Railroad Administration and the State of California.

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# ACRONYMS AND ABBREVIATIONS

| Term | Definition |
|---|---|
| Amtrak | National Railroad Passenger Corporation |
| ARTIC | Anaheim Regional Transportation Intermodal Center |
| Authority | California High-Speed Rail Authority |
| BNSF | BNSF Railway |
| CFR | Code of Federal Regulations |
| CWA | Clean Water Act |
| EIR | Environmental Impact Report |
| EIS | Environmental Impact Statement |
| FAC | facultative |
| FACU | facultative upland |
| FACW | facultative wetland |
| FRA | Federal Railroad Administration |
| HSR | High-Speed Rail |
| HUC-8 | Hydrologic Unit Code–8 |
| LAUS | Los Angeles Union Station |
| LMF | Light Maintenance Facility |
| OBL | obligate wetland |
| OCS | overhead catenary system |
| PJD | Preliminary Jurisdictional Determination |
| project section | Los Angeles to Anaheim Project Section |
| PS | photo station |
| RSA | resource study area |
| RWQCB | Regional Water Quality Control Board |
| SP | sample point |
| STATSGO | State Soil Geographic |
| SWRCB | State Water Resources Control Board |
| TPSS | traction power substations |
| U.S.C. | U.S. Code |
| UPL | obligate upland |
| UPRR | Union Pacific Railroad |
| USACE | U.S. Army Corps of Engineers |
| USEPA | U.S. Environmental Protection Agency |

# EXECUTIVE SUMMARY

This Aquatic Resources Delineation Report was prepared on behalf of the California High-Speed Rail Authority (Authority) for the Los Angeles to Anaheim Project Section (project section) of the California High-Speed Rail (HSR) System. This report serves to provide a detailed description of the analysis conducted to delineate potentially jurisdictional aquatic resources, pursuant to Clean Water Act (CWA) Section 404 (33 U.S. Code [U.S.C.] 1344), CWA Section 401 (33 U.S.C. 1341), and Rivers and Harbors Act Section 10 (33 U.S.C. 403), including wetland and nonwetland waters of the U.S. (waters of the U.S.). For purposes of the California HSR System, the CWA Section 404 and Rivers and Harbors Act Section 10 programs are administered by the U.S. Army Corps of Engineers (USACE), and the CWA Section 401 program is administered by the State Water Resources Control Board (SWRCB). This report has been prepared to support documentation for compliance with the California Environmental Quality Act, the National Environmental Policy Act, and Sections 404 and 401 of the CWA.

The project section would extend approximately 30 miles and travel through the cities of Los Angeles, Vernon, Bell, Commerce, Montebello, Pico Rivera, Santa Fe Springs, Norwalk, La Mirada, Buena Park, Fullerton and Anaheim. The project section alignment would share the existing Los Angeles – San Diego – San Luis Obispo Rail Corridor with existing rail operations, including National Railroad Passenger Corporation (Amtrak) passenger trains, Metrolink commuter trains, and BNSF Railway (BNSF) freight trains. In addition to new tracks for HSR, the project section would include an HSR station in Anaheim, the Anaheim Regional Transportation Intermodal Center (ARTIC), as well as a maintenance of infrastructure siding, a light maintenance facility (LMF) with alternatives at 26th Street or 15th Street, and electric power utility improvements. HSR station options for one additional HSR station to be in either Norwalk/Santa Fe Springs or Fullerton are included in the project section.

There are two build alternatives for the project section, consisting of an alternative with the LMF at 26th Street (Shared Passenger Track Alternative A) and an alternative with the LMF at 15th Street (Shared Passenger Track Alternative B). A description of the Shared Passenger Track Alternatives and their locations can be found in Chapter 2, Project Description. Shared Passenger Track Alternative A proposes to introduce HSR service into the Los Angeles – San Diego – San Luis Obispo Rail Corridor from Los Angeles Union Station to ARTIC. The Shared Passenger Track Alternative A project footprint would primarily be within the existing railroad right-of-way, and include both a northbound and southbound electrified track for HSR. Shared Passenger Track Alternative A would include HSR service to and from stations in Los Angeles and Anaheim and could include one HSR station option (i.e., Fullerton or Norwalk/Santa Fe Springs) as an HSR station option. Shared Passenger Track Alternative A proposes an LMF between 26th Street and a BNSF spur on the south side of the BNSF Hobart Yard, also used by Amtrak, along the west bank of the Los Angeles River. Two HSR station options are proposed under Shared Passenger Track Alternative A: (1) Norwalk/Santa Fe Springs and (2) Fullerton. Shared Passenger Track Alternative B would follow the same alignment and share most of the same project features and operational assumptions as Shared Passenger Track Alternative A, except it would include the 15th Street LMF rather than the 26th Street LMF for Shared Passenger Track Alternative A. The 15th Street LMF has a northern boundary at approximately Seventh Street and continues adjacent to and west of the existing Amtrak Eighth Street Yard to Washington Boulevard in the south.

The Aquatic resource study area (RSA) defined for the project section encompasses the project construction footprint plus an additional 250-foot buffer, for a total area of 3,612.73 acres.[1] Waters of the U.S. identified within the RSA consist predominantly of concrete-lined riverine features. Additional features also identified include to a lesser extent freshwater emergent wetland, freshwater forested/shrub wetland, basins, and built watercourses at select locations. A

[1] The overall size of the RSA is based on the project footprint dated August 2024 and includes both of the Shared Passenger Track Alternatives.

total of 99.04 acres of potential waters of the U.S. were identified within the RSA, consisting of 97.15 acres of nonwetland waters and 1.89 acres of wetlands (Table ES-1). No Section 10 navigable waters of the U.S. were identified in the RSA. All aquatic features within the RSA were reviewed to determine if they met the definition of waters of the U.S. pursuant to the Preliminary Jurisdictional Delineation (PJD) methodology (USACE 2016), *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (USACE and USEPA 2007), revised guidance (USACE and USEPA 2008), the *Revised Definition of "Waters of the United States"; Conforming* (33 Code of Federal Regulations [CFR] Part 328.3(a)(1)–(5); USACE and USEPA 2023), and the preamble to the USACE regulatory program operating regulations (33 CFR Part 320–332; USACE 1986).

**Table ES-1 Total Acreages of Potential Wetlands and Nonwetland Waters of the U.S. Identified in the Resource Study Area[1]**

| Wetlands/Nonwetland Waters of the U.S. | Total Acreage in Resource Study Area |
|---|---|
| **Wetlands** | |
| Freshwater Emergent Wetland | 1.83 |
| Freshwater Forested/Shrub Wetland | 0.06 |
| *Wetlands subtotal* | *1.89* |
| **Nonwetland Waters of the U.S.** | |
| Basin | 20.81 |
| Built Watercourse | 0.43 |
| Riverine | 75.91 |
| *Nonwetland Waters of the U.S. subtotal* | *97.15* |
| **Total Potential Wetlands and Nonwetland Waters of the U.S.** | **99.04** |

*Source: ESRI 2024*

[1] Aquatic resource acreages are based on the project footprint dated August 2024 and include both of the Shared Passenger Track Alternatives. There is no difference in aquatic resource acreages between the Shared Passenger Track Alternatives.

This Aquatic Resources Delineation Report considers all aquatic resources described in Chapter 6, Results, and mapped in Appendix C, Delineated Wetlands and Nonwetland Waters of the U.S. Maps, of this report to be potentially jurisdictional under CWA Sections 404 and 401, based on the PJD methodology. This report has been prepared to support the regulatory permitting processes under both CWA Sections 404 and 401.

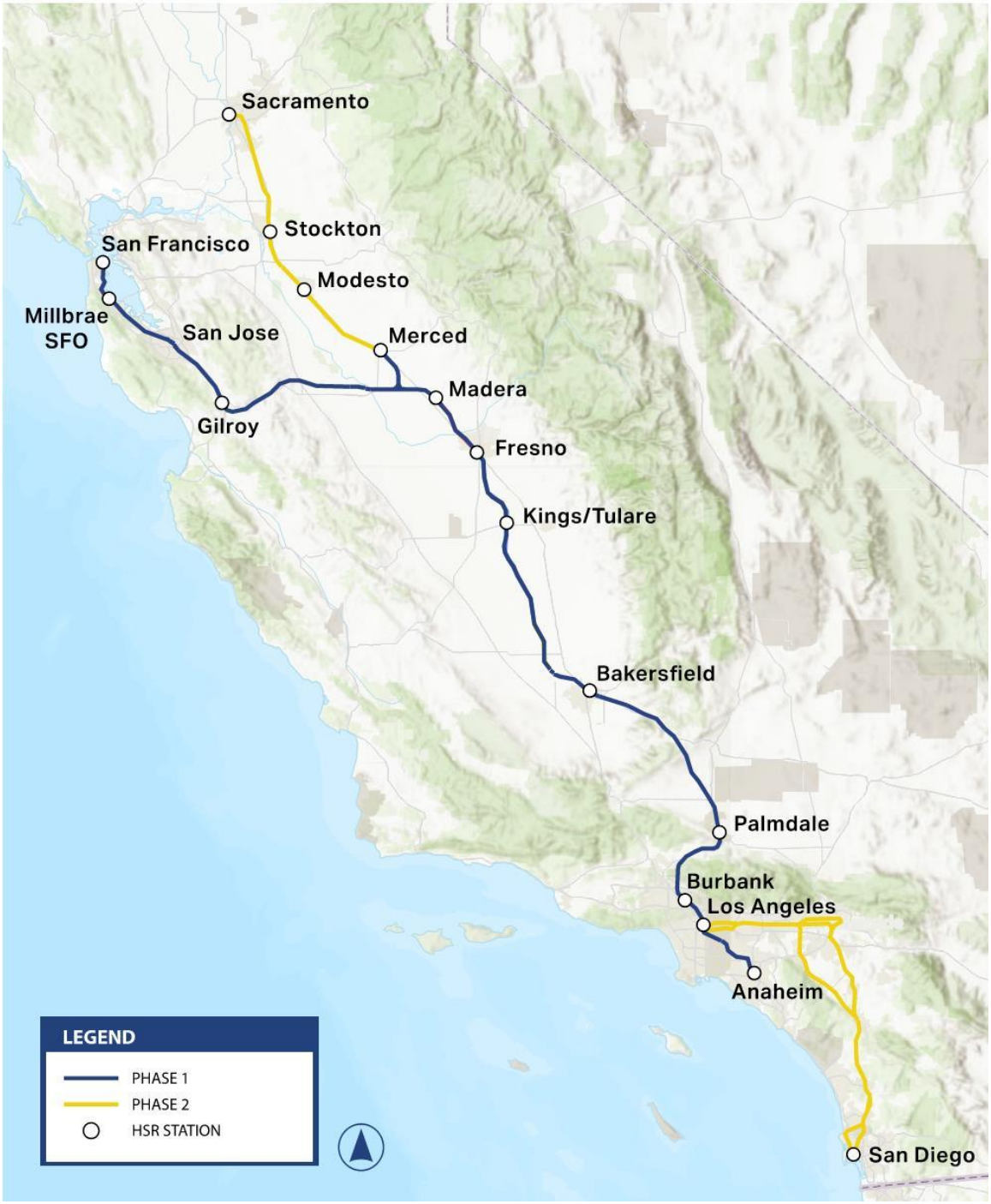
# 1 INTRODUCTION

## 1.1 California High-Speed Rail System Background

The California High-Speed Rail Authority (Authority), a state governing board formed in 1996, is responsible for planning, designing, building, and operating the California High-Speed Rail (HSR) System. Its statutory mandate is to develop an HSR system that coordinates with the state's existing transportation network, which includes intercity rail and bus lines, regional commuter rail lines, urban rail and bus transit lines, highways, and airports. The California HSR System will provide intercity, high-speed service on more than 800 miles of tracks throughout California, connecting the major population centers of Sacramento, the San Francisco Bay Area, the southern Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego, as depicted on Figure 1-1.[2] It will use state-of-the-art, electrically powered, high-speed, steel-wheel-on-steel-rail technology, including contemporary safety, signaling, and automated train control systems, with trains capable of operating up to 220 miles per hour.

The California HSR System is planned to be implemented in two phases. Phase 1 would connect San Francisco to Los Angeles and Anaheim via the Pacheco Pass and the Central Valley. Phase 2 would extend the HSR system from the Central Valley (starting at the Merced Station) to the state's capital in Sacramento and from Los Angeles to San Diego.

[2] The alignments depicted on Figure 1-1 reflect the Authority/Federal Railroad Administration decisions made in the 2005, 2008, and 2012 Programmatic Environmental Impact Report/Environmental Impact Statement documents.




*Source: Authority 2023a*

**Figure 1-1 California High-Speed Rail System**

## 1.2 Los Angeles to Anaheim Project Section Background

The Los Angeles to Anaheim Project Section (project section) of the HSR system would extend approximately 30 miles between Los Angeles Union Station (LAUS) in Los Angeles and Anaheim Regional Transportation Intermodal Center (ARTIC) in Anaheim. This narrow, existing railroad corridor is constrained by the surrounding urban environment and other existing rail operators in

the area, including trains operated by the National Railroad Passenger Corporation (Amtrak), Metrolink (governed by the Southern California Regional Rail Authority), the Union Pacific Railroad (UPRR), and BNSF Railway (BNSF).

The Authority, in cooperation with the Federal Railroad Administration (FRA), completed the *Final Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Proposed California High-Speed Train System* in November 2005 (Authority and FRA 2005). For the Los Angeles to Anaheim Project Section, the Authority and FRA selected the existing Los Angeles – San Diego – San Luis Obispo Rail Corridor, with the intent of sharing the existing right-of-way as the alignment.

In 2007, the Authority and FRA released the Notice of Preparation/Notice of Intent to inform the public of the beginning of the preparation of a Draft EIR/EIS for the project section.[3] The Authority and FRA engaged in project scoping, completed a Preliminary Alternatives Analysis Report in 2009, and completed Supplemental Alternatives Analysis Reports in 2010 and 2016. The 2016 Supplemental Alternatives Analysis considered two alternatives: Alternative 1 (formerly called the Dedicated High-Speed Track Alternative) and Alternative 2 (formerly called the Consolidated Shared-Track Alternative), and advanced Alternative 2 (HSR Project Alternative) for analysis in the project Draft EIR/EIS.

In 2017 and 2018, BNSF conducted operational modeling that indicated a need for additional capacity during construction and operation of this project section. Consequently, the Authority added BNSF staging tracks in Lenwood (Lenwood Component) and a Colton Intermodal Facility (Colton Component) in San Bernardino County to the project. In 2020, the Authority initiated revised scoping to include the Lenwood and Colton Components in the project section. Stakeholder feedback received during scoping included substantial opposition to the BNSF Components far outside the project corridor.

In response, the Authority prepared a Supplemental Alternatives Analysis (Authority 2023b) to evaluate a new alternative that would eliminate the need for a BNSF Intermodal Facility in San Bernardino County. The 2023 Supplemental Alternatives Analysis examined three new build alternatives that did not include an Intermodal Facility and proposed advancing the Shared Passenger Track Alternative for further consideration in the EIR/EIS, which closely resembled the 2018 HSR Project Alternative without the Lenwood and Colton Components. Operationally, the Shared Passenger Track Alternative would reduce the peak service level for HSR trains to two trains per hour per direction, and up to 10 freight trains per day could operate on the passenger tracks, eliminating the need for the BNSF Intermodal Facility.

Additional design refinements and outreach occurred, and in May 2024, a Preliminary Impacts Assessment Report further defined elements of the Shared Passenger Track Alternative, such as HSR station options, light maintenance facility (LMF) sites, and grade crossings. The Preliminary Impacts Assessment Report recommended the Shared Passenger Track Alternative be split into two build alternatives, Shared Passenger Track Alternative A and Shared Passenger Track Alternative B, which are similar in all aspects, except for the LMF size and location. Shared Passenger Track Alternative A proposes an LMF at 26th Street in Vernon, and Shared Passenger Track Alternative B proposes an LMF at 15th Street in Los Angeles. In May 2024, the Board identified Shared Passenger Track Alternative A as the Preferred Alternative.

## 1.2 Project Description Purpose

This project description provides a condensed version of the technical information discussed in Chapter 2, Alternatives, of the Draft EIR/EIS and includes references to other documents for additional details and discussion. The basis of this project description is the Draft Los Angeles to Anaheim Preliminary Engineering for Project Definition document. Chapter 2 of the Draft EIR/EIS

[3] The Notice of Intent was issued in the *Federal Register* on March 15, 2007 (72 Fed. Reg. 12,250).

includes additional details beyond the content discussed herein, including information on the proposed operating plans and scenarios, construction plans, and capital and operating costs.

## 1.2 Purpose of the Assessment

This Aquatic Resources Delineation Report is for the Los Angeles to Anaheim Project Section. There are two build alternatives for the project section, consisting of an alternative with the light maintenance facility (LMF) at 26th Street (Shared Passenger Track Alternative A) and an alternative with the LMF at 15th Street (Shared Passenger Track Alternative B). A description of the Shared Passenger Track Alternatives and their locations can be found in Chapter 2, Project Description.

This project-level study provides the location, type, and extent of potentially jurisdictional features, including wetlands, within the Aquatic resource study area (RSA) of the project section pursuant to Sections 404 and 401 of the Clean Water Act (CWA) and U.S. Army Corps of Engineers (USACE) regulations and guidance (Figure 1-2).

Aquatic resources within the RSA meeting the statutory definition of waters of the U.S. and the USACE or State Water Resources Control Board (SWRCB) technical criteria for wetlands or nonwetland waters of the U.S. are considered potentially jurisdictional under CWA Section 404/401. These resources are described and mapped in Appendix C, Delineated Wetlands and Nonwetland Waters of the U.S. Maps. This technical report fulfills the requirements of the project-level study for the project section because it identifies and delineates the location, type, and extent of surface water resources, including wetlands that are potentially subject to jurisdiction under CWA Sections 404 and 401. The extent of these features is identified and quantified in linear feet and acreages to support future effects analysis for the EIR/EIS and permit applications and notifications.

A Preliminary Jurisdictional Determination (PJD) was submitted to USACE, Los Angeles District, in June 2018, consistent with requirements set forth in Regulatory Guidance Letter 16-01,[4] to obtain USACE concurrence on the extent of all mapped features presented herein. The PJD form identifies all wetland and nonwetland waters of the U.S. mapped within the RSA. As set forth in Regulatory Guidance Letter 16-01, PJDs are advisory in nature and are not legally binding determinations, but may be used as the basis for a permit decision in order to expedite a USACE permit authorization where the requestor determines that it is in his or her best interest to do so. By assuming jurisdiction over waters, PJDs obviate the need to perform “significant nexus” and “relatively permanent water” evaluations of surface water features. PJDs also provide for concurrence at the district level, eliminating the need for elevated inter-agency coordination with the U.S. Environmental Protection Agency (USEPA). The use of a PJD is further supported within the RSA because USACE has administratively affirmed the jurisdictional status of major watercourses falling within the RSA, including the Los Angeles River (SPL 2008-000218-AJS), San Gabriel River (file number not publicly available), Rio Hondo (file number not publicly available), and Santa Ana River (file number not publicly available), as well as other named features within the project section. On July 31, 2018, USACE, Los Angeles District, issued a PJD for the project stating that on review of the mapped aquatic resources, waters of the U.S. may be present in the project section in the locations identified by the Authority.

The appendices to this technical report provide additional supporting information and maps. Information from this technical report will be summarized in the *Los Angeles to Anaheim Project Section Draft EIR/EIS* and will be part of the administrative record supporting the environmental review of the proposed project.

[4] Regulatory Guidance Letter 16-01 (USACE October 2016).

## 1.3 Resource Study Area

The Aquatic RSA defined for the project section encompasses the project construction footprint plus an additional 250-foot buffer for a total area of 3,612.73 acres[5] (Figure 1-2). The RSA was established to include all components of the project footprint and design options, including tracks, power and station facilities, utility connections, and access routes for use during operations and maintenance, plus a 250-foot buffer around these features. The RSA is sized appropriately to allow for analysis of potential direct and indirect project impacts on waters of the U.S.

[5] The overall size of the RSA is based on the project footprint dated August 2024.

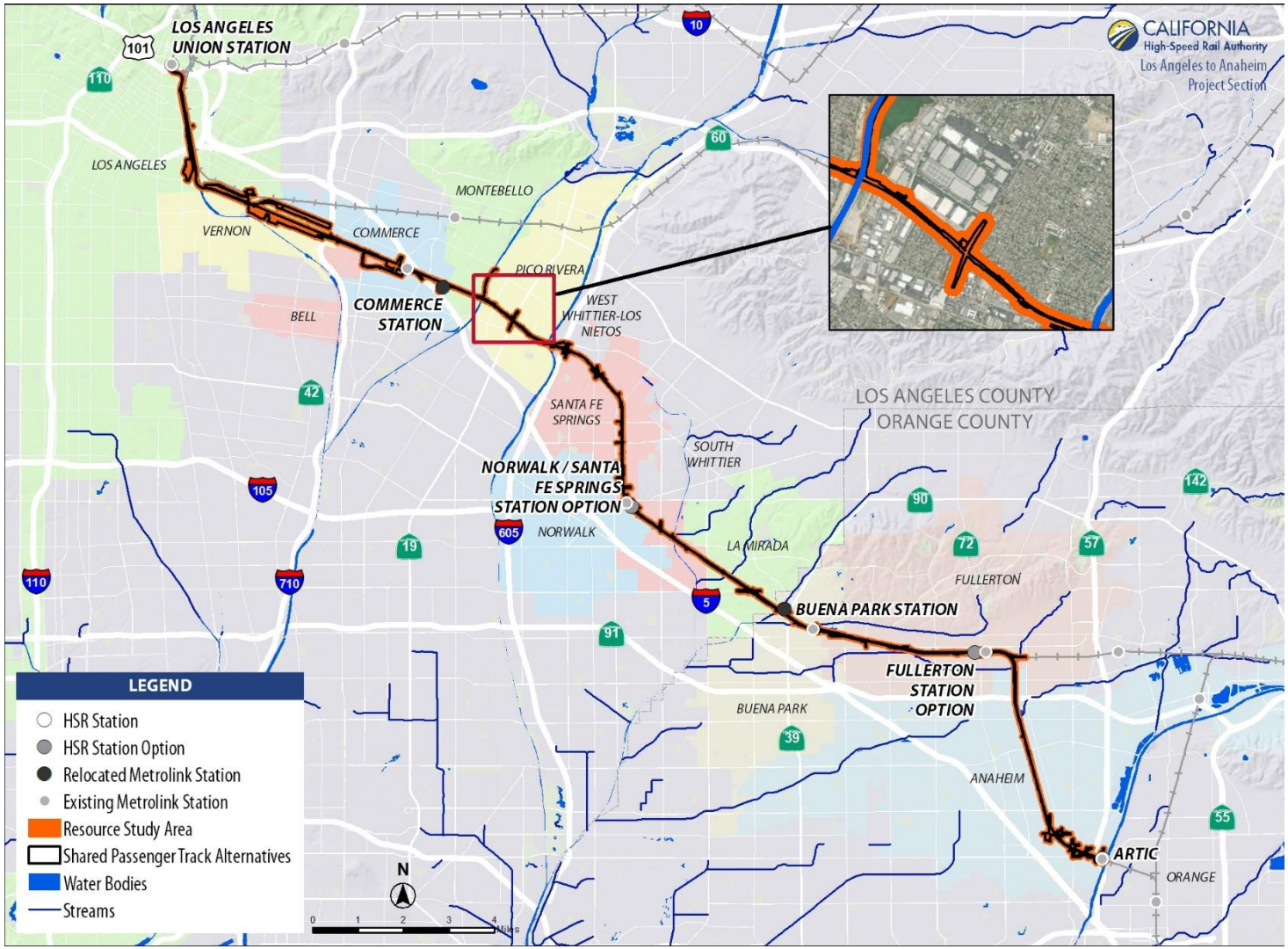



**Figure 1-2 Aquatic Resource Study Area**

# 2 PROJECT DESCRIPTION

The project section is approximately 30 miles long and travels through the cities of Los Angeles, Vernon, Commerce, Bell, Montebello, Pico Rivera, Santa Fe Springs, Norwalk, La Mirada, Buena Park, Fullerton, and Anaheim. The project's alignment would share a portion of the existing Los Angeles – San Diego – San Luis Obispo Rail Corridor with existing rail operators. The Authority adopted a strategy of sharing the existing corridor and blending HSR with existing rail systems on shared infrastructure (referred to as "blended operations"[6]) to accelerate and broaden benefits, improve efficiency, minimize community impacts, and reduce construction costs.

This section describes the No Project Alternative and Shared Passenger Track Alternatives A and B.

## 2.1 No Project Alternative

Under the No Project Alternative, the project section would not be built. The No Project Alternative represents the condition of the project section as it currently exists in the base year, and as it would exist without the California HSR System at the planning horizon year of 2040.

In assessing future conditions, it was assumed that all currently known, programmed, and funded improvements to the statewide transportation system (highway, rail, and transit) and reasonably foreseeable local land development projects would be implemented by the year 2040. The No Project Alternative is based on a review of and consultation with several documents and data sources, including, but not limited to, transportation plans such as the 2020 Southern California Association of Governments' Regional Transportation Plan[7]; the Governor's Office of Land Use and Climate Innovation CEQAnet Database; the Federal Aviation Administration's Air Carrier Activity Information System and Airport Improvement Plan grant data; the California State Transportation Commission's State Transportation Improvement Program; airport master plans and interviews with airport officials; intercity passenger rail plans; and city and county general plans and planning officials.

## 2.2 High-Speed Rail Build Alternatives

The project proposes two build alternatives: Shared Passenger Track Alternative A and Shared Passenger Track Alternative B. Shared Passenger Track Alternative A proposes an LMF at 26th Street, whereas Shared Passenger Track Alternative B proposes an LMF at 15th Street. Both alternatives include an HSR station option in either Norwalk/Santa Fe Springs or Fullerton. The main elements of the build alternatives are summarized in Table 2-1 and depicted on Figure 2-1.

**Table 2-1 Summary of Design Features of Shared Passenger Track Alternative A and Shared Passenger Track Alternative B**

| Feature | Total |
|---|---|
| Total length (linear miles) | 29.7 |
| At-grade profile (linear miles) | 23.8 |
| Elevated profile (linear miles) | 5 |
| Below-grade/braced trench profile (linear miles) | 0.9 |

[6] California High-Speed Rail Business Plans (California High-Speed Rail 2022 Business Plan) suggest blended railroad systems and operations. These terms refer to integrating the HSR system with existing intercity, and commuter and regional rail systems through coordinated infrastructure (blended systems) and scheduling, ticketing, and other means (blended operations).

[7] The No Project Alternative uses the 2020 Southern California Association of Governments Regional Transportation Plan as the basis for analysis, with the exception of the transportation analysis, which uses the 2016 Regional Transportation Plan as the baseline. This is because of the date and availability of traffic counts collected for the project.

| Feature | Total |
|---|---|
| Number of straddle bents[1] | 16 |
| Number of at-grade railroad crossings[2] | 8 |
| Number of major water crossings[3] | 9 |
| Number of roadway overcrossings and undercrossings | 57 |

[1] A straddle bent is a pier structure that spans (or "straddles") the functional/operational limit of a roadway, highway, or railway.

[2] Railroad crossing means a railroad crossing another railroad.

[3] Features considered major water crossings are Los Angeles River, Rio Hondo (and basins), San Gabriel River, North Fork Coyote Creek, La Mirada Creek, Coyote Creek, Brea Creek, Fullerton Creek, and Carbon Creek.




*Source: Authority 2025*

**Figure 2-1 Los Angeles to Anaheim Project Section Alignment**

Currently, two to three mainline tracks occur throughout the corridor, with a variable number of freight siding tracks. The HSR project seeks to maintain existing operations in the corridor while minimizing impacts outside of the existing right-of-way. To accomplish this, the HSR project would add one new mainline track from LAUS to Fullerton Junction and would use existing tracks, where possible, to ensure that, overall, the project section includes two electrified tracks along the corridor for HSR, which would be shared with other passenger rail operators. These two electrified tracks are referred to herein as *shared tracks*. The specific details of Shared Passenger Track Alternative A and Shared Passenger Track Alternative B are discussed further below.

### 2.2.1 Shared Passenger Track Alternative A

#### *2.2.1.1 Alignment*

Table 2-2 summarizes the alignment of Shared Passenger Track Alternative A through the corridor cities. Figure 2-2 depicts the northern project section limit and its relationship with Los Angeles County Metropolitan Transportation Authority's proposed Link Union Station Project. Figure 2-3 through Figure 2-8, as referenced therein, provide cross-sections of various points along the project alignment discussed in Table 2-2. Where applicable, Table 2-2 also provides references to later sections of this project description that provide further details of other project components including, but not limited to, ancillary facilities, HSR and passenger rail stations, and the LMFs.

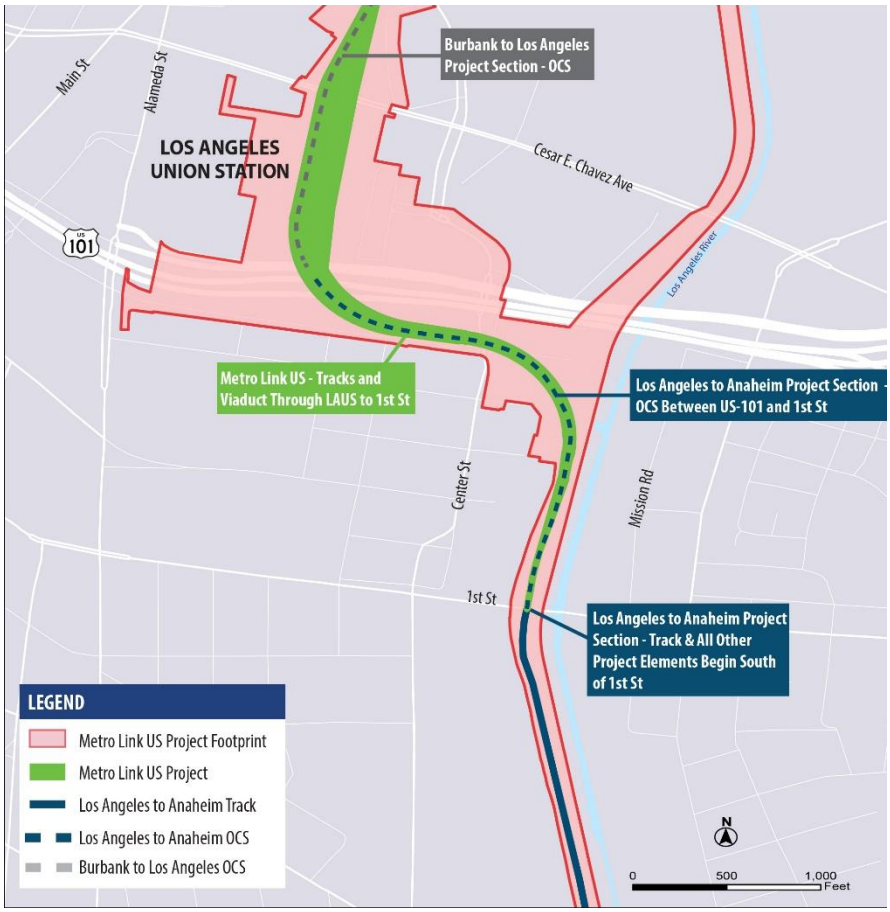
**Table 2-2 Shared Passenger Track Alternative A Alignment**

| Project Section Segment | Segment Alignment Description |
|---|---|
| Los Angeles and Vernon | • The project section would begin immediately south of LAUS, at the northern edge of US 101, where a viaduct built as part of the Link US Project would begin. The installation of the OCS north of US 101 was previously approved as part of the Burbank to Los Angeles Project Section in January 2022. From US 101 to 1st St, the Authority would build the OCS for HSR. At 1st St, Shared Passenger Track Alternative A would include the HSR project tracks and all other project infrastructure south to ARTIC.<br>• Starting at the LAUS platforms, HSR trains would run on tracks built as part of Link US, cross over US 101, Commercial St, and Ducommun St on a viaduct, and come down to grade just before 1st St, joining the existing railroad right-of-way. From this tie-in point south, the HSR trains would use the existing tracks, which would be upgraded with an OCS. Refer to Figure 2-3 for a cross section of the track between 1st St and 4th St.<br>• Between 7th St and I-10, two HSR layover tracks would be added west of the shared tracks; refer to Section 2.2.1.2, Ancillary Facilities, for more information. The shared tracks would cross under the Olympic Blvd roadway overcrossing and rise onto an existing railroad bridge to cross over Washington Blvd and the Los Angeles River. The shared tracks would return to at grade east of Soto St and enter Vernon.<br>• The BNSF and shared tracks would pass by the BNSF Los Angeles Intermodal Facility (referred to as Hobart Yard). The proposed 26th St LMF would be south of Hobart Yard and is described in more detail in Section 2.2.1.4, Light Maintenance Facility. |
| Commerce, Bell, Montebello, and Pico Rivera | • East of Hobart Yard, the tracks would cross at grade under I-710 and enter Commerce. Starting from west of Eastern Ave, the shared tracks would rise onto a new elevated structure, referred to as the *Commerce Flyover*; refer to Section 2.2.1.5, Freight or Passenger Railroad Modifications, and Figure 2-4 for more information on the Commerce Flyover, which is designed to pass by the BNSF Commerce Intermodal Facility (referred to as *Commerce Yard*).<br>• The Commerce Flyover would cross over Eastern Ave and pass by the existing Commerce Metrolink Station. The elevated shared tracks would not connect with the Commerce Metrolink Station's existing location, which would be relocated. Refer to Section 2.2.1.5 for more information on the Commerce Metrolink Station's relocation. The elevated tracks would return to grade before I-5 and would remain so throughout Montebello and Pico Rivera. |

| Project Section Segment | Segment Alignment Description |
|---|---|
| Santa Fe Springs and Norwalk | • The tracks would continue east into Santa Fe Springs and cross over Pioneer Blvd, Norwalk Blvd, and Los Nietos Rd. All of these would be new grade separations, with the roadway lowered and tracks crossing over on new railroad bridges; refer to Section 2.2.1.6, State Highway or Local Roadway Modifications.<br>• From Slauson Ave to Telegraph Ave, the track configuration would remain at grade with four tracks, as depicted on Figure 2-5.<br>• South of Telegraph Rd, the shared tracks would diverge outside of the existing railroad right-of-way and rise onto retained fill to cross over Florence Ave on a new bridge, while three BNSF mainline tracks would cross Florence Ave on the existing railroad bridge. The shared tracks would transition from retained fill onto an elevated structure that crosses over Lakeland Rd, while the BNSF tracks would remain at grade in their current configuration throughout this segment. The elevated structure would continue south and transition from the west side of the corridor over to the east side. Figure 2-6 depicts the track configuration south of Lakeland Rd.<br>• The elevated structure would veer east out of the existing railroad corridor and cross over Imperial Hwy, necessitating modifications to the existing Norwalk/Santa Fe Springs Metrolink Station, described in Section 2.2.1.3, High-Speed Rail Station Facilities, in more detail. Under Shared Passenger Track Alternative A, HSR trains would not stop at the Norwalk/Santa Fe Springs Metrolink Station.<br>• South of the station, the elevated structure would rejoin the existing railroad corridor and transition back down to at grade just west of Carmenita Rd. |
| La Mirada and Buena Park | • The tracks would continue at grade through La Mirada and Buena Park. In Buena Park, the track design would conflict with the location of the existing Buena Park Metrolink Station platform, necessitating the station's relocation (refer to Section 2.2.1.5 for more information). |
| Fullerton | • East of Dale St, the tracks would enter Fullerton. The Fullerton Municipal Airport is south of the railroad corridor, and the shared tracks would require lowering as they pass by the airport to prevent the HSR project, including the OCS, trains, and all other project components, from conflicting with the airport runway protection zone. The shared tracks on the north side of the corridor would also need to transition to the south side in order to serve the existing Fullerton Metrolink/Amtrak Station farther south.<br>• The shared tracks would transition underneath the BNSF tracks via a short below-grade section, in a braced trench. The trench would start approximately 850 feet east of Dale St and, approaching the eastern end of the Fullerton Airport, would cross under the BNSF tracks to the south side of the corridor, continuing adjacent to the existing BNSF tracks (which would remain at grade). Refer to Figure 2-7 for a cross section of the shared tracks in the trench after they transition to the south side of the corridor.<br>• The shared tracks would return to grade just before Gilbert St. Continuing east, a fourth track would be added to the south side of the corridor at the Fullerton Metrolink/Amtrak Station, which would require modifications, described in more detail in Section 2.2.1.3. Under Shared Passenger Track Alternative A, HSR trains would not stop at the Fullerton Metrolink/Amtrak Station.<br>• East of the station at Fullerton Junction, the three tracks along the north side of the corridor would be dedicated to BNSF trains and would continue east through Fullerton Junction. The tracks along the south side of the corridor would be dedicated to passenger trains and travel south to ARTIC. |

| Project Section Segment | Segment Alignment Description |
|---|---|
| Anaheim | • South of Fullerton Junction, the tracks would enter Anaheim. From Fullerton Junction to ARTIC, the two existing tracks would be electrified to allow for shared operations with Metrolink. Several freight trains per day currently run on the existing tracks and would retain operation rights in the future. The two shared tracks would remain at grade through the rest of Anaheim.<br>• The existing at-grade crossings at Orangethorpe Ave, La Palma Ave, Sycamore St, Broadway St, Santa Ana St, South St, Vermont Ave, and Ball Rd would be maintained. Refer to Figure 2-8 for the cross section that is representative of the two-track configuration throughout this segment.<br>• From south of Ball Rd to south of Cerritos Ave, two HSR layover tracks would be added along the west side of the corridor. Cerritos Avenue and State College Blvd would be grade separated, with the roadways lowered and the tracks crossing over the road on new railroad bridges.<br>• The tracks would end at ARTIC, where HSR platforms and station facilities would be added to the existing station, described in more detail in Section 2.2.1.3. |

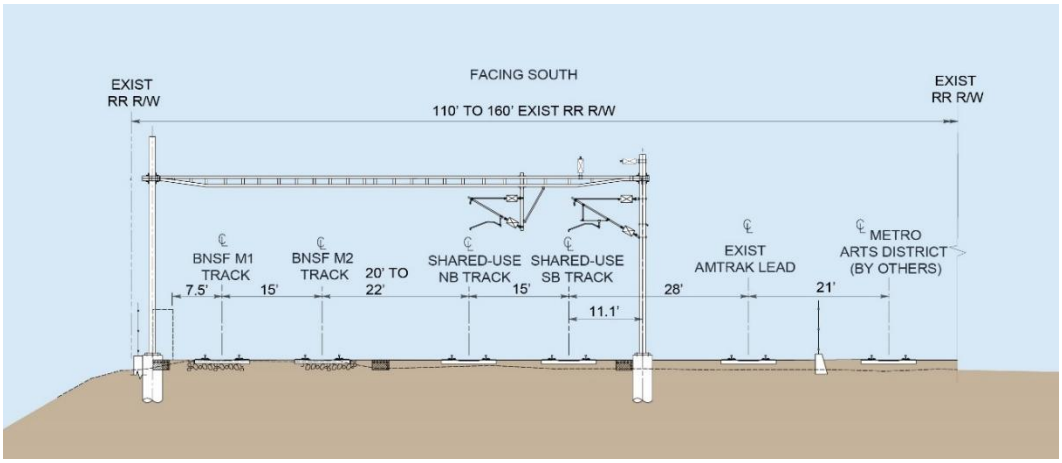
ARTIC = Anaheim Regional Transportation Intermodal Center; Authority = California High-Speed Rail Authority; BNSF = BNSF Railway; HSR = high-speed rail; I = interstate; LAUS = Los Angeles Union Station; Link US = Link Union Station; OCS = overhead contact system; project section = Los Angeles to Anaheim Project Section; US 101 = U.S. Highway 101




*Source: Authority 2025*

Link US = Link Union Station; Metro = Los Angeles County Metropolitan Transportation Authority; OCS = overhead contact system

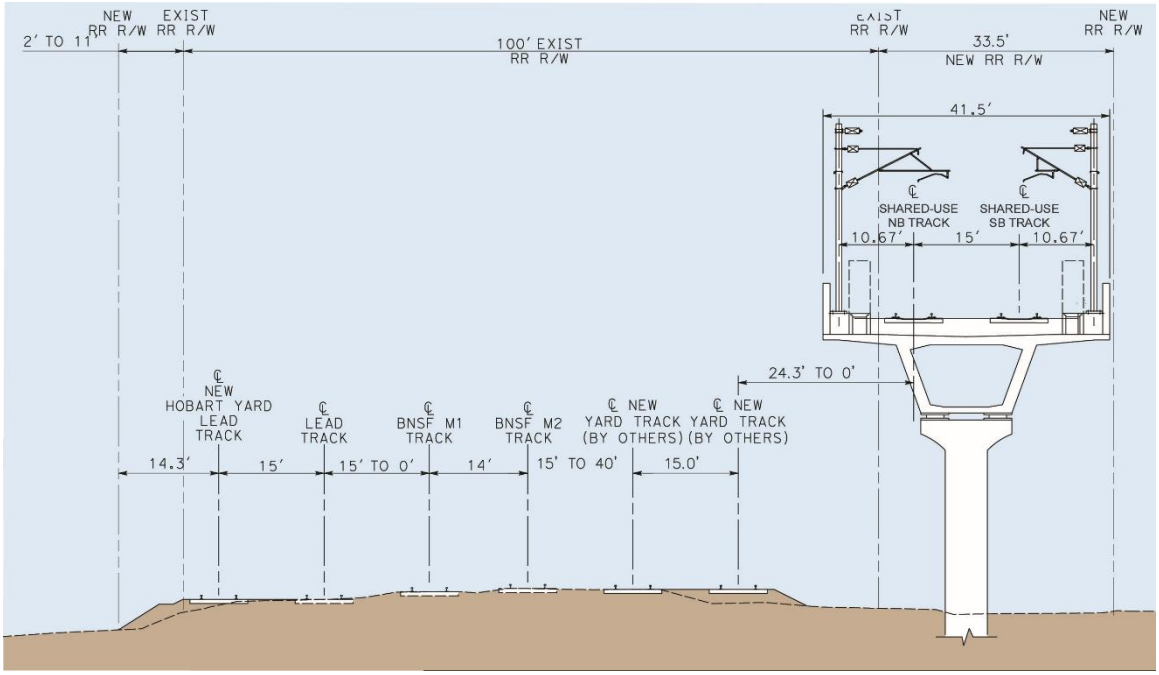
**Figure 2-2 High-Speed Rail and Link Union Station Project**




*Source: Authority 2025*

M = main track; RR = railroad; R/W = right-of-way; NB = northbound; SB = southbound

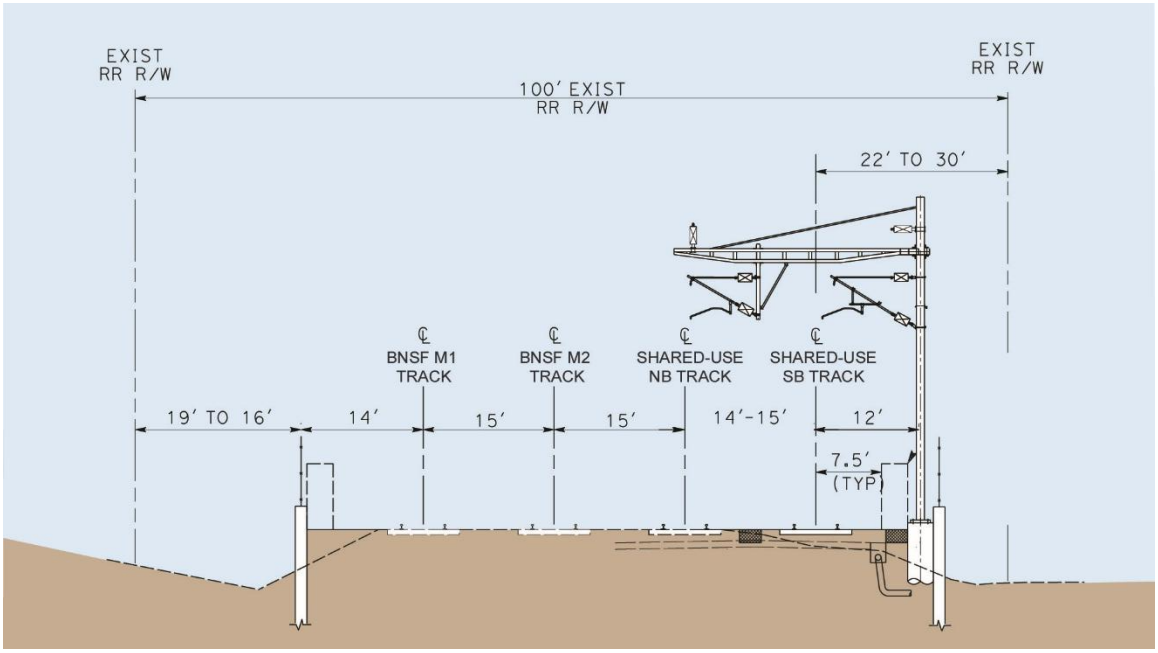
**Figure 2-3 At-Grade Cross Section between 1st Street and 4th Street**




*Source: Authority 2025*

M = main track; RR = railroad; R/W = right-of-way; NB = northbound; SB = southbound;

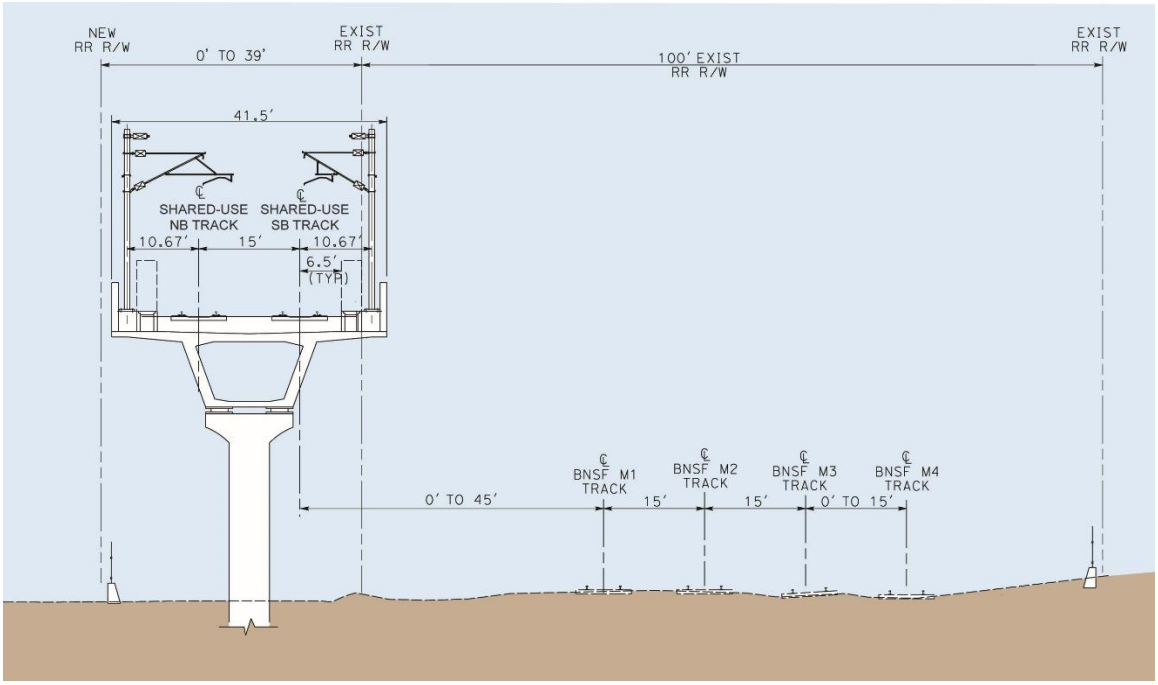
**Figure 2-4 Elevated Cross Section between Atlantic Boulevard and Eastern Avenue (Commerce Flyover)**




*Source: Authority 2025*

M = main track; RR = railroad; R/W = right-of-way; NB = northbound; SB = southbound

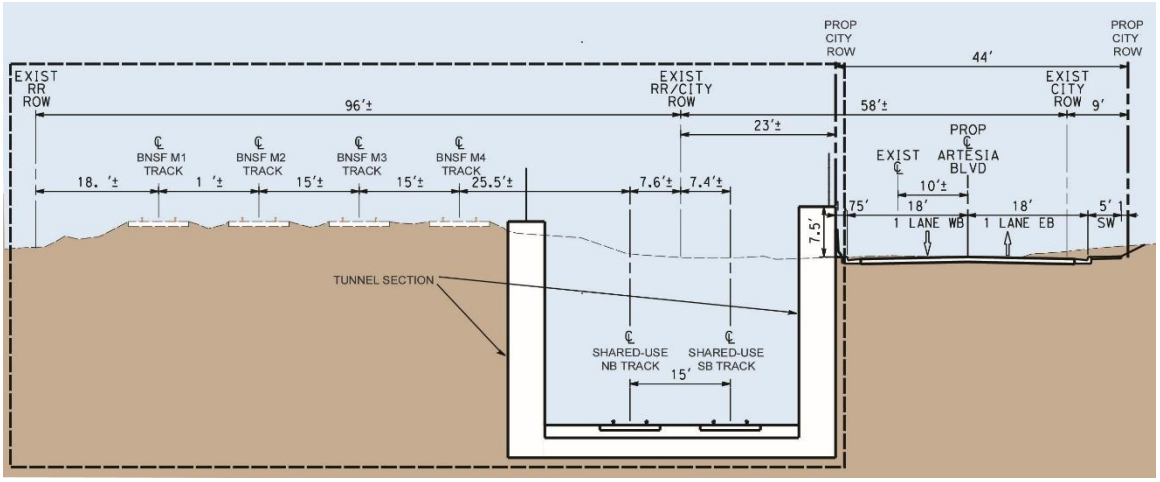
**Figure 2-5 At-Grade Cross Section from Slauson Avenue to Telegraph Road**




*Source: Authority 2025*

M = main track; RR = railroad; R/W = right-of-way; NB = northbound; SB = southbound

**Figure 2-6 Elevated Cross Section South of Lakeland Road**

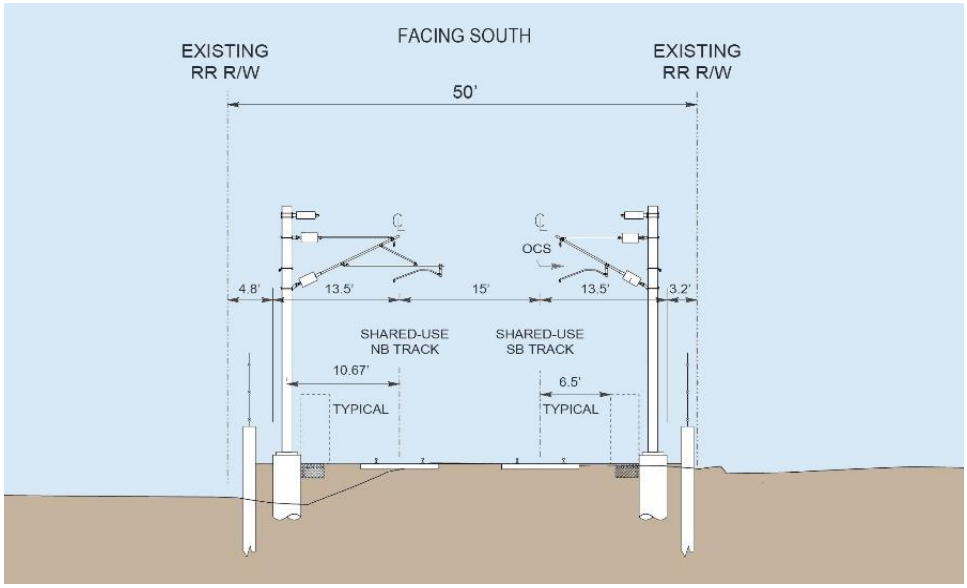



*Source: Authority 2025*

Figure not to scale

M = main track; OCS = overhead contact system; RR R/W = railroad right-of-way

**Figure 2-7 Braced Trench Cross Section East of Fullerton Airport**




*Source: Authority 2025*

OCS = overhead contact system; RR = railroad; R/W = right-of-way; NB = northbound; SB = southbound

**Figure 2-8 At-Grade Cross Section between La Palma Avenue and Ball Road**

### *2.2.1.2 Ancillary Facilities*

#### *Systems Facilities*

HSR trains would draw power from California's existing electricity grid, with power distributed to the trains via the overhead contact system (OCS). The project would not include construction of a separate power source; rather, the existing grid would supply power to the OCS through the extension of underground or overhead transmission lines to a series of power substations positioned along the railroad corridor. The transformation and distribution of electricity would occur through the following three types of stations:

- Traction power substations (TPSS), which would transform high-voltage electricity supplied by public utilities to the train operating voltage. The project section would include two TPSS sites (Los Angeles and Anaheim), which would both be adjacent to existing utility transmission lines and outside of the existing right-of-way. The TPSS sites would be spaced apart by approximately 30 miles along the project alignment and each include an approximately 450-square-foot control room and two 115/50-kilovolt or 230/50-kilovolt, single-phase transformers that would both be rated at 60 megavolt-amperes. The foregoing components would be installed within an approximately 32,000-square-foot area, and screening of each TPSS would be provided by a wall or fence.
- A switching station to connect and balance the electrical load between tracks and switch OCS power on or off in the event of a power outage or emergency. A switching station would be installed in Santa Fe Springs, generally midway between the two TPSS sites, approximately 15 miles from the nearest TPSS and 0.1 mile northeast of the project alignment. Installation of the station's equipment would require approximately 9,600 square feet.
- Paralleling stations, or autotransformer stations, to provide voltage stabilization and equalize current flow. Two paralleling stations would be installed along the project alignment, with one each along the segments between the Santa Fe Springs switching station and the Los Angeles and Anaheim TPSS sites. Each paralleling station would be adjacent to the HSR right-of-way, include an approximately 450-square-foot control room, and require approximately 8,000 square feet.

Table 2-3 provides the locations of the proposed TPSSs, switching station, and paralleling stations.

**Table 2-3 Traction Power, Paralleling, and Switching Station Locations**

| Traction Power Station Type | Location |
|---|---|
| Traction power substation (two sites) | **City of Los Angeles:** South of Washington Blvd, and west of Soto St, adjacent to the existing railroad viaduct<br>**City of Anaheim:** On the northeast corner of Lewis St and Cerritos Ave, southwest of the HSR tracks |
| Paralleling station (two sites) | **City of Montebello:** Southwest corner of Maple Ave and Sycamore St, south of the HSR tracks (co-located with the relocated Commerce Metrolink Station)<br>**City of Fullerton:** Northwest corner of Dale St and Artesia Ave, south of the HSR tracks |
| Switching station | **City of Santa Fe Springs:** Northeast corner of Los Nietos Rd and Santa Fe Springs Rd, north of BNSF Railway tracks |

*Source: Authority 2025*

HSR = high-speed rail

### *Signaling and Train-Control Elements*

The National Transportation Safety Board, FRA, and other agencies mandate Positive Train Control, a train safety system designed to automatically implement safety protocols and provide communication with other trains to reduce the risk of a potential collision. Because of the lower operating speed of HSR trains in this project section compared to other HSR project sections, this project section would operate using conventional Positive Train Control signaling rather than a specialized HSR signaling system. This project section would use a radio-based communications network, including a fiber optic backbone and communications towers approximately every 2 to 3 miles, depending on the terrain and selected radio frequency. The towers would be in the HSR corridor in a fenced area of approximately 20 feet by 15 feet, including a 10- by 8-foot communications shelter and a 6- to 8-foot diameter, 100-foot-tall communications pole. These

communications facilities could be co-located within the TPSSs. Where communications towers cannot be located with TPSSs or other HSR facilities, they would be within or near the HSR corridor in an approximately 20- by 15-foot fenced area.

***Layover Tracks***

Layover tracks are used to store and restock trains during the day, in between service runs, and to store trains at night at terminus stations when they are not in service. Layover tracks are required where high-speed trains would end their runs, near LAUS and ARTIC, to support layover functions such as overnight storage, draining of waste tanks, filling of potable water tanks, and cleaning of windows, among others, as well as daily scheduled interior cleaning of passenger areas that would occur prior to the train entering revenue service. The Los Angeles layover tracks would be between Seventh Street and Interstate 10, and could be accessed for cleaning activities through the Amtrak Eighth Street Yard. The Anaheim layover tracks would be from south of Ball Road to south of Cerritos Avenue, and would have a layover support facility at the northeast corner of Lewis Street and Cerritos Avenue.

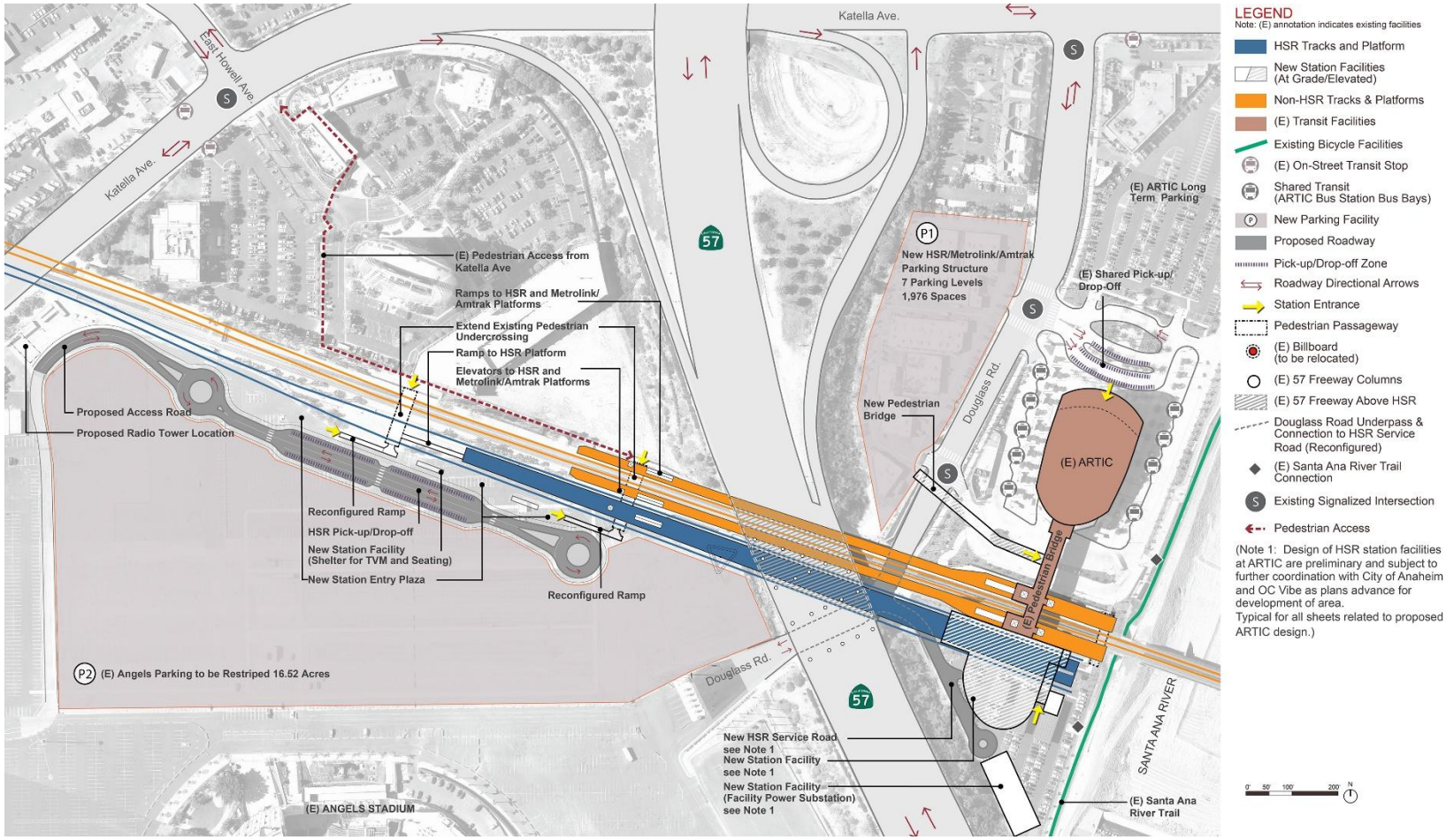
### *2.2.1.3 High-Speed Rail Station Facilities*

Because the project section is within an existing corridor with passenger rail service, Shared Passenger Track Alternative A does not propose new HSR stations but rather modifies existing passenger rail stations to allow for shared operations with HSR. Shared Passenger Track Alternative A would include an HSR station platform and facilities at ARTIC, described below.

***ARTIC High-Speed Rail Platform and Station Facilities***

The proposed HSR platform and station facilities at the existing ARTIC station would be at grade, with two new HSR tracks and a single 1,410-foot center platform for HSR, south of and parallel to the existing Metrolink/Amtrak tracks and platforms. The HSR platform would be accessed through an extension of ARTIC's existing pedestrian bridge from the northeast and through an extension of two existing pedestrian tunnels on the western end of the existing ARTIC platforms. The Authority would work with the City of Anaheim, as the ARTIC passenger terminal owner, to share the passenger amenities inside ARTIC in the near term. Once ridership increases enough that combined HSR and local-provider passenger volumes exceed the design capacity of the ARTIC passenger terminal building, the Authority would build a separate HSR passenger terminal. This new HSR station building, included within the project footprint and depicted on Figure 2-9, would be at the southern end of the pedestrian bridge, along with a facility power substation to provide electricity to the building. The existing Metrolink/Amtrak parking lot north of Angel Stadium would be reconfigured into a pick-up/drop-off area and connected to the existing access road from Katella Avenue. The project would maintain the two existing access points between the Santa Ana River Trail and ARTIC. Radio towers would be built adjacent to the access road at Katella Avenue.

This project would include a new parking structure adjacent to State Route 57 and Katella Avenue, providing 1,350 HSR parking spaces and 626 replacement parking spaces to account for existing parking spaces at ARTIC that would be displaced by the HSR tracks and platform, for a total of 1,976 parking spaces. Figure 2-9 provides an illustration of the HSR platform and station facilities at ARTIC.




*Source: Authority 2025*

**Figure 2-9 High-Speed Rail Platform and Facilities at ARTIC**

#### 2.2.1.4 Light Maintenance Facility

HSR operations in Southern California would require a Level III[8] LMF for fleet storage, cleaning, repair, overnight layover accommodations, and servicing facilities, including the necessary water cistern and power facilities. The 26th Street LMF is designed to follow the Authority's *Requirements for High-Speed Trainset Fleet and Infrastructure Maintenance Facilities Technical Memorandum* (Authority 2024).

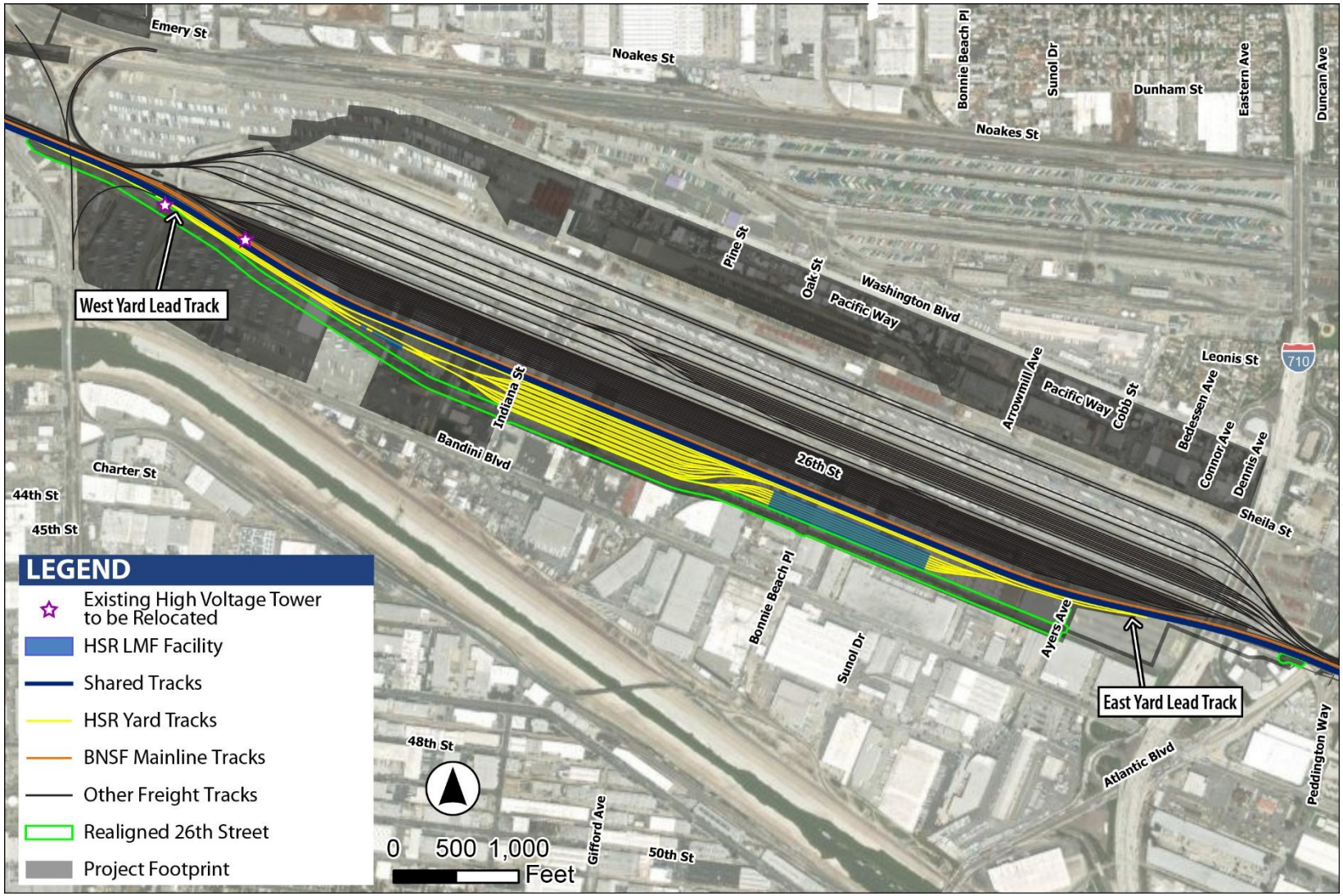
Refer to Figure 2-10 for an overview of the 26th Street LMF, which would have an overall size of 50 acres and be roughly bounded by the realigned mainline tracks on the north, a relocated 26th Street on the south, Downey Road on the west, and Interstate 710 on the east. The changes on the south side of Hobart Yard would require 26th Street to be realigned, which would provide access to the LMF. Two high-voltage utility towers would be relocated to accommodate the 26th Street realignment. Refer to Section 2.2.1.5 for more details on changes adjacent to Hobart Yard.

The LMF would be double-ended, with all tracks having access from the mainline on both the eastern and western sides. HSR trains would access the LMF from the east and west on two new yard lead tracks, which would be south of the mainline tracks. Within the 26th Street LMF, there would be an outdoor train yard with 12 yard tracks to allow for the storage of 24 single trainsets, along with a 1,345-foot-long, six-track shop building, which could accommodate 12 trainsets. The internal LMF access roads would be wide enough to accommodate service vehicles, consolidate commissary functions, and provide more clearance from the OCS poles to the yard tracks.

#### 2.2.1.5 Freight or Passenger Railroad Modifications

Shared Passenger Track Alternative A would modify the existing rail corridor to create a corridor that is primarily four mainline tracks (two electrified and shared with other passenger rail operators) from Los Angeles to Fullerton, and two mainline tracks (electrified and shared with both passenger rail and freight operators) from Fullerton to Anaheim. Freight rail would operate primarily on the nonelectrified tracks, although the electrified tracks could accommodate freight traffic if necessary (up to 10 BNSF freight trains per day would be able to use the two passenger rail tracks), while maintaining service and operation levels for all operators within the corridor. The following sections describe the freight and passenger railroad modifications in more detail, which include modifications to BNSF storage and intermodal facilities as well as modifications to and relocations of existing passenger rail stations.

[8] The Authority defines three levels of maintenance to be conducted at an LMF.




*Source: Authority 2025*

**Figure 2-10 Shared Passenger Track Alternative A: 26th Street Light Maintenance Facility**

### *BNSF Railway Storage and Intermodal Facilities*

Adding and electrifying tracks in the existing right-of-way would require the Authority to remove or modify track and right-of-way that is currently used or planned for future use by BNSF for train storage and intermodal operations. This requires modifications to BNSF's plans for expansion at its yards in Vernon and Commerce. In several locations, Shared Passenger Track Alternative A would require removal/relocation of existing BNSF infrastructure. Thus, Shared Passenger Track Alternative A would replace the affected BNSF infrastructure, primarily adjacent to Hobart Yard, to maintain BNSF capacity and avoid disruptions to operations.

Table 2-4 lists the BNSF storage capacity that would be removed from the corridor and relocated to the new consolidated storage yard adjacent to Hobart Yard; refer to Figure 2-11 for an overview of the relocated infrastructure. The new storage yard would provide 101,094 track feet of storage, including 5,850 track feet for a new runaround track,[9] which is slightly more than the amount removed from the corridor (90,940 track feet). This is a result of the layout and overall length of the new consolidated yard. The tracks need to be operational while fitting within the new yard space and maintaining the removed storage capacity, and therefore some replacement tracks would be longer than the ones that are being removed from the corridor. In addition to the relocations described in Table 2-4, some BNSF yard lead and storage tracks throughout the corridor would be relocated and replaced within the same area, with the same level of storage capacity and operational functionality maintained. This includes the Pico Rivera Yard north and south lead tracks, La Mirada Yard lead track and storage track, and Fullerton storage track on the southern side between Commonwealth Avenue and Highland Avenue.

**Table 2-4 BNSF Railway Facility or Track to Be Removed or Modified**

| HSR Project Element Affecting BNSF Infrastructure | BNSF Facility/Track to Be Removed/Relocated/Modified | Length of Removed/ Relocated Tracks (TF) |
|---|---|---|
| HSR mainline and layover tracks | BNSF 8th St Yard (BNSF storage tracks between 1st St and I-10 along West Bank) | 35,000 |
| Relocated Commerce Metrolink Station | South Vail Support Track (between Vail St and Minson Wy) | 3,800 |
| 4th mainline track | Pico Rivera Storage Tracks | 4,000 |
| 4th mainline track | Norwalk Support Track (between Telegraph Rd and Florence Ave) | 4,400 |
| 4th mainline track | Santa Fe Springs Staging Track (through existing Norwalk/Santa Fe Springs Metrolink Station area) | 14,600 |
| Fullerton braced trench | Buena Park/Fullerton Storage Tracks (on north side between Dale St and Gilbert St) | 15,840 |
| 4th mainline track | Fullerton support track (north of Fullerton Amtrak/Metrolink Station) | 4,500 |
| 4th mainline track | Fullerton storage track (on north side between Commonwealth Ave and Highland Ave) | 8,800 |
| **Total** | | **90,940** |

*Source: STV 2025*

[9] Runaround tracks allow a locomotive to move around the train and attach to the opposite end, enabling the train to be switched or moved in the desired direction. The runaround track must be as long as the longest set of cars that would be pulled. A runaround track is generally recommended for all modern rail yards to reduce overall freight congestion.

BNSF = BNSF Railway; HSR = high-speed rail; I = interstate; TF = track feet




*Source: STV 2025*

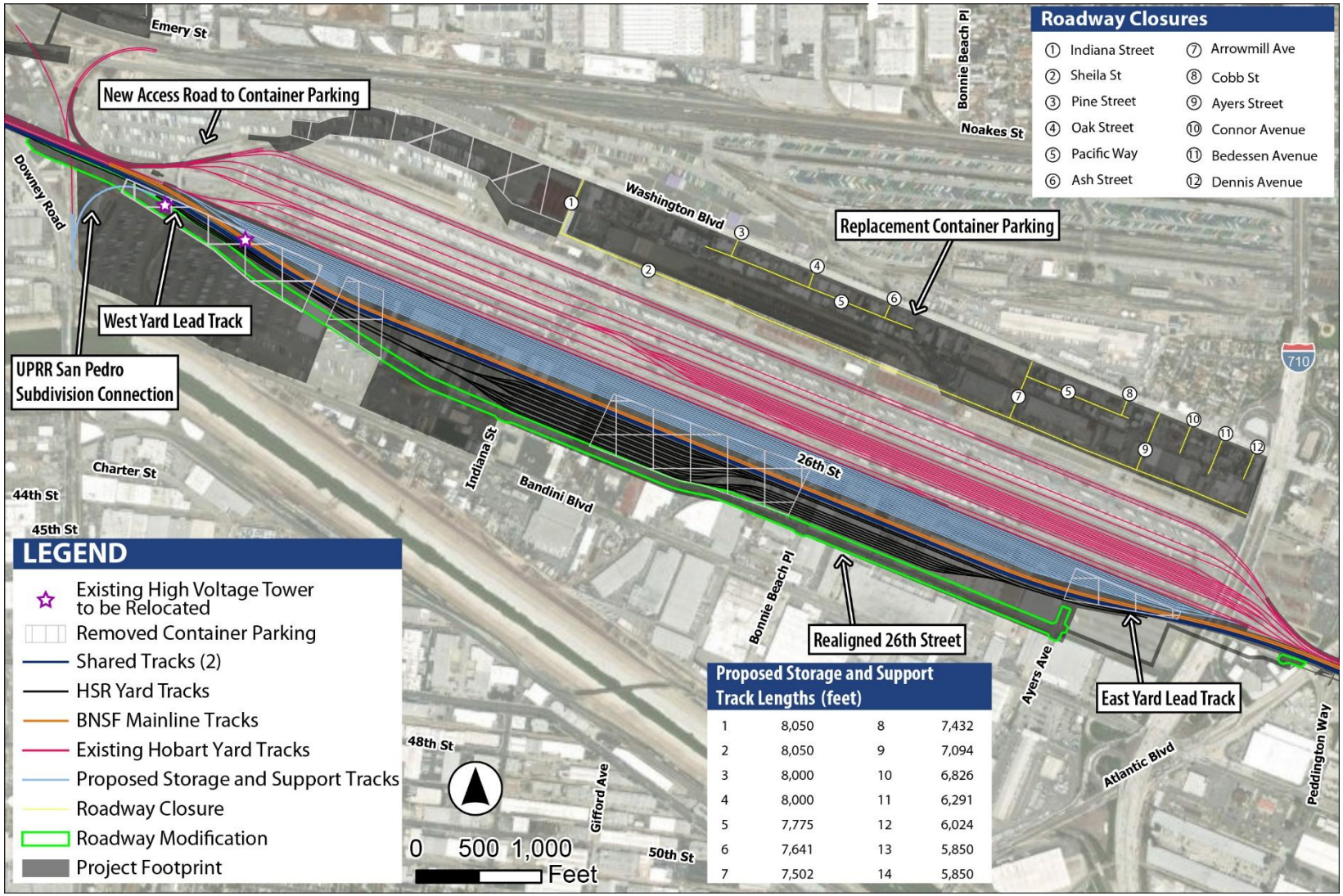
**Figure 2-11 BNSF Railway Infrastructure Affected by the Los Angeles to Anaheim Project Section**

### BNSF Railway Los Angeles Intermodal Facility (Hobart Yard)

Figure 2-12 depicts the proposed changes at Hobart Yard. The consolidated storage yard, BNSF mainline tracks, shared tracks, and new connection to the UPRR San Pedro Subdivision would be up to 250 feet south of the current southern limit at Hobart Yard and into properties south of 26th Street. New second lead tracks into Hobart Yard from the west and east would also be added. These additional lead tracks would allow freight trains to move off the mainline tracks at speed and avoid delays and backups in an already heavily congested corridor. These track changes would require the vacation and realignment of the 26th Street right-of-way from Downey Road to Atlantic Boulevard.

The changes described above, along with LMF yard lead tracks, would displace some existing BNSF container parking south of the railroad corridor. This container parking would be replaced by acquiring properties north of Hobart Yard along the south side of Washington Boulevard, which would require a new access road north of Hobart Yard and the closure of several roads between Washington Boulevard and Sheila Street (refer to Section 2.2.1.6, State Highway or Local Roadway Modifications, for more details on roadway changes related to Hobart Yard). The new access road would also displace some existing container parking that would be replaced in the new container parking area.

Additionally, two high-voltage utility towers would be relocated to accommodate the 26th Street realignment.



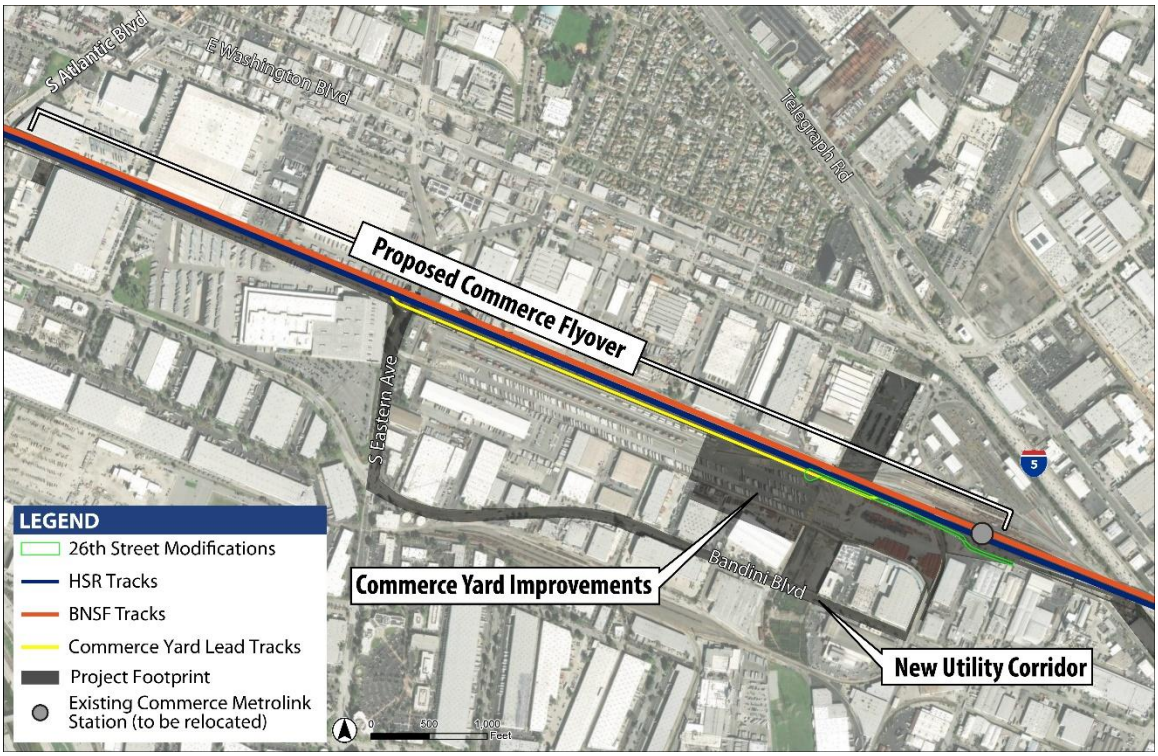

*Sources: Authority 2025; ESRI 2020*

**Figure 2-12 Hobart Yard Modifications (Shared Passenger Track Alternative A)**

### BNSF Railway Commerce Intermodal Facility (Commerce Yard)

Adjacent to Commerce Yard, the Commerce Flyover would separate passenger trains on an elevated structure from the freight trains running at grade. Figure 2-13 depicts the modifications required throughout the Commerce Yard area to maintain operations. Two new BNSF yard tracks would be added, converging into a new BNSF stub lead track west of Interstate 5, with additional connector tracks. Improvements would include reconstructing several of the lead tracks, relocating the truck entrance gates and internal access road, and adding truck storage parking and a switching tail track. These yard improvements would require a portion of 26th Street to be closed; 26th Street currently provides access to the yard from the east, but the new entrance to the yard would require approximately 1,300 feet of the road to be closed.

Existing utilities along the south side of the railroad corridor would be relocated to the south in a new utility corridor, within Bandini Boulevard. Additionally, the high-voltage power lines currently running south of and parallel to the railroad corridor must be raised to provide the required clearance from the Commerce Flyover structure.




*Sources: Authority 2025; ESRI 2020*

**Figure 2-13 Commerce Flyover and Commerce Yard Modifications**

### *Modified Metrolink Stations*

### Norwalk/Santa Fe Springs Metrolink Station Modifications

HSR trains would not stop at the Norwalk/Santa Fe Springs Metrolink Station, but modifications would be required for HSR operations, as depicted on Figure 2-14. The existing platforms at Norwalk/Santa Fe Springs Metrolink Station are in an area that would not be able to accommodate an additional mainline track and shared operations between HSR and Metrolink. Adding the additional mainline track would require shifting the existing platforms to an area with a straight section of track. Therefore, the Metrolink platforms would be moved to be served by the shared tracks on the new elevated structure, approximately 350 feet east of the existing alignment (at their farthest points). The modified station would be elevated, with two 680-foot side

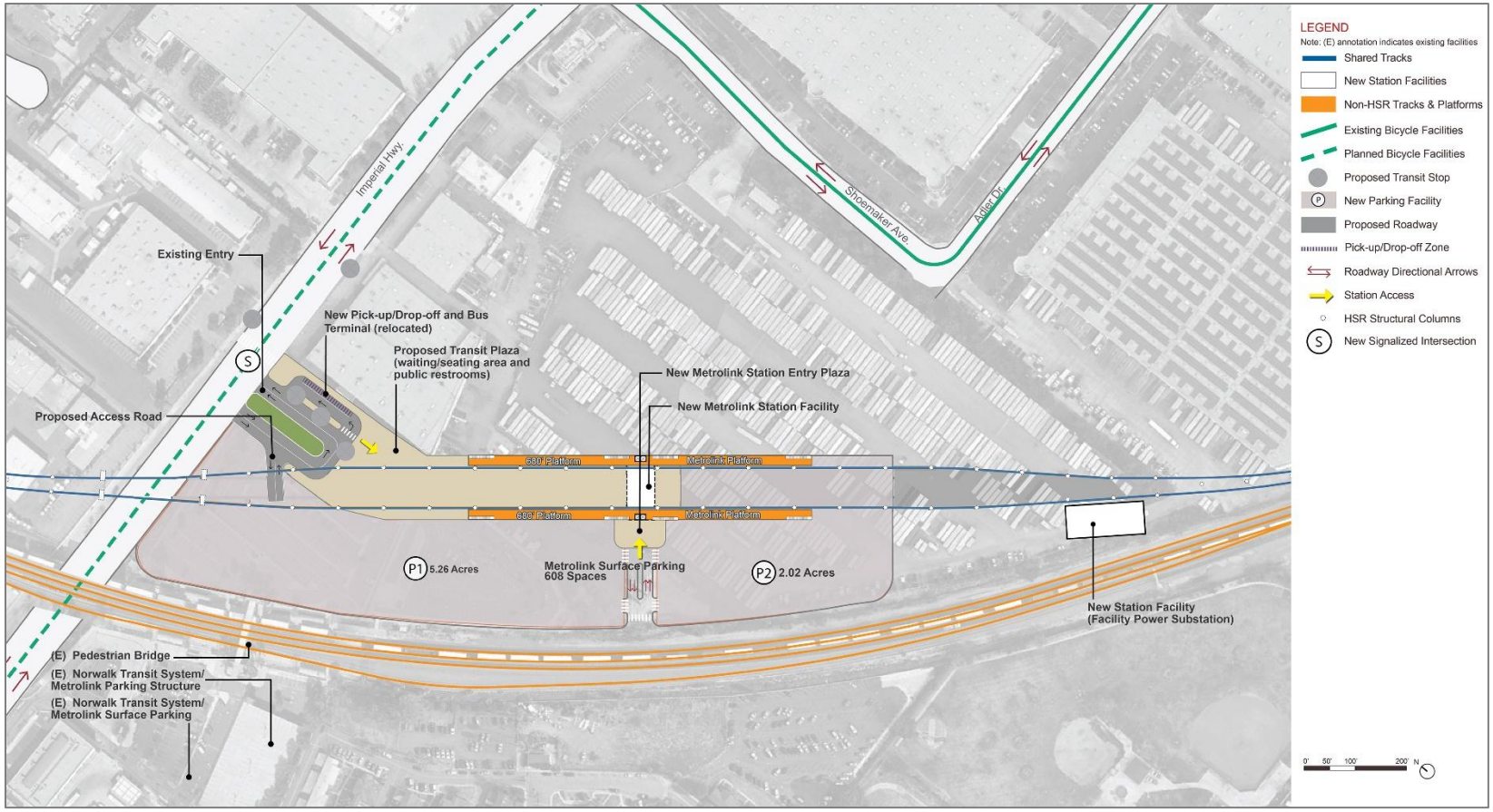
platforms, capable of future extension to 1,000 feet; the space for the future extension is included within the project footprint.

The existing Metrolink parking and bus drop-off west of the railroad corridor would be relocated to the east of the elevated structure to provide better access to the modified Metrolink platforms. Station entry points would be on Imperial Highway to the north and at Shoemaker Avenue and Adler Drive to the east and would require new access roadways. On Imperial Highway, the signalization leading into the parking garage would require modifications, as required by the City of Norwalk. The project would provide 608 surface parking spaces west of the modified platforms to replace the parking spaces at the existing Norwalk/Santa Fe Springs Metrolink Station displaced by the HSR modifications. Parking and pick-up/drop-off for Metrolink passengers would be within surface parking lots.

**Fullerton Metrolink/Amtrak Station Modifications**

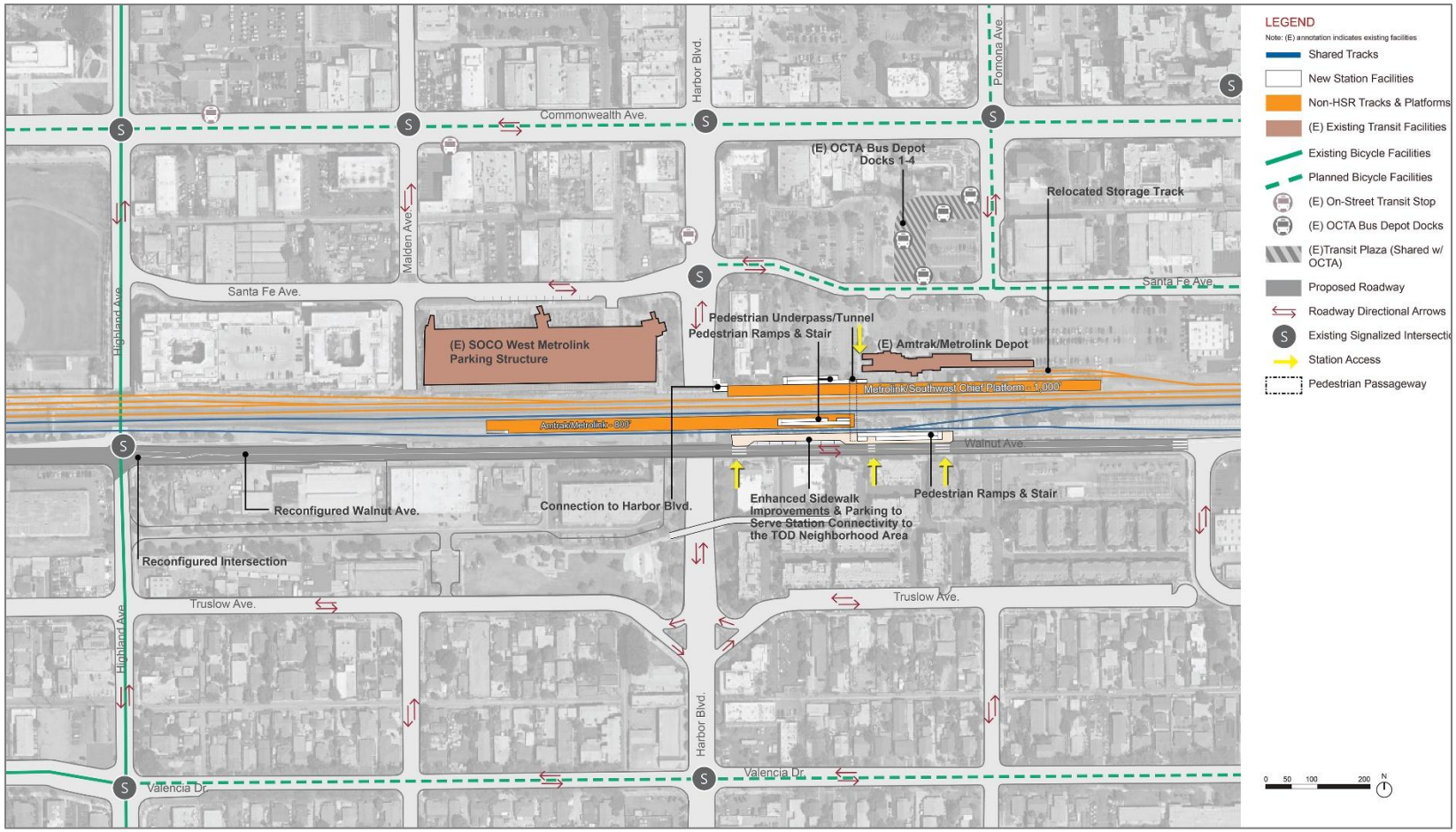
HSR trains would not stop at the Fullerton Metrolink/Amtrak Station, but modifications would be required for HSR operations, as depicted on Figure 2-15. At the Fullerton Metrolink/Amtrak Station, a fourth mainline track would need to be added on the southern side of the corridor, outside of the existing railroad right-of-way, to allow HSR trains to pass through the station. A new railroad bridge would be built over Highland Avenue to accommodate the new shared track, which requires Walnut Avenue to be slightly realigned to the south, and the intersection of Walnut Avenue and Highland Avenue would need to be redesigned.

Several modifications would occur for the Metrolink/Amtrak station platforms. The two existing platforms on the southern side would be removed, and a new 800-foot center platform would be added over Harbor Boulevard. The existing pedestrian bridge east of Harbor Boulevard that connects the two side platforms would be removed and replaced by a new pedestrian underpass that connects the existing northern platform, new center platform, and Walnut Avenue to the south, with ramps and stairs providing access. South of the new Metrolink/Amtrak center platform, Walnut Avenue would be slightly narrowed, and sidewalk improvements and crosswalks would be added east of Harbor Boulevard to improve station connectivity to the neighborhood.




*Source: Authority 2025*

**Figure 2-14 Modified Norwalk/Santa Fe Springs Metrolink Station Site Plan**




*Source: Authority 2025*

**Figure 2-15 Modified Fullerton Metrolink/Amtrak Station Site Plan**

***Relocated Metrolink Stations***

**Commerce Metrolink Station Relocation**

As stated in Section 2.2.1.1, the Commerce Flyover would require the Commerce Metrolink Station to be relocated to an area northeast of the intersection of Telegraph Road and Maple Avenue, which is approximately 0.75 mile to the east of its current location. The relocated Commerce Metrolink Station would be for Metrolink trains only; no HSR trains would stop at this station. An HSR paralleling station would be co-located at the relocated station site. Most of the relocated station would be within Montebello, including the replacement surface parking, plaza, and internal access roads; the platform and nonpublic station facilities north of the railroad corridor would be within Commerce.

The relocated station would have a center platform along the southern side of the rail corridor, accessible from the north via Sycamore Street via a new pedestrian underpass, and from the south via Maple Avenue. The intersection of Sycamore Street and Supply Avenue would be modified with pedestrian crosswalks, and the intersection of Telegraph Road and Maple Avenue would have a new signal and crosswalks to provide safe access to the new station location. All the existing station facilities, such as a transit plaza for buses, bicycle parking, vehicle parking (140 spaces), and a pick-up/drop-off area for motorists, would be replaced south of the corridor, to be accessed via Maple Avenue.

**Buena Park Metrolink Station Relocation**

As stated in Section 2.2.1.1, the HSR project would add and realign tracks through the existing Buena Park Metrolink Station, necessitating the relocation of the station. The Buena Park Metrolink Station would be relocated to between South Coyote Creek and Beach Boulevard, approximately 0.75 mile northwest of its current location within Buena Park. The proposed relocated Buena Park Metrolink Station would be for Metrolink trains only; no HSR trains would stop at this station.

The relocated station would have a center platform provided along the northern side of the existing rail corridor, accessible from the north via Stage Road and from the east via Beach Boulevard. A new signalized intersection is proposed at the intersection of Coyote Creek and Stage Road. All existing station facilities would be replaced, including a transit plaza for buses, bicycle parking, vehicle parking (313 spaces), and a pick-up/drop-off area for motorists.

### *2.2.1.6 State Highway or Local Roadway Modifications*

***Modifications at Roadway Crossings***

Shared Passenger Track Alternative A would cross 57 federal, state, and locally controlled roadways, most of which are currently grade separated. A portion of the foregoing roadway crossings would require, in general, one of the following three types of roadway modifications:

- **New grade separations:** There are six roadway crossings where new railroad grade separations (railroad bridge crossings) would be needed. Five of the existing at-grade roadways would be fully grade separated and lowered to cross under the proposed railroad bridges. One roadway (Lakeland Road) would be partially grade separated and would not require vertical realignment, because the shared tracks would cross over the roadway on a new bridge.
- **Modified existing grade separations (roadway vertical realignment):** The alignment would use existing railroad bridges throughout the corridor, most of which would need to be widened or new bridges would need to be added adjacent to the existing bridges to accommodate new tracks. At nine of these existing grade separations, the roadways would require vertical realignments (i.e., be lowered) to provide the required clearances between the road and the railroad bridge.

- **Modified existing grade separations (new piers and abutments):** Thirteen existing grade separations would require modified piers or abutments to accommodate new or widened railroad bridges. No vertical realignment of the roadway would be required.

Eight at-grade crossings at Orangethorpe Avenue, La Palma Avenue, Sycamore Street, Broadway, Santa Ana Street, Sixth Street, Vermont Avenue, Ball Road, and Lewis Street would remain at grade and would be modified only to add OCS to the existing tracks.

Additionally, all existing roadway overcrossings that would span over the shared tracks would be modified to have protective barriers on the top to prevent people or objects from entering the HSR right-of-way from the bridge. Detailed plans of barrier type and installation details will be determined during the Preliminary Engineering for Procurement design phase and coordination with the corridor stakeholders.

Table 2-5 lists all the crossings and any modifications that would be required along the Shared Passenger Track Alternative A alignment.

**Table 2-5 Modifications to Roadway Crossings (from northwest to southeast)**

| Roadway | City | Current Crossing Configuration | Proposed Modification |
|---|---|---|---|
| 1st St | Los Angeles | Overcrossing | None |
| 4th St | Los Angeles | Overcrossing | None |
| 6th St/Whittier Blvd | Los Angeles | Overcrossing | None |
| 7th St | Los Angeles | Overcrossing | None |
| I-10 (Santa Monica freeway) | Los Angeles | Overcrossing | None |
| Olympic Blvd | Los Angeles | Overcrossing | None |
| Washington Blvd | Los Angeles | Undercrossing | None |
| Soto St | Los Angeles | Undercrossing | None |
| Downey Rd | Vernon | Undercrossing | New pier and abutments within roadway |
| Private access road | Vernon | Overcrossing | None |
| I-710 (Long Beach freeway) | Vernon | Overcrossing | None |
| Atlantic Blvd | Commerce | Undercrossing | New piers and abutments within roadway |
| Eastern Ave | Commerce | Undercrossing | New piers and abutments within roadway |
| I-5 (Santa Ana freeway) | Commerce | Undercrossing | None |
| Telegraph Rd | Commerce | Undercrossing | None |
| Garfield Ave | Commerce | Undercrossing | None |
| Greenwood Ave | Montebello | Undercrossing | None |
| Paramount Blvd | Pico Rivera | Undercrossing | None |
| SR 19 (Rosemead Blvd) | Pico Rivera | Undercrossing | Road vertical realignment, new abutments within roadway |
| Passons Blvd | Pico Rivera | Undercrossing | New pier and abutments within roadway |
| Slauson Ave | Santa Fe Springs | Overcrossing | Pier modifications |

| Roadway | City | Current Crossing Configuration | Proposed Modification |
|---|---|---|---|
| I-605 (San Gabriel freeway) | Santa Fe Springs | Overcrossing | None |
| Pioneer Blvd | Santa Fe Springs | At grade | New grade separation; roadway lowered to cross under tracks on a new railroad bridge |
| Norwalk Blvd | Santa Fe Springs | At grade | New grade separation; roadway lowered to cross under tracks on a new railroad bridge |
| Los Nietos Rd | Santa Fe Springs | At grade | New grade separation; roadway lowered to cross under tracks on a new railroad bridge |
| Santa Fe Springs Rd | Santa Fe Springs | Undercrossing | New piers and abutments within roadway |
| Telegraph Rd | Santa Fe Springs | Undercrossing | New pier and abutments within roadway |
| Florence Ave | Santa Fe Springs | Undercrossing | New pier and abutments within roadway |
| Lakeland Rd | Santa Fe Springs | At grade | New grade separation (for HSR only); roadway remains at grade and shared tracks on elevated structure |
| Imperial Hwy | Santa Fe Springs, Norwalk | Undercrossing | None |
| Carmenita Rd | Santa Fe Springs | Undercrossing | Roadway vertical realignment, new piers and abutments within roadway |
| Rosecrans Ave/Marquardt Ave | Santa Fe Springs | Overcrossing | None |
| Valley View Ave | Santa Fe Springs, La Mirada | Undercrossing | New piers and abutments within roadway |
| Alondra Blvd | La Mirada | Overcrossing | Bridge replacement, roadway vertical realignment |
| SR 39 (Beach Blvd) | Buena Park | Undercrossing | New piers and abutments within roadway |
| Dale St | Buena Park | Undercrossing | Roadway vertical realignment, new piers and abutments within roadway |
| Gilbert St | Fullerton | Undercrossing | Roadway vertical realignment, new pier and abutments within roadway |
| Commonwealth Ave | Fullerton | Undercrossing | Roadway vertical realignment, new piers and abutments within roadway |
| Euclid St | Fullerton | Undercrossing | New pier and abutments within roadway |
| Highland Ave | Fullerton | Undercrossing | New abutments within roadway |
| Harbor Blvd | Fullerton | Undercrossing | New piers and abutments within roadway |
| Lemon St | Fullerton | Undercrossing | None |

| Roadway | City | Current Crossing Configuration | Proposed Modification |
|---|---|---|---|
| Orangethorpe Ave | Anaheim | At grade | None |
| SR 91 (Riverside freeway) | Anaheim | Overcrossing | None |
| La Palma Ave | Anaheim | At grade | None |
| Sycamore St | Anaheim | At grade | None |
| Lincoln Ave | Anaheim | Undercrossing | None |
| Broadway | Anaheim | At grade | None |
| Santa Ana St | Anaheim | At grade | None |
| South St | Anaheim | At grade | None |
| Vermont Ave | Anaheim | At grade | None |
| Ball Rd | Anaheim | At grade | None |
| Lewis St | Anaheim | Undercrossing | Roadway vertical realignment, new piers and abutments within roadway |
| Cerritos Ave | Anaheim | At grade | New grade separation; roadway lowered to cross under tracks on a new railroad bridge |
| State College Blvd | Anaheim | At grade | New grade separation; roadway lowered to cross under tracks on a new railroad bridge |
| Katella Ave | Anaheim | Undercrossing | Roadway vertical realignment, roadway widening, new piers and abutments within roadway |
| SR 57 (Orange freeway) | Anaheim | Overcrossing | None |
| Douglass Rd | Anaheim | Undercrossing | Roadway vertical realignment, new piers and abutments within roadway |

*Source: Authority 2025*

Authority = California High-Speed Rail Authority; HSR = high-speed rail; I = interstate; overcrossing = road over train tracks; SR = State Route; undercrossing = road under train tracks

### *New Grade Separations*

As indicated in Table 2-5, five existing at-grade roadways would be grade separated for passenger rail and freight, with the roadway lowered to cross under new railroad bridges. These new grade separations are described in detail in Table 2-6, which includes references to the temporary and permanent footprints depicted on Figure 2-16 through Figure 2-19. The temporary project footprint includes areas such as utility easements and construction staging areas while the permanent project footprint includes areas that would be needed permanently for operation of HSR or areas that would permanently lose access from changes in roadway elevation. These grade separations are early action projects, which are described further in Section 2.3.1, Grade Separations.

Lakeland Avenue would be grade separated for HSR and passenger rail on a new elevated structure, but the freight tracks would remain at grade, with a minimal area of temporary and permanent impacts. Therefore, it is not included in Table 2-6.

**Table 2-6 New Grade Separations with Roadway Vertical Realignments**

| Roadway | Grade Separation Description |
|---|---|
| Pioneer Boulevard (Figure 2-16) | • The existing roadway configuration at the Pioneer Blvd crossing in Santa Fe Springs consists of two northbound and two southbound traffic lanes and left-turn lanes to Rivera Rd (which is immediately adjacent and to the north of the railroad corridor) in both directions, with sidewalks on both sides of the road.<br>• The at-grade crossing would be grade separated as a roadway undercrossing, with the railroad tracks on a bridge structure. Approximately 1,275 feet of Pioneer Blvd would be lowered, with the roadway approximately 20 feet below its current elevation at the lowest point of the undercrossing. Additional excavation depths would be required for bridge footings, utilities, pump station, and roadway subbase.<br>• Direct access to Rivera Rd would be removed and a new roadway that loops west and south just north of the crossing would provide access from Pioneer Blvd to Rivera Rd. |
| Norwalk Boulevard (Figure 2-17) | • The existing roadway configuration at the Norwalk Blvd crossing in Santa Fe Springs consists of two northbound and two southbound traffic lanes and a southbound left-turn lane to eastbound Los Nietos Rd (which is immediately south of the crossing), with sidewalks on both sides of the roadway.<br>• The at-grade crossing would be grade separated as a roadway undercrossing, with the railroad tracks on a bridge structure. Approximately 1,325 feet of Norwalk Blvd would be lowered by approximately 20 feet below its current elevation at the lowest point. Roadway clearance from bottom of bridge to top of pavement would be approximately 15 to 16.5 feet. Additional excavation depths would be required for bridge footings, utilities, pump station, and roadway subbase.<br>• The intersection of Norwalk Blvd and Los Nietos Rd would also be lowered, as also described below. |
| Los Nietos Road (Figure 2-17) | • The existing roadway configuration at the Los Nietos Rd crossing in Santa Fe Springs consists of two westbound and two eastbound traffic lanes and a westbound left-turn lane to Norwalk Blvd (which is immediately west of the crossing), with sidewalks on both sides of the roadway.<br>• The at-grade crossing would be grade separated as a roadway undercrossing, with the railroad tracks on a bridge structure. Approximately 1,700 feet of Los Nietos Rd would be lowered, with the roadway elevation approximately 25 feet below its current elevation at the lowest point. Roadway clearance from bottom of bridge to top of pavement would be approximately 15 to 16.5 feet. Additional excavation depths would be required for bridge footings, utilities, pump station, and roadway subbase.<br>• The intersection of Norwalk Blvd and Los Nietos Road would also be lowered as part of this and the Norwalk Blvd grade separation. |
| Cerritos Avenue (Figure 2-18) | • The existing roadway configuration at the Cerritos Ave crossing in Anaheim consists of two westbound and two eastbound traffic lanes with sidewalks on both sides of the roadway.<br>• The at-grade crossing would be grade separated as a roadway undercrossing, with the railroad tracks on a bridge structure. Approximately 1,850 feet of Cerritos Ave would be lowered by 25 feet below its current elevation at the lowest point. Roadway clearance from bottom of bridge to top of pavement would be approximately 15 to 16.5 feet. Additional excavation depths would be required for bridge footings, utilities, pump station, and roadway subbase.<br>• In order to maintain its intersection with Cerritos Ave, Vernon St would need to be lowered about 5 feet below its existing elevation. Similarly, Lewis St would need to be lowered to maintain the intersection with Cerritos Ave. |

| Roadway | Grade Separation Description |
|---|---|
| State College Boulevard (Figure 2-19) | • The existing roadway configuration at the State College Blvd crossing in Anaheim consists of three northbound and three southbound traffic lanes with sidewalks on both sides of the roadway.<br>• The at-grade crossing would be grade separated as a roadway undercrossing, with the railroad tracks on a bridge structure. Approximately 1,660 feet of State College Blvd would be lowered below its current elevation, up to 25 feet at the lowest point. Roadway clearance from bottom of bridge to top of pavement would be approximately 17.5 feet. Additional excavation depths would be required for bridge footings, utilities, pump station, and roadway subbase.<br>• In order to maintain its intersections with State College Blvd, Howell Ave and Wright Circle would also need to be lowered below its existing elevation, along with multiple driveways and access roads along State College Blvd. |



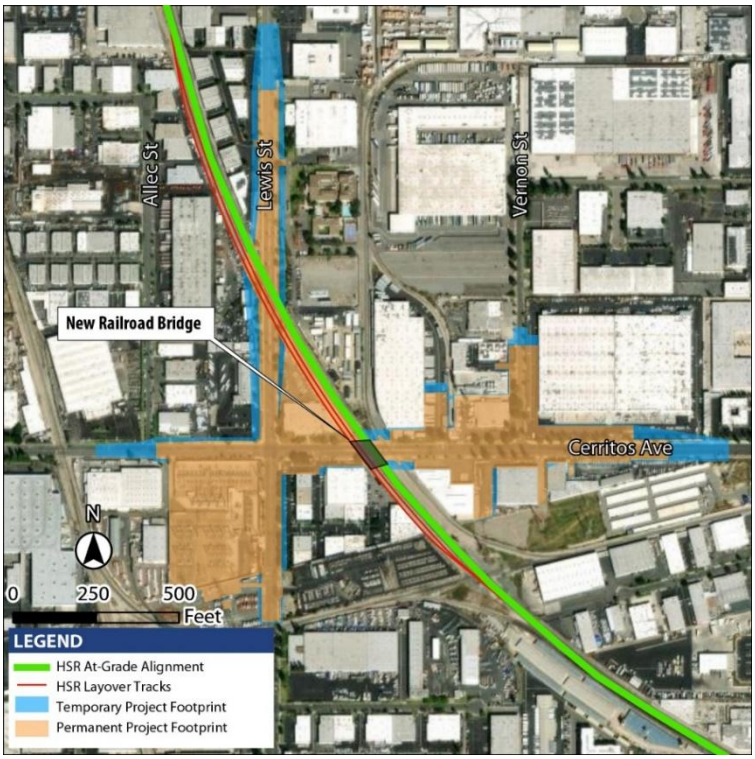

*Sources: Authority 2025; ESRI 2020*

**Figure 2-16 Pioneer Boulevard Grade Separation**




*Sources: Authority 2025; ESRI 2020*

**Figure 2-17 Norwalk Boulevard and Los Nietos Road Grade Separations**




*Sources: Authority 2025; ESRI 2020*

**Figure 2-18 Cerritos Avenue Grade Separation**




*Sources: Authority 2025; ESRI 2020*

**Figure 2-19 State College Boulevard Grade Separation**

### *Modifications to Other Roadways*

In addition to modifications to roadway crossings described above for the railway alignment, several other roadways along the alignment would require modifications as a result of other project elements.

#### Roadway Modifications by Hobart Yard

The addition of new storage tracks and realignment of existing tracks throughout the Hobart Yard area would require 26th Street to be realigned. The roadway currently forms the southern boundary of Hobart Yard. At the eastern end of the yard, at Atlantic Boulevard, 26th Street connects to Pennington Way. From the UPRR San Pedro Subdivision track to Atlantic Boulevard, 26th Street would be realigned about 500 feet south from its existing location, at the farthest point. The realigned 26th Street would provide access to the 26th Street LMF, just north of the street. Currently, 26th Street intersects with Indiana Avenue, Bonnie Beach Place, and Ayers Avenue. Indiana Avenue and Bonnie Beach Place would connect with the realigned 26th Street, and the segments north of the realigned 26th Street would be closed. The realigned 26th Street would not connect to Pennington Way; it would end at Ayers Avenue, and Pennington Way would end in a cul-de-sac west of Atlantic Boulevard, accessible only from Bandini Boulevard. The existing segment of 26th Street between Ayers Avenue and Pennington Way would be closed.

Several roads between Sheila Street and Washington Boulevard are proposed to be closed because of the relocated BNSF truck parking. These roadway closures include the following, and are depicted on Figure 2-12 in yellow:

- Indiana Street
- S Pine Street
- Pacific Way
- Oak Street

- Ash Street
- Arrowmill Avenue
- Ayers Avenue
- Bedessen Avenue
- Connor Avenue
- Dennis Avenue

**Roadway Modifications by Commerce Yard**

Access is provided by 26th Street to BNSF's Commerce Yard from the east, but the yard improvements would require the entrance to the yard to be relocated approximately 1,300 feet to the east. This segment of 26th Street, within BNSF property, would be closed, and a new cul-de-sac would be provided at the end of the road.

**Roadway Modifications by the Fullerton Braced Trench**

The braced trench in Fullerton would be located partially outside the existing railroad right-of-way along the south side of the corridor, within the existing Artesia Boulevard right-of-way. Artesia Boulevard would be realigned slightly south, from approximately Pritchard Avenue to Gilbert Street. The intersection of Artesia Avenue and Gilbert Street would be reconfigured.

**Roadway Modifications by Fullerton Metrolink/Amtrak Station**

The changes at the Fullerton Metrolink/Amtrak Station would require Walnut Avenue to be realigned. Walnut Avenue currently runs east to west from Richman Avenue to Lawrence Avenue, south of and adjacent to the existing railroad corridor. With the addition of a fourth mainline track, Walnut Street would be slightly realigned south, from Richman Avenue to Lemon Street. All existing lanes and sidewalks would be maintained. At Highland Avenue, Walnut Street would be lowered slightly to meet the new, lowered grade of Highland Avenue, and the intersection would be reconfigured.

### 2.2.2 Shared Passenger Track Alternative B

Shared Passenger Track Alternative B would follow the same alignment and share the same project features and operational assumptions as Shared Passenger Track Alternative A, except for the location of the LMF as discussed below.

#### *2.2.2.1 Alignment*

The BNSF mainline and shared tracks for Shared Passenger Track Alternative B would be the same as those discussed for Shared Passenger Track Alternative A, as described in Section 2.2.1.1, because the LMF location would not affect the BNSF mainline and shared tracks.

#### *2.2.2.2 Ancillary Facilities*

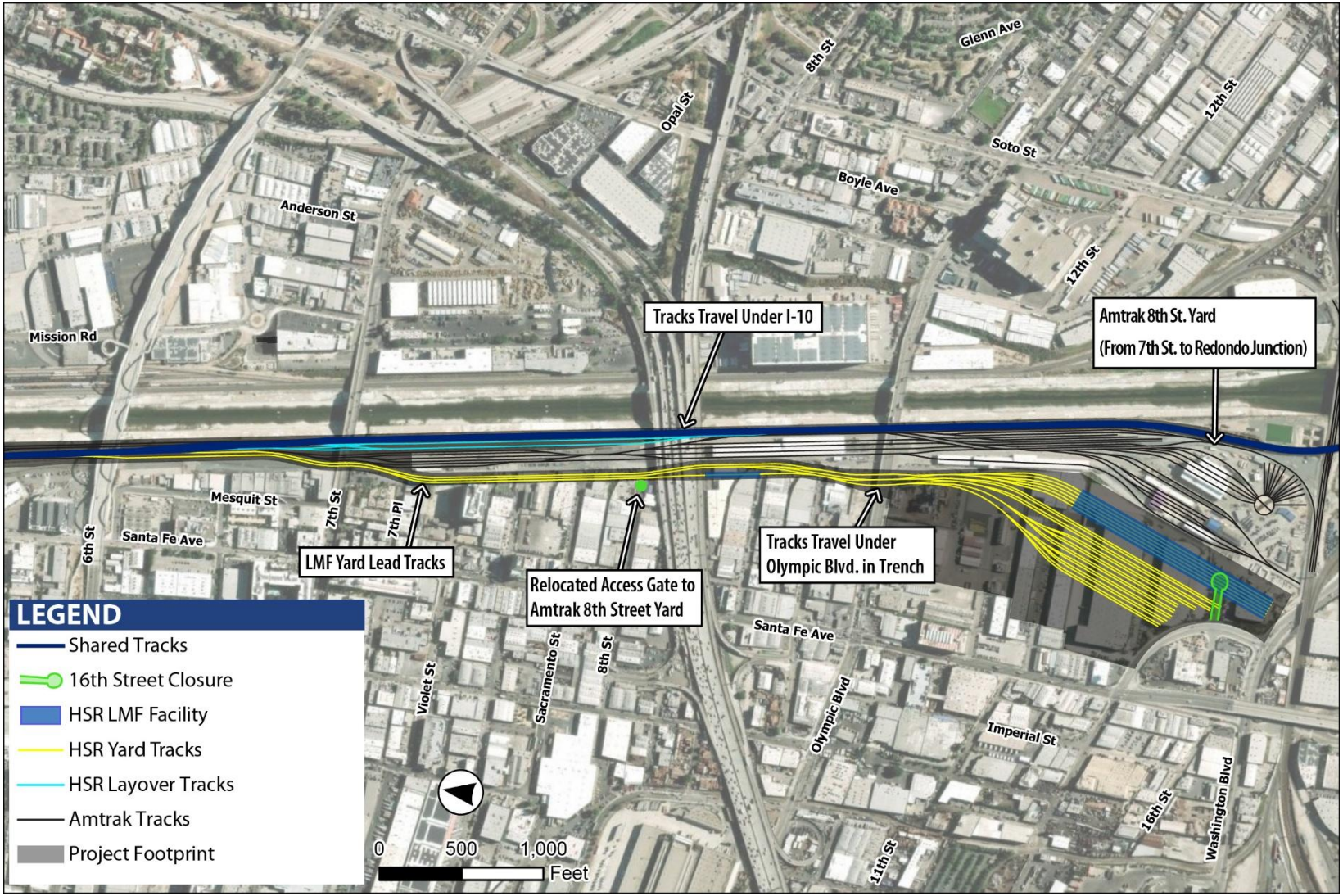
The proposed ancillary facilities for Shared Passenger Track Alternative B would be the same as those discussed for Shared Passenger Track Alternative A. Refer to Section 2.2.1.2 for more information on proposed ancillary facilities.

#### *2.2.2.3 High-Speed Rail Station Facilities*

Under Shared Passenger Track Alternative B, the proposed HSR station facilities at ARTIC would be the same as for Shared Passenger Track Alternative A. Refer to Section 2.2.1.3 for more information on proposed station sites.

#### *2.2.2.4 Light Maintenance Facility*

Shared Passenger Track Alternative B proposes an LMF between Olympic Boulevard and 15th Street, immediately adjacent to the existing Amtrak Eighth Street Yard. The 15th Street LMF would include the same maintenance operation facilities as the 26th Street LMF under Shared Passenger Track Alternative A, described in Section 2.2.1.4. Refer to Figure 2-20 for an overview of the 15th Street LMF.




*Source: Authority 2025*

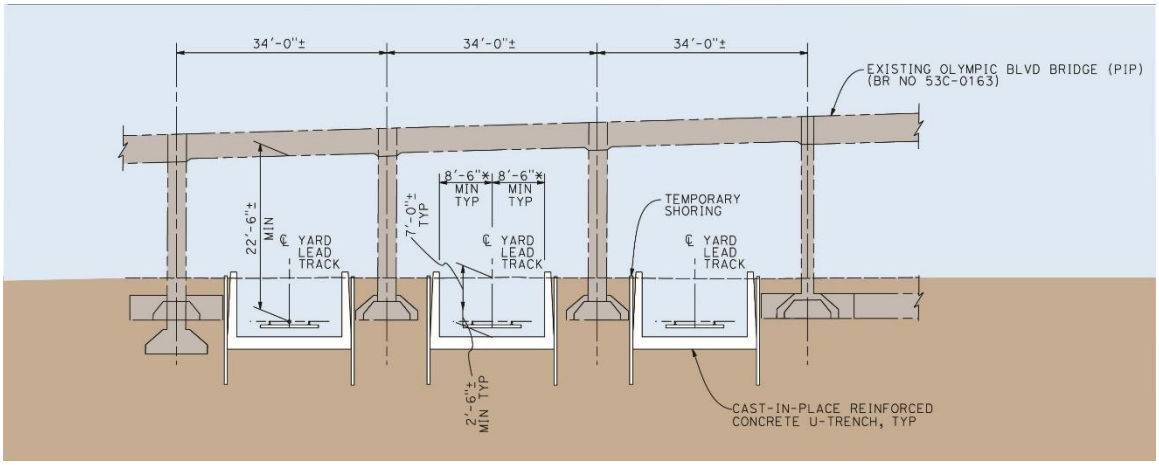
**Figure 2-20 Shared Passenger Track Alternative B: 15th Street Light Maintenance Facility**

The 15th Street LMF would have an overall size of 52 acres and would include a six-track shop building able to accommodate 12 trainsets, along with an outdoor train yard with a storage capacity of 20 HSR trainsets. The 15th Street LMF would be a single-ended yard, with access to and from the mainline tracks provided only from one side, at the northern end.

Primary roadway access to the 15th Street LMF would be from Washington Boulevard and 15th Street. HSR trains would access the yard via new yard lead tracks, which would start north of Seventh Street; the HSR project has been designed in coordination with the Los Angeles County Metropolitan Transportation Authority so that it would not conflict with the planned Metro Arts District Station, proposed north of Seventh Street. Two yard lead tracks would diverge from the mainline tracks out of the existing railroad right-of-way, cross under Seventh Street, and then branch into three tracks. Continuing south, the tracks would cross through part of Amtrak's existing primary access road to its Eighth Street Yard, which is currently gated at Eighth Street; these gates would need to be relocated to the west, but Amtrak would still be able to use the road to access its Eighth Street Yard. The three 15th Street LMF yard lead tracks would continue south to cross under Interstate 10.

Approaching Olympic Boulevard, the tracks would descend to provide the minimum required 24-foot clearance between the OCS and the historic Olympic Boulevard overpass. Only one track would fit between each of the Olympic Boulevard overpass' four piers. As depicted on Figure 2-21, each track would pass through the piers within a separate trench at a finished depth of 7 feet. The Olympic Boulevard piers would not be altered during construction and would remain in place during HSR operations.

South of Olympic Boulevard, the 15th Street LMF yard lead tracks would connect to the yard on a curve, which requires special trackwork (turnout tracks). To make this connection, the LMF site would be lowered to meet the yard lead tracks. This is because the yard lead tracks would still be below grade as they come out of the Olympic Boulevard trenches, and there would not be enough room to transition the tracks back up to the existing elevation of the LMF site. Additionally, the special trackwork to connect the yard leads to the LMF tracks needs to be located on flat sections of track, not on a slope. Therefore, to make the connection between the below-grade yard lead tracks and the yard tracks, the northern portion of the LMF site (approximately 25 acres) would be excavated up to an approximate depth of 8 feet and regraded at a finished depth of approximately 5 feet to match the grade of the yard lead tracks.



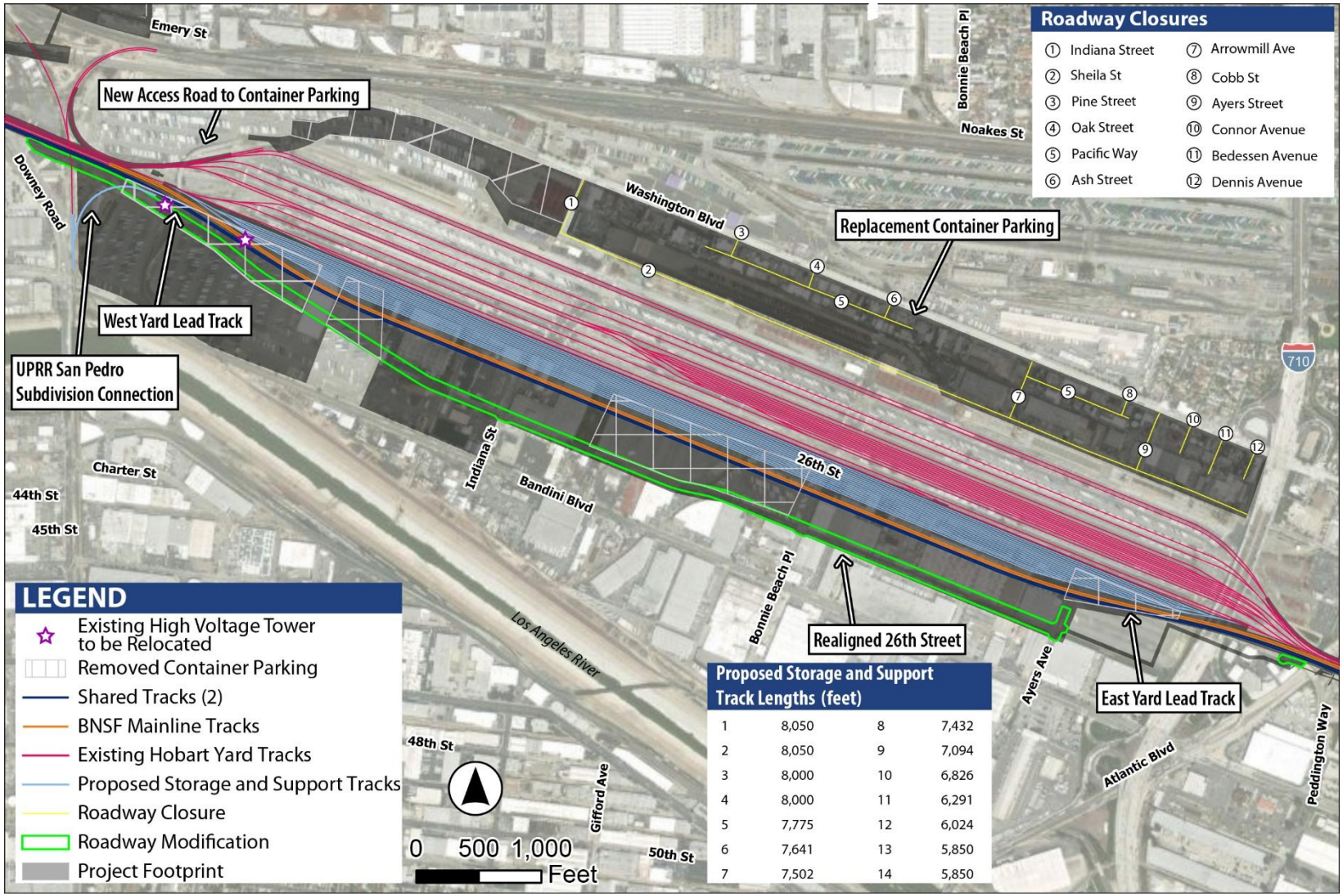

*Source: Authority 2025*

**Figure 2-21 Trenches for 15th Street Light Maintenance Facility Yard Lead Tracks under Olympic Boulevard**

#### 2.2.2.5 Freight or Passenger Railroad Modifications

Freight and passenger railroad modifications for Shared Passenger Track Alternative B would be the same as for Shared Passenger Track Alternative A, except for one difference at Hobart Yard. Figure 2-22 illustrates Hobart Yard without the 26th Street LMF. Because there would not be LMF lead tracks or yard tracks running through BNSF's existing container parking areas, Shared Passenger Track Alternative B would displace slightly less container parking compared to Shared Passenger Track Alternative A.

The two passenger rail station modifications (Norwalk/Santa Fe Springs and Fullerton) and two Metrolink station relocations (Buena Park and Commerce) would be the same for Shared Passenger Track Alternative B as described for Shared Passenger Track Alternative A.




*Sources: Authority 2025; ESRI 2020*

**Figure 2-22 Shared Passenger Track Alternative B: Hobart Yard**

#### *2.2.2.6 State Highway or Local Roadway Modifications*

The proposed modifications to roadways for Shared Passenger Track Alternative B would be the same as for Shared Passenger Track Alternative A, described in Section 2.2.1.6, except for the area around the 15th Street LMF site. Note that although the 26th Street LMF would not be included under Shared Passenger Track Alternative B, the realignment of 26th Street would still occur.

At the 15th Street LMF, Shared Passenger Track Alternative B would cross through part of Amtrak's access road to its Eighth Street Yard and through its existing access gate at Eighth Street. The access gate would be shifted to the west, and Amtrak would still be able to use its access road, but it would have to cross the three HSR yard lead tracks at grade to reach the road. The 15th Street LMF would also require the closure of a small portion of 16th Street, and the intersection of 15th Street and 16th Street would be reconfigured as a T-intersection. This portion of 16th Street, which is an existing cul-de-sac, serves the properties that would be acquired for construction of the 15th Street LMF. Refer to Figure 2-20, which depicts the portion of 16th Street that would be closed in green.

## 2.3 Early Action Projects

As described in the 2023 Project Update Report, the Authority has committed to investing in regionally important early action projects to provide early benefits to transit riders and local communities in Southern California, while laying a solid foundation for implementation of the HSR system. These early investments would be made by the Authority in collaboration with local and regional agencies. The types of projects include grade separations, track enhancements, and improvements at passenger rail stations, which would increase capacity, improve safety and air quality, and provide immediate mobility and reliability benefits for existing freight and passenger rail operations. The potential temporary construction and permanent operational environmental effects associated with these early action projects are included in the total evaluation of the Shared Passenger Track Alternatives. These early action projects may be implemented as standalone projects by other local agencies relying on the environmental analyses and conclusions of the Los Angeles to Anaheim Project Section in advance of the HSR system. The early action projects described below would be the same for both Shared Passenger Track Alternatives.

### 2.3.1 Grade Separations

The following five new railroad/roadway grade separations would be built as part of buildout of the project section and are identified as early action projects:

- Pioneer Boulevard
- Norwalk Boulevard and Los Nietos Road (considered a single early action project because of the adjacency of the two crossings)
- Cerritos Avenue
- State College Boulevard

The potential temporary construction and permanent operational environmental effects associated with these early action projects are analyzed in site-specific detail and included in the total evaluation of the project. Refer to Section 2.2.1.6 for more information.

### 2.3.2 Metrolink Station Relocations

Passenger rail currently operates within the Los Angeles – San Diego – San Luis Obispo Rail Corridor and would continue to do so with the introduction of HSR service. The relocations of the existing Commerce and Buena Park Metrolink Stations are necessary for implementation of either of the Shared Passenger Track Alternatives for reasons described in more detail in Section 2.2.1.5.

Existing transit service to the current Metrolink station locations would need to be modified to serve the relocated Metrolink station locations. Future coordination with Metrolink, Amtrak, and transit service providers would be necessary to determine bus routes and schedules for the

relocated Metrolink station locations and to inform final design of bus facilities at and near the station. Access roads, curb space, and passenger and operations facilities for buses have been included in the footprint in anticipation of this reconfigured service.

### 2.3.3 Fullerton Metrolink/Amtrak Modifications (Fullerton Interlocker)

The Shared Passenger Track Alternatives would modify the tracks and platforms throughout the Fullerton Metrolink/Amtrak Station, as well as the tracks east to Fullerton Junction, as described in Section 2.2.1.1. However, some of these proposed HSR modifications could be completed as an early action project to support the Metrolink Fullerton Interlocker Project, which is being planned by BNSF in coordination with Metrolink and the Authority. This project is critical to Metrolink's Southern California Optimized Rail Expansion Program and will allow for more frequent and regular service in Southern California. The Authority has incorporated the Fullerton Interlocker Project design as part of HSR's Fullerton/Metrolink Amtrak modifications, based on coordination with BNSF and Metrolink and on the anticipated timelines of the two projects.

If the Fullerton Interlocker Project occurs prior to HSR implementation, the early action project would consist of the same modifications described in Section 2.2.1.3 to the Fullerton Metrolink/Amtrak Station, with one exception. The fourth mainline track on the southern side of the corridor would only extend from east of Highland Avenue to Fullerton Junction because, in the absence of HSR, a fourth mainline track would not be added throughout the entire segment between LAUS and Fullerton Junction. All other modifications would be included: the removal of the southern side platforms, addition of a new center platform over Harbor Boulevard, new pedestrian underpass, and realignment and modifications to Walnut Avenue. If the HSR project is implemented later, the southern track would be extended west past Highland Avenue to connect to the fourth mainline track of the HSR alternatives.

### 2.3.4 Reconfiguration of Freight Rail Facilities

As discussed in Section 2.2.1.5, the project requires new or modified BNSF facilities to add and electrify tracks in the existing BNSF right-of-way between Los Angeles and Fullerton. The Hobart Yard modifications and Commerce Yard modifications (including the Commerce Flyover) could be implemented as early action projects to allow for improvements to existing Amtrak and Metrolink service in the Los Angeles – San Diego – San Luis Obispo Rail Corridor.

## 2.4 Optional High-Speed Rail Station

HSR trains would not stop at the Norwalk/Santa Fe Springs Metrolink Station or Fullerton Metrolink/Amtrak Station under either Shared Passenger Track Alternative A or Shared Passenger Track Alternative B. However, an option for a full-stop HSR station is considered, at either Norwalk/Santa Fe Springs or Fullerton. The inclusion of the HSR station option would require additional elements to support full-stop HSR service, in addition to the modifications described in Section 2.2.1.5. These HSR station elements are described in detail below.

### 2.4.1 High-Speed Rail Station Option: Norwalk/Santa Fe Springs

If the Norwalk/Santa Fe Springs Metrolink Station HSR Station Option is included, several additional elements would be included along with the station modifications described above for Shared Passenger Track Alternative A. An overview of the HSR station option elements is depicted on Figure 2-23, with the additional HSR station elements highlighted in green. The other elements depicted on Figure 2-23 would be completed as part of Shared Passenger Track Alternative A.

The Norwalk/Santa Fe Springs HSR Station Option would add two more electrified passenger rail tracks, for a total of four tracks through the station. The two tracks described under Section 2.2.1.1, Alignment, would serve the modified Metrolink side platforms; the two tracks added as part of the HSR station option would serve an HSR center platform in between the modified Metrolink side platforms. The HSR platform would be 1,000 feet long and capable of future extension to 1,410 feet.

The HSR station option would also require more parking to be added to serve HSR passengers. Parking and pick-up/drop-off for HSR and Norwalk/Santa Fe Springs Metrolink passengers would be combined within new surface parking lots. The HSR station option at Norwalk/Santa Fe Springs would provide 640 more parking spaces compared to what Shared Passenger Track Alternative A would otherwise provide, for a total of 1,248 parking spaces. A new access road would be provided from Imperial Highway, along the east side of the site, to the Shoemaker Avenue/Adler Drive intersection, with new signalized intersections.

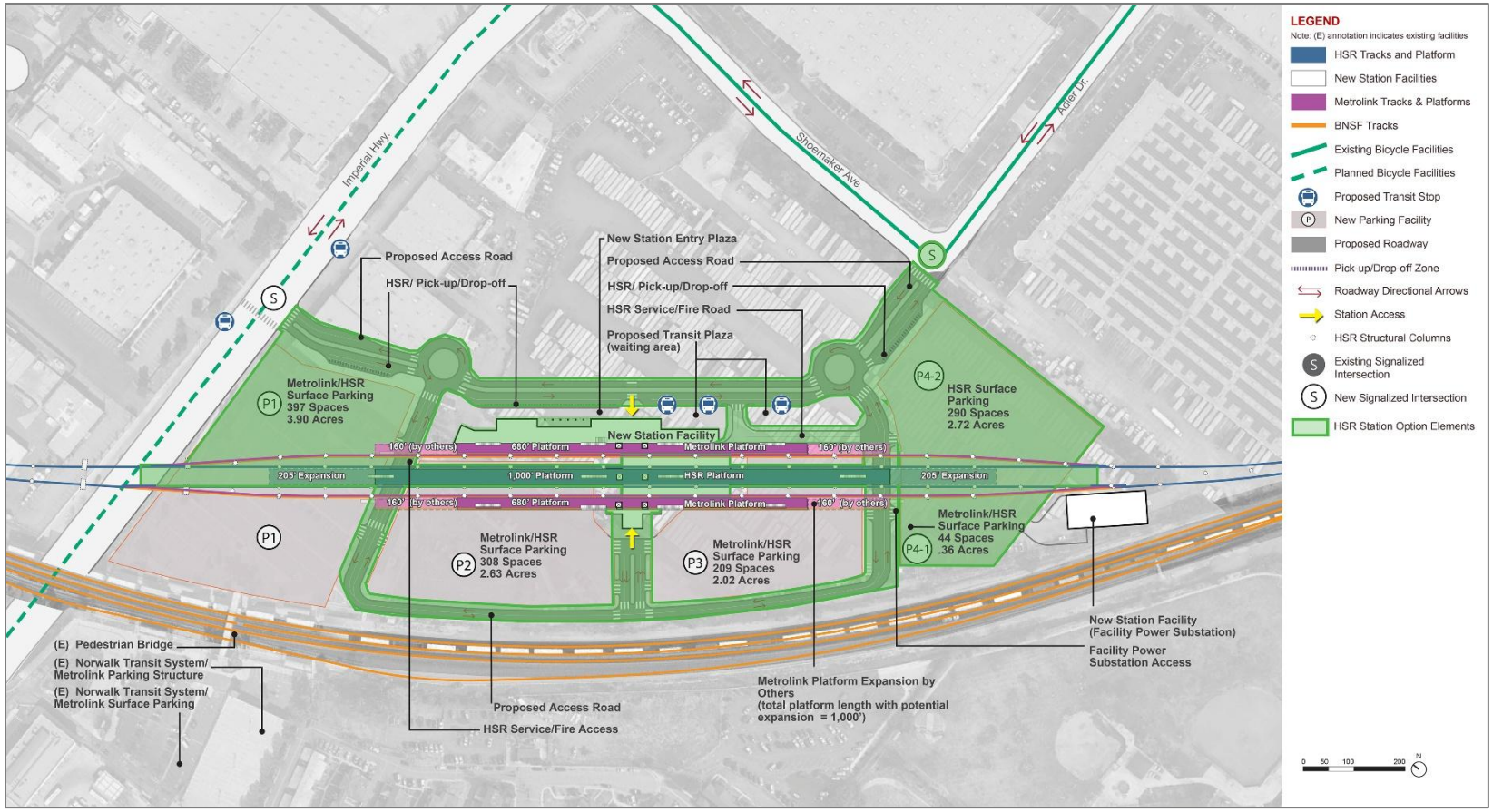
### 2.4.2 High-Speed Rail Station Option: Fullerton

If the Fullerton HSR Station Option is included, several additional elements would be included along with the station modifications described above for Shared Passenger Track Alternative A. An overview of the HSR station option elements is depicted on Figure 2-24, with the additional HSR station elements highlighted in green. The other elements depicted on Figure 2-24 would be completed as part of Shared Passenger Track Alternative A.

The overall track configuration would be the same as described in Section 2.2.1.1, but the southernmost shared track would be shifted south to accommodate a 1,000-foot HSR platform extending over Highland Avenue. The platform would be 48 inches above the rail on retained fill, at 10 feet at the highest point. A pedestrian ramp would connect the HSR platform to the Metrolink/Amtrak platform.

South of Walnut Avenue, the HSR station option would add HSR station buildings, a facility power substation, and a new multilevel parking structure that would provide a total of 570 new HSR parking spaces. The intersection of Highland Avenue and Walnut Avenue would be reconfigured to accommodate the new track and the Highland Avenue railroad bridge, along with improvements for transit stops and pedestrian crossings.

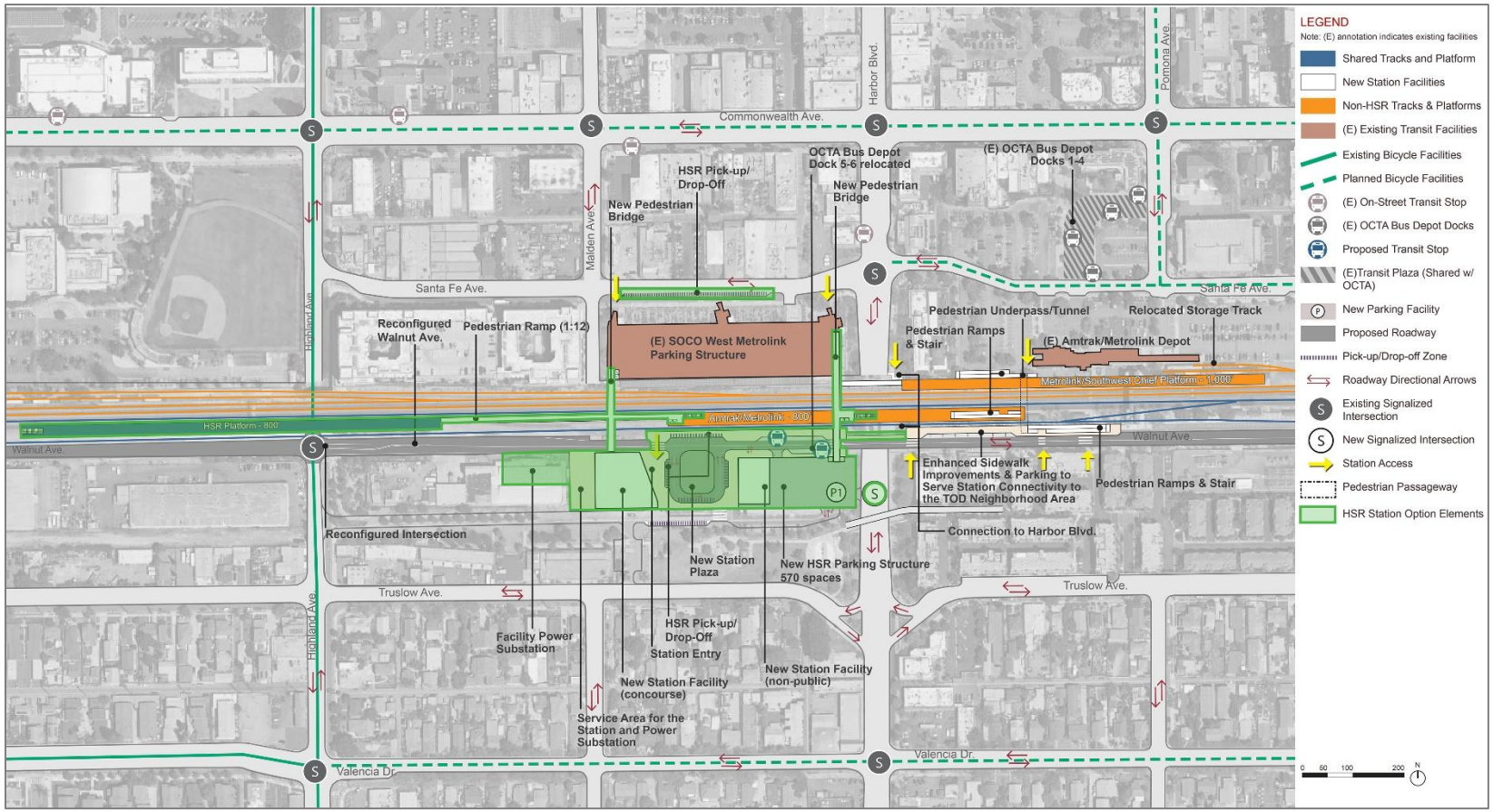
The HSR station option would add two pedestrian bridges: one west of Harbor Boulevard to connect the existing Metrolink parking structure to the HSR parking structure, and another east of Malden Avenue to connect the existing Metrolink parking structure to the HSR station building. A new signalized intersection on Harbor Boulevard would also be required to provide access to the HSR parking garage.




*Source: Authority 2025*

Future platform extension not included in project definition for the environmental impact report/environmental impact statement.

**Figure 2-23 Norwalk/Santa Fe Springs High-Speed Rail Station Option**




*Source: Authority 2025*

**Figure 2-24 Fullerton High-Speed Rail Station Option**

## 2.5 Project Construction

For the Los Angeles to Anaheim Project Section of the California HSR System, specific construction elements would include surface and elevated track; track work; grade-separated roadway crossings; and installation of a Positive Train Control system, as summarized in Table 2-7. Construction would take approximately 7.5 to 8 years.

Surface track sections would be built using conventional railroad construction techniques. A typical construction sequence includes clearing, grubbing, grading, and compacting the railbed; applying crushed rock ballast; laying track; and installing electrical and communications systems.

Elevated track sections would use the precast, segmented construction method. In this construction method, large concrete bridge segments are mass-produced at an on-site, temporary casting yard. Precast segments are then elevated atop the already completed portions of the elevated viaduct or embankment, and installed using a special gantry crane positioned on the aerial structure. Although the precast segmental method is the favored technique for aerial structure construction, other methods may be used, including cast-in-place, box girder, or precast, span-by-span techniques.

Preconstruction activities would occur during final design and would include geotechnical investigations, identification of staging areas, initiation of site preparation and demolition, relocation of utilities, and implementation of temporary, long-term, and permanent road closures. Additional studies and investigations to develop construction requirements and worksite traffic control plans would occur as needed.

Major construction activities for the project section would include earthwork and excavation support, systems construction, bridge and aerial structure construction, and railway systems construction (including trackwork, traction electrification, signaling, and communications).

During peak construction periods, work would be under way at several locations along the route simultaneously, with overlapping construction of various project elements. Working hours and the number of workers present at any time would vary depending on the activities being performed.

**Table 2-7 Los Angeles to Anaheim Project Section Construction Schedule**

| Activity | Tasks | Schedule[10] |
|---|---|---|
| Right-of-way acquisition | Commencement of right-of-way acquisitions once State Legislature appropriates funds in annual budget, environmental due diligence | Prior to construction |
| Survey and preconstruction | Location of utilities, establishment of right-of-way and project control points and centerlines, establishment/relocation of survey monuments | Prior to construction |
| Mobilization | Safety devices and special construction equipment mobilization | Prior to construction |
| Site preparation | Utilities relocation; clearing/grubbing right-of-way; establishment of detours and haul routes; preparation of construction equipment yards, stockpile materials, and precast concrete segment casting yard | January 2031–January 2034 |
| Earth moving | Excavation and earth support structures | April 2031–October 2036 |

[10] Schedule as of September 2023.

| Activity | Tasks | Schedule[10] |
|---|---|---|
| Construction of road crossings | Surface street modifications, grade separations | July 2031–July 2037 |
| Construction of aerial structures | Aerial structure and bridge foundations, substructure, and superstructure | July 2032–July 2036 |
| Construction of underground structures | Straddle bent trench | October 2032–April 2036 |
| Track laying | Includes backfilling operations and drainage facilities | July 2033–December 2037 |
| Systems | Train control systems, OCS, communication system, signaling equipment | October 2035–October 2037 |
| Demobilization | Includes site cleanup | At completion of construction |
| HSR stations and station relocations | Demolition, site preparation, foundations, structural frame, electrical and mechanical systems, finishes | Commerce Metrolink Station relocation: January 2031–January 2032 |
| | | Buena Park Metrolink Station Relocation: January 2034–March 2035 |
| | | Norwalk/Santa Fe Springs HSR/Metrolink Station: July 2033–July 2036[1] |
| | | Fullerton HSR/Metrolink Station: January 2033–June 2035[1] |
| | | Anaheim HSR platform and facilities: November October 2034–September 2037 |

*Source: Authority 2024*

[1] Construction schedule for Norwalk/Santa Fe Springs and Fullerton Station dependent on station selection.

OCS = overhead contact system; HSR = high-speed rail

## 2.6 Independent Utility of the Los Angeles to Anaheim Project Section

The Authority and FRA divided the HSR system they established with Tier 1 process into individual project sections for Tier 2 planning, environmental review, and decision making. The FRA, consistent with regulations issued by the Federal Highway Administration, considers three criteria when determining the scope of a project to be considered in an EIS: (1) whether it connects "logical termini" and has "sufficient length to address environmental matters on a broad scope"; (2) whether it has "independent utility or independent significance," meaning that it will "be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made"; and (3) whether it will "restrict consideration of alternatives for other reasonably foreseeable transportation improvements" (23 Code of Federal Regulations (CFR) Part 771.111(f)). *Logical termini* is defined by the Federal Highway Administration as the rational starting and ending points for a transportation improvement project and for review of the environmental impacts of the project (FHWA 1993).[11] The project section connects logical termini

[11] The Federal Highway Administration criteria for determining project scope, as established in 23 Code of Federal Regulations Part 771.11(f), do not specifically address the scope of individual projects considered in the second tier of a tiered National Environmental Policy Act process. With the tiered National Environmental Policy Act process, the same general principles apply, but they are applied in the context of the decisions made in Tier 1—in this case, the decision to

at planned passenger stations where HSR service would be provided, at LAUS to the north and at ARTIC to the south. If other sections of the HSR system are not completed, the infrastructure could be used by regional and intercity services to improve their capacity, reliability, and performance (Authority 2009).

## 2.7 Operation of the Los Angeles to Anaheim Project Section

The conceptual HSR service plan for Phase 1 begins with service between Los Angeles/Anaheim running through the Central Valley from Bakersfield to Merced, and traveling northwest into the Bay Area. Subsequent sections in Phase 2 of the HSR system include a southern extension from Los Angeles to San Diego and an extension from Merced to Sacramento, which do not have an anticipated implementation date.

The Shared Passenger Track Alternatives would be within an active passenger and freight rail corridor, which would require a change in operational patterns and frequency for users. Because the project proposes new and realigned tracks throughout the corridor shared by other passenger rail and freight operators, implementation would change the tracks on which the various users operate. Currently, the Metrolink Orange County line and 91 line, Amtrak Pacific Surfliner, BNSF, and UPRR freight trains operate within the project section. The introduction of HSR service between Los Angeles and Anaheim would not conflict with the California State Rail Plan (Caltrans 2023).

Under the Shared Passenger Track Alternatives, there would be up to two HSR passenger trains per hour (peak) in each direction. Up to 10 freight trains per day could operate on the passenger tracks. The Shared Passenger Track Alternatives would maintain current and projected freight train volume within the corridor.

build the HSR system as a whole. Therefore, in determining the scope of individual project sections for Tier 2 studies, the Authority and FRA focused primarily on determining whether each project section could serve a useful transportation purpose on its own, and ensuring that a decision in one project section does not limit consideration of reasonable alternatives for completing the HSR system in an adjacent section for which the National Environmental Policy Act process has not yet been completed.

# 3 SUMMARY OF REGULATIONS

The following federal laws, regulations, and orders, as applicable to the RSA, regulate wetlands and waters of the U.S.

## 3.1 Protection of Wetlands (Executive Order 11990)

U.S. Presidential Executive Order 11990 aims to avoid direct or indirect impacts on wetlands from federal or federally approved projects when a practicable alternative is available. If wetland impacts cannot be avoided, practicable measures to minimize harm must be included.

## 3.2 Section 401 of the Clean Water Act

Pursuant to Section 401 of the CWA (33 U.S. Code [U.S.C.] 1341), the State Water Resources Control Board (SWRCB) or Regional Water Quality Control Board (RWQCB) must certify that a proposed discharge of pollutants into waters of the U.S. that requires a federal permit or license will comply with federal and state water quality standards. The RWQCB(s) with jurisdiction over the Aquatic RSA consist of the Los Angeles and Santa Ana RWQCBs. In circumstances where a proposed project crosses multiple RWQCB jurisdictional boundaries, SWRCB will generally assume regulatory responsibilities pursuant to CWA Section 401 and the Porter-Cologne Water Quality Control Act (California Water Code section 13000 et seq.). The Authority has confirmed that the Section 401 certification process and Section 401 compliance for the Shared Passenger Track Alternatives will be managed by SWRCB. It is the Authority's understanding that SWRCB would consult with both the Los Angeles and Santa Ana RWQCBs to ensure compliance with requirements set forth in the basin plan of each respective board.

On April 2, 2019, SWRCB adopted its proposed *State Wetland Definition and Procedures for Discharges of Dredge or Fill Material to Waters of the State* (SWRCB 2021). The procedures became effective on May 28, 2020, and were revised on April 6, 2021. The procedures include a definition for state wetlands regulated under the Porter-Cologne Water Quality Control Act.

For purposes of this report, this wetland definition is used to identify state wetlands and wetlands regulated under CWA Section 401.

Neither SWRCB nor the Los Angeles and Santa Ana RWQCBs, which both have jurisdiction over the drainage basins that the project section could affect, have adopted a methodology for defining nonwetland waters. Therefore, this report uses the definition for nonwetland waters of the U.S. set forth under Section 404 of the CWA, 33 CFR Part 328.

## 3.3 Section 404 of the Clean Water Act

Pursuant to Section 404 of the CWA, USACE is authorized to regulate an activity that would result in the discharge of dredged or fill material into waters of the U.S. (including wetlands and nonwetland waters), which include those waters listed in 33 CFR Part 328.3(a) (Definitions of Waters of the U.S.). USACE, with oversight by USEPA, has principal authority to issue CWA Section 404 permits.

The regulations defining waters of the U.S. have been revised a number of times since the enactment of the CWA. On January 18, 2023, USACE and USEPA published a final rule with a revised definition of waters of the U.S. in the *Federal Register* (Fed. Reg. 2022-28595), effective on March 20, 2023. This rule replaced the pre-2015 definition of waters of the U.S., which was in effect starting on September 2, 2021.

On May 25, 2023, the U.S. Supreme Court decided *Sackett v. Environmental Protection Agency*, which considered the jurisdictional extent of waters of the U.S. On August 29, 2023, USACE and USEPA issued a final rule to conform the definition of waters of the U.S. to the U.S. Supreme Court's decision. This definition established the scope of USACE and USEPA authority under the CWA. The conforming rule, *Revised Definition of "Waters of the United States"; Conforming* (33 CFR 328.3(a)(1)–(5); USACE and USEPA 2023), became effective September 8, 2023.

Under the current regulations, Section 404 of the CWA (33 CFR Part 328.3) defines waters of the U.S. as follows:

(a) The term waters of the United States means:

(1) Waters which are:

i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

ii) The territorial seas; or

iii) Interstate waters;

(2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;

(3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;

(4) Wetlands adjacent[12] to the following waters:

i) Waters identified in paragraph (a)(1) of this section; or

ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;

(5) Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section.

## 3.4 Rivers and Harbors Act of 1899

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) requires authorization from USACE for the construction of a structure in, over, or under navigable waters of the U.S. No Section 10 navigable waters of the U.S. (33 U.S.C. 403) were identified in the RSA.

[12] The term “adjacent” means having a continuous surface connection, pursuant to 33 CFR Part 328.3(c)(2).

# 4 PROJECT SETTING

The RSA is within the Los Angeles basin, bounded by the Santa Monica and Puente Hills to the north, the Santa Ana Mountains and San Joaquin Hills to the east and south, and the Palos Verdes Peninsula along the coast. The project section falls within a heavily urbanized and industrialized portion of the Los Angeles basin, within the northernmost portion of the Peninsular Ranges Geomorphic Province. The RSA consists of flat, developed lands and includes the full suite of urbanized land uses, including commercial, industrial, recreational, and residential. Appendix B, U.S. Geological Survey Topographic Maps, provides U.S. Geological Survey topographic mapping for the project footprint. The predominant aquatic features observed in the RSA are low-gradient streams that have been concrete-lined or channelized and are surrounded by urban development. Elevation ranges from approximately 82 to 292 feet above mean sea level. In terms of ecology, the project section is in the Southern California/Northern Baja Coast (Level III) Ecoregion and, more specifically, the Los Angeles Plain (Level IV) Ecoregion (USGS 2011 [draft]).

The following sections provide a general overview of the land use, typical terrestrial and wetland vegetation communities, climate, hydrology, soils, and publicly recorded data of wetland and nonwetland aquatic resources.

## 4.1 Vegetation Communities

The RSA is in the South Coast subregion of the California Floristic Province's Southwestern California region. This subregion extends along the Pacific Coast, from Point Conception to Mexico. Historically, coastal sage scrub and chaparral vegetation characterized this subregion (Jepson Flora Project 2015). Currently, over 95 percent of the lands within the RSA have been developed (USGS 2011). The remaining undeveloped lands are composed predominantly of vacant lots (approximately 3 percent). Urban areas within the RSA include (from north to south) the cities of Los Angeles, Vernon, Bell, Commerce, Montebello, Pico Rivera, unincorporated Los Angeles County (West Whittier), Santa Fe Springs, Norwalk, La Mirada, Buena Park, Fullerton, Anaheim, and Orange.

Vegetation mapping was based on a combination of fieldwork, review of existing geographic information system wetland mapping data, and interpretation of aerial photographs. Land cover and vegetation communities were mapped and classified according to *A Manual of California Vegetation* (Sawyer et al. 2009). In circumstances where a land cover could not be suitably represented by an alliance name, generally applicable to urban/disturbed habitats, a standard description was used. Table 4-1 provides a list of the vegetation communities and land cover types observed, as well as the corresponding jurisdictional aquatic resources classes, where applicable.

Six land cover types and eight vegetation communities were identified within the RSA. Vegetation communities included eucalyptus woodlands, annual brome grasslands, California bulrush marsh, mulefat thickets, cattail marshes, black willow thickets, duckweed blooms, and salt grass flats. Land cover types included open water, unvegetated channel, urban, barren, disturbed/ruderal and developed/ornamental (Table 4-1).

Natural and seminatural vegetation communities are uncommon within the RSA and are most often found in association with aquatic features such as rivers, built watercourses, and basins (e.g., spreading grounds and detention basins) that support aquatic habitats. These aquatic habitats consist of California bulrush marsh, mulefat thickets, cattail marshes, black willow thickets, duckweed blooms and relatives, salt grass flats, as well as the open water and unvegetated channel land cover types. Natural and seminatural vegetation communities within the Aquatic RSA have been heavily modified as a result of urbanization (e.g., concrete-lined channels) and transportation and rail infrastructure. In addition, these areas are subject to periodic disturbance for flood control purposes, including eradication and removal of vegetation, removal of debris and accumulated sediment, and tilling of earthen channels and basins. This routine flood control maintenance prevents establishment of vegetation within the concrete-lined

channels and mature vegetative growth forms (e.g., woodlands, forest) within earthen-bottom channels and basins, and limits the extent and diversity of natural and seminatural vegetative communities. Based on current conditions, aquatic resources within the RSA are expected to perform a very limited set of aquatic ecological functions and services.

**Table 4-1 Vegetation Communities and Other Land Cover Types within the Resource Study Area**

| Vegetation Classification Alliance[1] | Aquatic Resource Classification[2] | Typical Vegetation |
|---|---|---|
| **Natural and Seminatural Upland Habitats** | | |
| Eucalyptus Woodland Seminatural Alliance | N/A | *Eucalyptus*, red brome, Bermuda grass |
| Annual Brome Grasslands Seminatural Alliance | Basins: Rio Hondo spreading grounds and Raymond Retarding Basins<br>Riverine: San Gabriel River | Brome grasses, annual forbs |
| **Aquatic Habitats** | | |
| California Bulrush Marsh Herbaceous Alliance | Freshwater Emergent Wetland | California bulrush, cattail, American bulrush, saltgrass, rush, common reed |
| Mulefat Thickets Shrubland Alliance | Riverine[3] | Mulefat |
| Cattail Marshes Herbaceous Alliance | Riverine[4] | Cattails, barnyard grass, pale smartweed, bulrush |
| Black Willow Thickets Woodland Alliance | Freshwater Forested/Shrub Wetland | Black willow |
| Duckweed Blooms Herbaceous Alliance | Riverine | Duckweed |
| Salt Grass Flats Herbaceous Alliance | Riverine | Salt grass |
| Open Water | Basin | Greater than 2 meters in depth or beyond the depth of floating rooted plants, concrete lined |
| Unvegetated Channel | Built Watercourses and Riverine | Unvegetated or concrete lined |
| **Developed Habitats** | | |
| Urban | N/A | Residential, commercial, and industrial buildings. Paved/unpaved roads, railroads, and highways |
| Barren | N/A | Unvegetated, rock, gravel, soil |
| Disturbed/Ruderal | N/A | Bare ground with disturbed areas that is dominated by less than 20 percent cover of ruderal nonnative forbs such as Russian thistle |
| Developed/Ornamental | N/A | Presence of ornamental plantings, generally trees, sometimes shrubs |

*Sources: Sawyer et al. 2009; USACE 1987; USFWS 2016, 2024; Cowardin et al. 1979*

[1] Wherever possible, alliances are taken from *A Manual of California Vegetation* (Sawyer et al. 2009).

[2] As defined by *Corps of Engineers Wetlands Delineation Manual* (USACE 1987), *U.S. Fish and Wildlife Service National Wetlands Inventory* (USFWS 2016, 2024) and *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979).

[3] The mulefat thickets habitat identified within the RSA that fall under CWA Section 404/401 jurisdiction (San Gabriel River) is classified as "riverine." Refer to Section 6.2.3, Riverine, for additional detail.

[4] The cattail marsh habitat identified within the RSA that fall under CWA Section 404/401 jurisdiction (La Mirada Creek) is classified as "riverine." Refer to Section 6.2.3, Riverine, for additional detail.

N/A = not applicable

### 4.1.1 Natural and Seminatural Upland Habitats

#### *4.1.1.1 Eucalyptus Woodland Seminatural Alliance*

Eucalyptus groves are classified by Sawyer et al. (2009) as eucalyptus woodland seminatural alliances. Relative cover in this membership is greater than 80 percent eucalyptus species (such as *Eucalyptus globulus, E. camaldulensis, E. viminalis, E. citriodora*) relative cover in the tree layer. This alliance is characterized by relatively dense stands of eucalyptus trees with a sparse to intermittent shrub layer and a sparse to intermittent herbaceous layer.

Within the RSA, eucalyptus woodlands were observed within uplands on the east side of the San Gabriel River. For the purposes of this delineation report, there is no corresponding jurisdictional aquatic resource category for this habitat alliance, because eucalyptus woodlands are outside of CWA Section 404/401 wetland and nonwetland waters of the U.S.

#### *4.1.1.2 Annual Brome Grasslands Seminatural Alliance*

Annual brome grassland is a seminatural alliance as classified by Sawyer et al. (2009) with stiff brome (*Brachypodium distachyon*), ripgut brome (*Bromus diandrus*), or soft chess (*Bromus hordeaceus*) as a dominant or co-dominant with nonnatives in the herbaceous layer. Emergent trees and shrubs may be present at low cover, and cover is intermittent to continuous. Annual brome grassland is an open grassland composed primarily of annual plant species. Annual brome grasslands can have seasonal presence of native plants, many with limited ranges, but the nonnative grasses attain strong dominance in years of high precipitation (Bartolome et al. 2007) and in these years, natives are often overlooked. Annual brome grasslands provide value as wildlife habitat for many species.

Within annual brome grasslands, native species adapted to disturbance were observed, including fiddleneck (*Amsinckia menziesii*), telegraph weed (*Heterotheca grandiflora*), Jimson weed (*Datura stramonium*), and common horseweed (*Erigeron canadensis*). Nonnative species observed included Bermuda grass (*Cynodon dactylon*), ripgut brome, tocalote (*Centaurea melitensis*), Italian rye grass (*Festuca perennis*), soft chess, wild oat (*Avena fatua*), foxtail brome (*Bromus madritensis* ssp. *rubens*), Mediterranean grass (*Schismus barbatus*), field bindweed (*Convolvulus arvensis*), lamb's quarters (*Chenopodium album*), tree tobacco (*Nicotiana glauca*), annual meadow grass (*Poa annua*), and filaree (*Erodium cicutarium*). All or most of the plant species observed in the annual brome grasslands are adapted to disturbance.

Annual brome grassland in the RSA was observed generally either in watercourses, waterbodies (i.e., basins), or in areas where natural vegetation had previously been removed by human activities, such as abandoned fields. The basins in the Rio Hondo spreading grounds support annual brome grassland. Species observed included ripgut brome, Bermuda grass, dense-flowered sprangletop (*Leptochloa fusca*), willow smartweed (*Persicaria lapathifolium*), rough cocklebur (*Xanthium strumarium*), common horseweed, Russian thistle (*Salsola tragus*), and annual sunflower (*Helianthus annuus*). The Raymond Retarding Basins support annual brome grassland at the edges of the open water, and the upland vegetation observed include common horseweed, Bermuda grass, Russian thistle, annual sunflower, dense-flowered sprangletop, willow smartweed, and rough cocklebur. The earthen-bottom San Gabriel River supports annual brome grassland; plant species observed include ripgut brome, Bermuda grass, annual meadow grass, barnyard grass (*Echinochloa crus-galli*), curly dock (*Rumex crispus*), English plantain (*Plantago lanceolata*), tocalote, castor bean (*Ricinus communis*), and London rocket (*Sisymbrium irio*).

For the purposes of this delineation report, this habitat alliance is both within and outside of CWA Section 404/401 wetland and nonwetland waters of the U.S. The annual brome grasslands found within the Rio Hondo spreading grounds, Raymond Retarding Basins, and San Gabriel River are consistent with the “basin” and “riverine” jurisdictional aquatic resource categories.

### 4.1.2 Aquatic Habitats

The aquatic habitat types described below are based on the Sawyer et al. (2009) alliance classifications whenever possible. Defined habitat types are not available for open water and unvegetated channels. Corresponding jurisdictional aquatic resources classes, as defined by the *U.S. Army Corps of Engineers Wetland Delineation Manual* (USACE 1987), *U.S. Fish and Wildlife Service National Wetland Inventory* (USFWS 2016, 2024), and *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979), are provided at the end of each subsection where applicable. These jurisdictional aquatic resource categories are based on vegetative growth form (e.g., herbaceous, emergent, shrub) and hydrogeomorphic category (e.g., riverine, basin), with the exception of built watercourses. A comparison of these different classification systems is provided in Table 4-1.

#### *4.1.2.1 California Bulrush Marsh Herbaceous Alliance*

The California bulrush (*Schoenoplectus californicus*) herbaceous alliance is based on Sawyer et al. (2009). California bulrush is dominant or co-dominant in the herbaceous layer for this alliance. Other species often present in this alliance may include dogbane (*Apocynum cannabinum*), cosmopolitan bulrush (*Bolboschoenus maritimus*), water hyacinth (*Eichhornia crassipes*), western goldentop (*Euthamia occidentalis*), floating primrose-willow (*Ludwigia peploides*), dotted smartweed (*Persicaria punctate*), common reed (*Phragmites australis*), bulrush (*Schoenoplectus* spp.), and cattail (*Typha* spp.). Emergent shrubs may be present at low cover, including buttonbush (*Cephalanthus occidentalis*), California wild rose (*Rosa californica*), or willow (*Salix* spp.).

California bulrush marshes is a widespread emergent marsh type and is found in brackish to freshwater marshes and along the shores and channels of river mouth estuaries. The soils are poorly aerated and have a high organic content. California bulrush marsh provides habitat for wildlife. The seeds and stems of California bulrush and related species are important for both food and cover.

Within the RSA, California bulrush marsh is sparse and is found only in the San Gabriel River. At this location, California bulrush marsh is on the channel bottom and is characterized by the presence of California bulrushes, willow smartweed, barnyard grass, curly dock, English plantain, African umbrella sedge (*Cyperus involucratus*), and Bermuda grass.

For the purposes of this delineation report, this habitat alliance is consistent with the “freshwater emergent wetland” jurisdictional aquatic resource category. Refer to Section 6.1.1, Freshwater Emergent Wetland, for additional detail.

#### *4.1.2.2 Mulefat Thickets Shrubland Alliance*

The mulefat (*Baccharis salicifolia*) thicket shrubland alliance is based on Sawyer et al. (2009). Mulefat is the dominant or co-dominant in the shrub canopy. Other shrub species such as Emory’s baccharis (*Baccharis emoryi*), laurel sumac (*Malosma laurina*), California sagebrush (*Artermisia californica*), tree tobacco, arrowweed (*Pluchea sericea*), blackberry (*Rubus* spp.), elderberry (*Sambucus nigra*), or tamarisk (*Tamarix* spp.) may be present. Emergent trees may be present at low cover, including ghost pine (*Pinus sabiniana*), western sycamore (*Platanus racemosa*), cottonwood (*Populus femontii*), oaks (*Quercus* spp.) or willows. The herbaceous layer is sparse.

Small stands of mulefat thickets exist within the RSA only within the Rio Hondo spreading grounds and the San Gabriel River. The earthen-bottom San Gabriel River supports scattered isolated stands of mulefat along the toe of the western bank, and the Rio Hondo spreading grounds supports a single isolated patch of mulefat on the slope of the southwestern basin. This

habitat type is adapted to disturbance (adapted to seasonal flooding with larger flood events generally at 7 to 10 year intervals) with high and episodic recruitment. Flood control activities within the Rio Hondo and San Gabriel River likely actively remove this habitat type or prevent proliferation.

For the purposes of this delineation report, this habitat alliance is both within and outside of CWA Section 404/401 jurisdiction. Specifically, the mulefat thickets shrubland found within the San Gabriel River is consistent with the "riverine" jurisdictional aquatic resource category, whereas the mulefat thicket found within the Rio Hondo spreading grounds is on a bank slope outside of CWA Section 404/401 jurisdiction (the ordinary high water mark). It should be noted that none of these aquatic features met the USACE or SWRCB wetland definitions. Refer to Section 6.2.3, Riverine, for additional detail.

#### *4.1.2.3 Cattail Marshes Herbaceous Alliance*

Narrowleaf cattail (*Typha angustifolia*), southern cattail (*Typha domingensis*), or common cattail (*Typha latifolia*) are the dominants or co-dominants in the herbaceous layer for cattail marshes herbaceous alliance. Other species often present in this alliance include creeping bentgrass (*Agrostis stolonifera*), tall flatsedge (*Cyperus eragrostis*), salt grass (*Distichlis spicata*), barnyard grass, spikerush (*Eleocharis* spp.), rushes (*Juncus* spp.), duckweed (*Lemna* spp., *Spirodela* spp., *Wolffia* spp., *Wolffiella* spp), peppergrass (*Lepidium latifolium*), water parsley (*Oenanthe sarmentosa*), willow smartweed, common reed (*Phragmites australis*), California bulrush, hybrid cattail (*Typha ×glauca*), and rough cocklebur. Emergent trees, including willows, may be present at low cover.

This alliance is found in semipermanently flooded freshwater or brackish marshes. Soils are clayey or silty. Cattails provide valuable habitat and are a food source for wildlife. They are also useful in removing pollutants. Stands of cattails can invade canals, ditches, ponds and reservoirs and may be removed by mowing, mechanical removal, or burning (DiTomaso and Healy 2007).

As a result of urbanization, transportation and rail infrastructure, and routine flood control activities, cattail marshes herbaceous alliance is severely limited. This alliance is only present in La Mirada Creek and an unnamed drainage ditch near the Fullerton Airport. Species observed within La Mirada Creek and in the unnamed drainage ditch included southern cattail, umbrella plant (*Cyperus involucratus*), willow smartweed, and barnyard grass.

The unnamed drainage ditch near the Fullerton Airport was built in uplands, does not exhibit physical indicators of an ordinary high-water mark, and is not adjacent to known waters of the U.S. Based on the definition of wetland and nonwetland waters of the U.S., this feature does not appear to be jurisdictional under CWA Section 404/401. Refer to Section 5.3.6, Non-Jurisdictional Aquatic Features, for additional discussion of classes of potential non-jurisdictional features.

The aquatic feature in La Mirada Creek did not meet the three-parameter wetland definition for USACE and SWRCB. Accordingly, the cattail marshes herbaceous alliance falls within the "riverine" aquatic resource category for purposes of USACE/SWRCB jurisdiction. Refer to Section 6.2.3, Riverine, for additional detail.

#### *4.1.2.4 Black Willow Thickets Shrubland Alliance*

Black willow (*Salix gooddingii*) is the dominant or co-dominant in the tree canopy for the black willow thickets shrubland alliance (Sawyer et al. 2009). Other species present in this alliance may include white alder (*Alnus rhombifolia*), cottonwood, red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), Pacific willow (*Salix lasiandra* ssp. *lasiandra*), elderberry, and California fan palm (*Washingtonia filifera*). Shrubs include mulefat or dogwood (*Cornus sericea*).

Black willow is a fast growing, native shrub or tree that often provides cover for wildlife. Black willows are moderately sized and reach heights of 20 to 60 feet. Black willow thickets are found in riparian areas that are typically seasonally inundated, with a shallow water table and fine-grained alluvial soils. Black willows bloom and fruit in early spring and seeds germinate best on fine-grained, moist, bare soil, so fire and flood create favorable seedbed conditions. Seeds remain

viable for only a few days after dispersal and seedlings compete poorly with grasses. The timing of seed dispersal and spring flood patterns determine seedling success. Established plants tolerate seasonal inundation and plants sprout from a root crown in lighted conditions (Reed 1993).

Because of urbanization and routine flood control activities, black willow thickets shrubland alliance is severely limited. Within the San Gabriel River, two small stands of black willow thickets shrubland alliance were identified within the Aquatic RSA, specifically in the San Gabriel River associated with feature 12. Vegetation associated with these stands includes black willow with an understory of Bermuda grass, salt grass, and California bulrush. It is likely that flood control activities actively remove these willows and prevent the spread of this habitat.

For the purposes of this delineation report, this habitat alliance is consistent with the "freshwater forested/shrub wetland" jurisdictional aquatic resource category. Refer to Section 6.1.2, Freshwater Forested/Shrub Wetlands, for additional detail.

#### *4.1.2.5 Duckweed Blooms Herbaceous Alliance*

Duckweed blooms have duckweed as the dominant herbs on the water surface or in the herbaceous layer with water fern (*Azolla filiculoides*), Mexican mosquito fern (*Azolla mexicana*), and Brazilian waterweed (*Egeria densa*) often present. Emergent plants may be present at low cover, including parrot's feather (*Myriophyllum aquaticum*) or sedges (*Scirpus* spp.) (Sawyer et al. 2009).

Duckweed blooms are found in freshwater habitats with still water or on ground surfaces where water levels have dropped. All species are important food sources for wildlife, especially waterfowl (DiTomaso and Healy 2007).

Within the RSA, duckweed blooms were observed within portions of the Los Angeles River and Brea Creek. It should be noted that these aquatic features did not meet the three-parameter wetland definition for USACE and SWRCB. For the purposes of this delineation report, this habitat alliance is consistent with the "riverine" jurisdictional aquatic resource category. Refer to Section 6.2.3, Riverine.

#### *4.1.2.6 Salt Grass Flats Herbaceous Alliance*

In salt grass flats, salt grass (*Distichlis spicata*) is the dominant or co-dominant in the herbaceous layer. Other plant species observed may include yerba mansa (*Anemopsis californica*), saltwort (*Batis maritima*), ripgut brome, buttonweed (*Cotula coronopifolia*), spikerush, meadow barley (*Hordeum brachyantherum*), rush, and peppergrass. Emergent shrubs may be present at low cover.

Salt grass flats are generally found in coastal salt marshes or in inland habitats such as playas, swales, and terraces along washes that may be flooded intermittently. Soils are often alkaline or saline. The tough rhizomes of salt grass allow this species to withstand disturbance from disking, erosion, and flooding.

As a result of urbanization, transportation and rail infrastructure, and routine flood control activities, salt grass flats are severely limited. This alliance was only identified within the San Gabriel River, in association with other herbaceous species such as curly dock. Salt grass flats were not mapped and were interspersed with annual brome grassland in the riverbed.

For the purposes of this delineation report, this habitat alliance is consistent with the "riverine" jurisdictional aquatic resource category. Refer to Section 6.2.3, Riverine, for additional detail.

#### *4.1.2.7 Open Water*

Open water habitats include freshwater ponds and lakes, and include basins that are dry much of the time, but inundated at least occasionally. Within the RSA, open water habitat was observed associated with Lakeside Residential Pond and the Raymond Retarding Basins. Depending on water levels and the time of year, duckweed blooms, annual brome grasslands, or smartweed – cocklebur patches herbaceous alliances may be present within these features.

For the purposes of this delineation report, this habitat alliance is consistent with the “basin” jurisdictional aquatic resource category. Refer to Section 6.2.1, Basins, for additional detail.

#### *4.1.2.8 Unvegetated Channel*

Unvegetated channel includes riverine areas that are either completely devoid of vegetation or contain only sparse vegetation (less than 2 percent).

Land cover within most of the concrete-lined rivers, creeks, and drainages was classified as unvegetated channel. The majority of the Los Angeles River was classified as unvegetated channel, as was the concrete-lined portion of the Rio Hondo, all of North Fork Coyote Creek, portions of La Mirada Creek, all of Coyote Creek, some sections of Brea Creek, all of Fullerton Creek, all of Carbon Creek, and all of the Santa Ana River.

For the purposes of this delineation report, this habitat alliance is consistent with the “riverine” and “built watercourse” jurisdictional aquatic resource categories. Refer to Section 6.2.3, Riverine, and Section 6.2.2, Built Watercourses for additional detail.

### 4.1.3 Developed Lands

#### *4.1.3.1 Urban*

Urban lands represent the predominant land use in the RSA, and land use includes mainly manufacturing, assembly, and industrial services; railroads; high-density, single-family residential; and open storage. Other developed land uses include improved flood waterways and structures; modern strip development; truck terminals; mixed transportation; freeways and major roads; low- and medium-rise major office use; mineral extraction—oil and gas; low-rise apartments, condominiums, and townhouses; maintenance yards; trailer parks and mobile home courts—high density; construction sites; and developed local parks and recreation.

Commercial and industrial areas include urban shops, businesses, warehouses, industrial plants, factories, junkyards, equipment storage yards, airports, and various municipal facilities, as well as their associated parking lots. Urban commercial and industrial areas often have associated landscaped vegetation. Where this vegetation provided potential habitat for wildlife (generally nesting habitat), it was mapped separately as developed/ornamental (as described in Section 4.1.3.4, Developed/Ornamental).

Transportation corridors include roads and railways. Roads include portions of Interstates 5, 710, 10, and 605; U.S. Highway 101; State Routes 39, 91, and 57; and numerous paved urban roads. Existing rail operators in the area include Amtrak, the Southern California Regional Rail Authority, UPRR, and BNSF.

#### *4.1.3.2 Barren*

Barren areas are open plots of rock, gravel, or soil that are either completely devoid of vegetation or contain only sparse (less than 2 percent), widely scattered, predominantly weedy herbaceous plants. Within the RSA, barren areas were often associated with equipment yards’ various storage or delivery features and the Rio Hondo spreading grounds.

#### *4.1.3.3 Disturbed/Ruderal*

Disturbed/ruderal habitats within the RSA include vegetation cover that is low (less than 20 percent) and widely scattered, and consists mainly of nonnative or invasive plant species. Species commonly observed in the RSA include Russian thistle, telegraph weed, dense-flowered sprangletop, common horseweed, Bermuda grass, annual sunflower, Mexican fan palm (*Washingtonia robusta*), tree tobacco, shortpod mustard (*Hirschfeldia incana*), fountain grass (*Pennisetum setaceum*), castor bean, ripgut brome, red brome (*Bromus madritensis*), wild oats (*Avena* spp.), common sow-thistle (*Sonchus oleraceus*), tocalote, castor bean, and London rocket. Tree species associated with this habitat type vary and can include species such as eucalyptus, carrotwood (*Cupania anacardioides*), tree of heaven (*Ailanthus altissima*), fig trees (*Ficus* spp.), Jacaranda (*Jacaranda* spp.), and Mexican fan palm.

Disturbed/ruderal habitat areas in the RSA are generally associated with open fields, margins of barren areas, roadsides, and upland areas adjacent to rivers.

#### *4.1.3.4 Developed/Ornamental*

Developed/ornamental land cover within the RSA include areas consisting of ornamental plantings, which sometimes consist of plantings of native species. Trees used in landscaping can be varied and may include western sycamore, eucalyptus, Jacaranda (*Jacaranda* spp.), Mexican fan palm, magnolias (*Magnolia* spp.), myrtle (*Myrica* spp.), juniper (*Juniperus* spp.), and pine (*Pinus* spp.).

Within the RSA, developed/ornamental land cover areas were common and were associated with landscaping of commercial buildings and recreational areas, roadside landscaping, and city parks and open space areas.

## 4.2 Hydrology and Climate

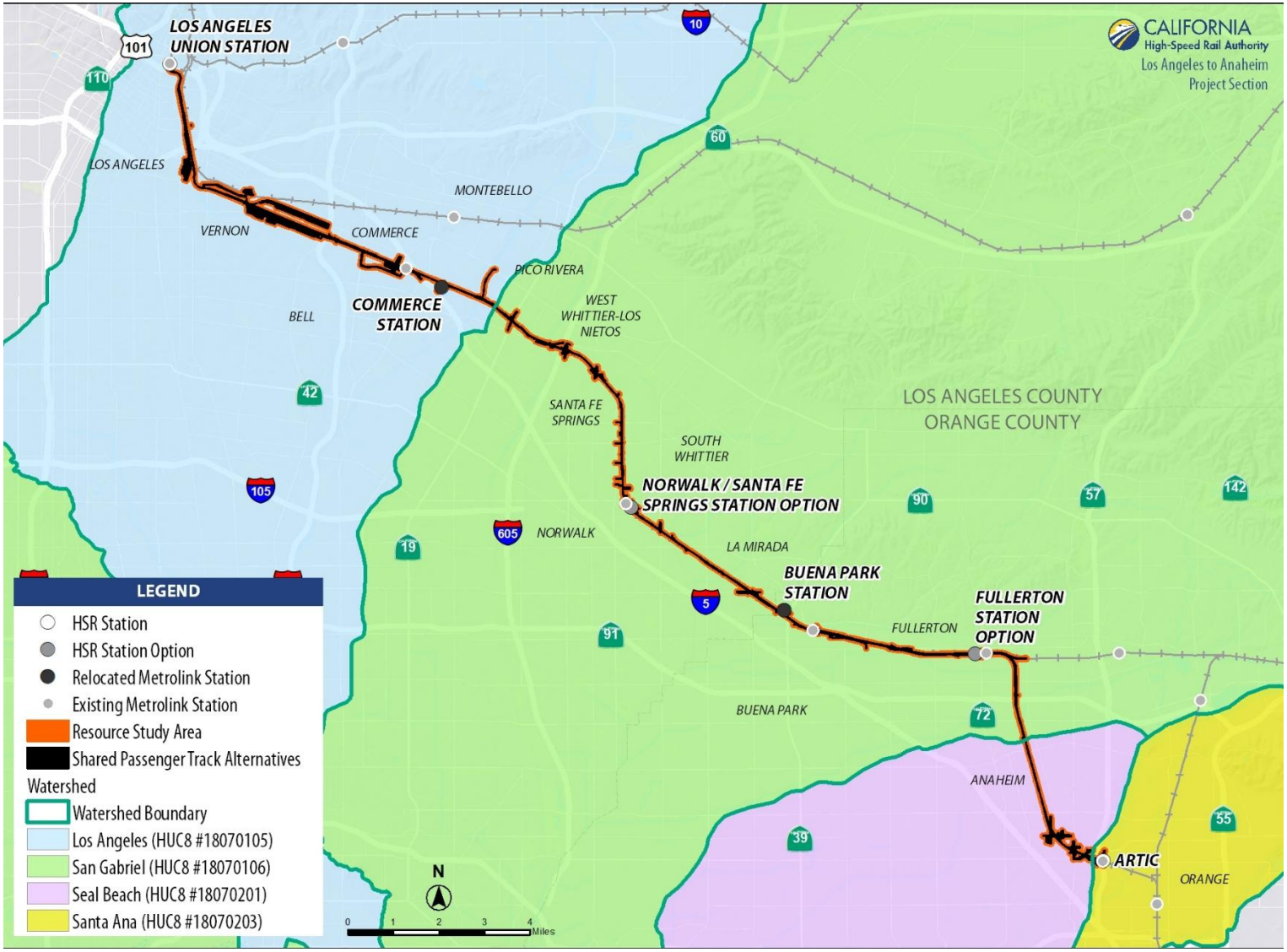
The construction of dams, detention/debris basins, groundwater recharge basins, storage reservoirs, concrete-lined flood control channels, and wastewater facilities has substantially altered the natural hydrology of the RSA.

### 4.2.1 Hydrology, Regional Conditions

The RSA lies within the watersheds of the Los Angeles River Basin (531,817 acres), San Gabriel River Basin (579,963 acres), Santa Ana River Basin (1,084,238 acres), and Seal Beach Basin (81,520 acres) (Figure 4-1). These watersheds are assigned the following U.S. Geological Survey Hydrologic Unit Code–8 (HUC-8) designations, respectively (USGS 2024a, 2024b):

- Los Angeles River (HUC-8 18070105)
- San Gabriel River (HUC-8 18070106)
- Santa Ana River (HUC-8 18070203)
- Seal Beach (HUC-8 18070201)

Prominent watercourses in the RSA (north to south) consist of the Los Angeles River, Rio Hondo, San Gabriel River, North Fork Coyote Creek, La Mirada Creek, Coyote Creek, Brea Creek, Fullerton Creek, Carbon Creek, and Santa Ana River. Prominent basins in the RSA include the eight Rio Hondo spreading grounds, the Lakeside Residential Community Lake, and the two Raymond Retarding Basins. Table 4-2 summarizes the major water features within each HUC-8 watershed and total acreage of each HUC-8 watershed occurring within the RSA.




*Sources: Authority 2025; USGS 2024a, 2024b*

**Figure 4-1 Watersheds in the Resource Study Area**

**Table 4-2 Watersheds in the Resource Study Area**

| Sub-basin (Hydrologic Unit Code–8) | Major Water Features within the RSA | Watershed Area (acres) | Watershed within RSA (acres) |
|---|---|---|---|
| Los Angeles River (18070105) | Los Angeles River, Rio Hondo, Rio Hondo spreading grounds | 531,817 | 1,508.52 |
| San Gabriel River (18070106) | San Gabriel River, North Fork Coyote Creek, La Mirada Creek, Coyote Creek, Brea Creek, Lakeside Residential Community pond, Fullerton Creek, Carbon Creek, Raymond Retarding Basins | 579,963 | 1,655.21 |
| Santa Ana River (18070203) | Santa Ana River | 1,084,238 | 63.35 |
| Seal Beach (18070201) | None | 81,520 | 385.65 |
| **Total** | **--** | **2,277,538** | **3,612.73** |

*Sources: USGS 2024a, 2024b*

RSA = resource study area

Table 4-3 summarizes the hydrologic units identified in the RWQCB Los Angeles Region and Santa Ana Region basin plans that occur within the RSA.

**Table 4-3 Watershed/Hydrologic Units Sub-Areas Identified in RWQCB Basin Plans in the Resource Study Area**

| RWQCB Basin Plan | Watershed/Hydrologic Unit Sub-Area within the RSA Identified in Basin Plan |
|---|---|
| Los Angeles Region | Los Angeles River Reach 2 Watershed |
| | Rio Hondo Reach 2 Watershed |
| | San Gabriel River Reach 2 Watershed |
| Santa Ana Region | Anaheim Hydrologic Unit Sub-Area Split |

*Sources: USGS 2024a, 2024b*

RSA = resource study area; RWQCB = Regional Water Quality Control Board

### 4.2.2 Climate and Precipitation Data

The climate within the Los Angeles basin (including the RSA) is arid to semi-arid. Summer and fall seasons (dry season) are generally hot and dry, with the majority of rain falling during the mid-winter months (wet season). Rainfall stations within the RSA reveal that approximately 80 percent of annual precipitation occurs between November and April. Accordingly, the condition of water resources (e.g., presence of surface water) is seasonally variable between the wet and dry seasons. Rainwater often inundates the watercourses and waterbodies (i.e., basins) within the RSA during winter storms, common from November through March, and many are completely dry or contain only nuisance or wastewater low flows during other seasons.

Adiabatic cooling (i.e., cooling caused by change in air pressure) causes warm, moisture-laden air masses generated over the Pacific Ocean to condense and cool as they are pushed upward and over the San Gabriel and San Fernando Mountain Ranges, resulting in moderate to heavy precipitation on the southwestern slopes. The resulting snowpack is highly variable, but averages range from 5 to 70 inches as elevation increases from the lower foothills to the mountain peaks. Similar to snowpack, mean annual precipitation for the downtown Los Angeles (USC Campus) meteorological station is highly variable, ranging from 3.85 inches in 1953 to 34.04 inches in 1983, and averaging 14.77 inches per year (WRCC 2024a). Mean annual temperature records for the same station indicate an average high temperature of 74 degrees and an annual average low

temperature of 56 degrees (WRCC 2024a). Key climatic factors influencing this high variability in intra-seasonal and inter-annual precipitation include the Madden-Julian Oscillation[13] and the El Nino Southern Oscillation,[14] respectively.

Table 4-4 presents annual precipitation data for four stations in the vicinity of the RSA. Average annual precipitation ranges from 12.01 inches at the Brea Dam to 20.24 inches in Pasadena.

**Table 4-4 Historical Annual Precipitation**

| Station | Location Relative to RSA | Elevation (msl) | Data Range | Mean Annual Rainfall (inches) |
|---|---|---|---|---|
| Pasadena (046719) | North | 820 feet | 1893–2016 | 20.24 |
| Brea Dam (041057) | East | 300 feet | 1948–2013 | 12.01 |
| Los Angeles Downtown USC Campus (045115) | West | 175 feet | 1877–2016 | 14.77 |
| Santa Ana Fire Station (047888) | South | 110 feet | 1906–2016 | 13.69 |

*Source: WRCC 2024b*

msl = mean sea level; RSA = resource study area

## 4.3 Soils

The Los Angeles basin of coastal Southern California is an alluviated lowland, situated south of the Santa Monica Mountains and the Elysian, Repetto, and Puente Hills, and west and northwest of the Santa Ana Mountains and San Joaquin Hills (Yerkes et al. 1965). Soils within Los Angeles County are mapped under the State Soil Geographic database (USDA/NRCS 2016a, 2024a), whereas more detailed soils maps are available for Orange County through the Soil Survey Geographic database (USDA/NRCS 2016b, 2024b).

Specifically, the following two State Soil Geographic database mapping units occur within the Los Angeles County portion of the RSA:

- Zamora – Urban Land – Ramona
- Urban Land – Sorrento – Hanford

The following 10 Soil Survey Geographic database mapping units occur within the Orange County portion of the RSA:

- Chino silty clay loam, drained
- Hueneme fine sandy loam, drained
- Metz loamy sand
- Metz loamy sand, moderately fine substratum
- Mocho loam, 0 to 2 percent slopes
- Pits
- Riverwash
- San Emigdio fine sandy loam, moderately fine substratum, 0 to 2 percent slopes
- San Emigdio fine sandy loam, 0 to 2 percent slopes
- Xeralfic Arents, 2 to 9 percent slopes

Table 4-5 lists the general soil map units that occur in the RSA, the geomorphic surfaces on which they occur, and the Great Group–level taxonomic classification. Figure 4-2 illustrates the extent of the general soil map units within the RSA.

[13] http://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/mjo.shtml

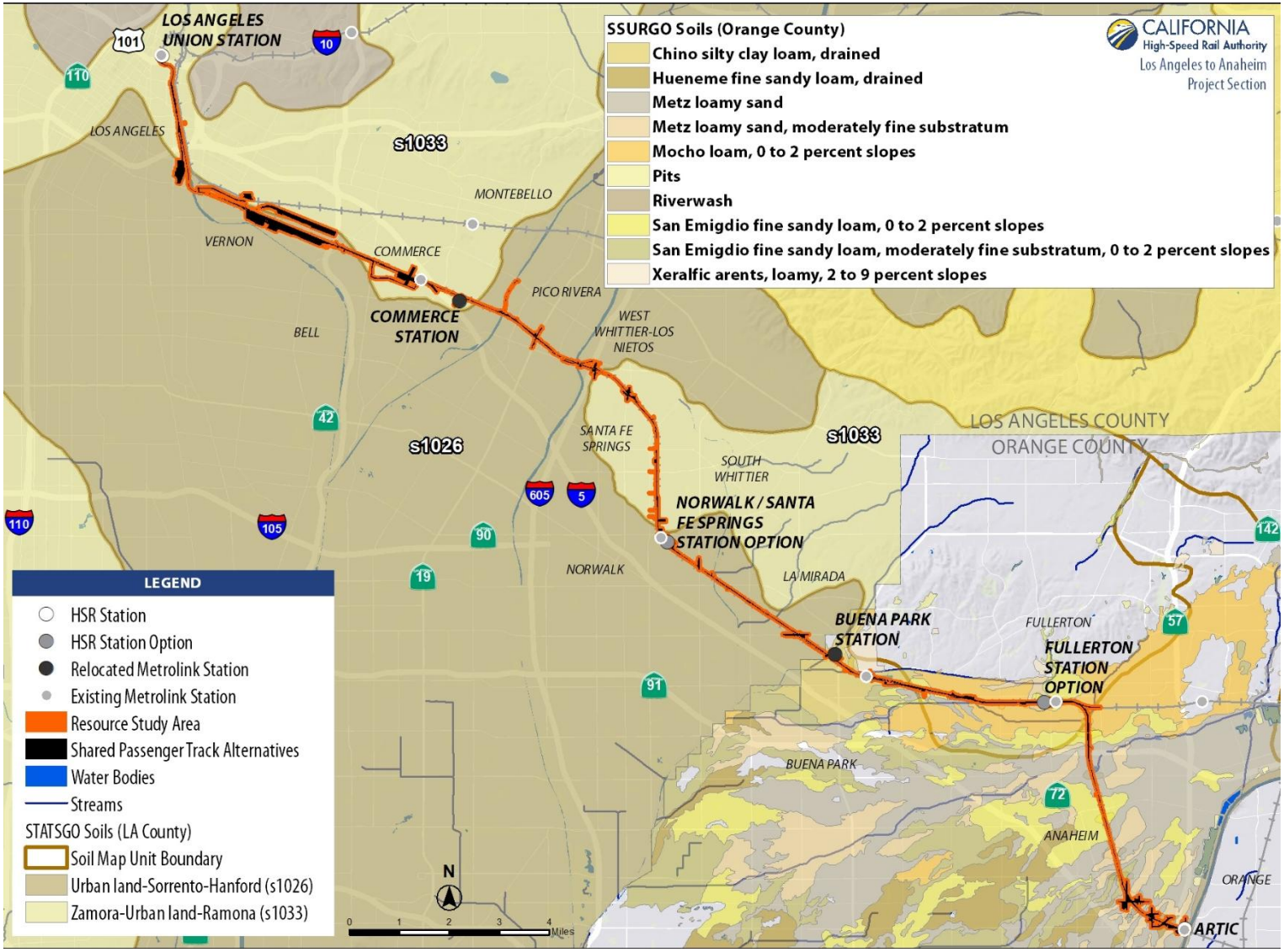
[14] http://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml

**Table 4-5 General Soil Map Units in the Resource Study Area**

| General Soil Map Unit (map symbol) | Geomorphic Surface | Primary Soil Classifications |
|---|---|---|
| Chino | Floodplains, basins | Aquic Haploxerolls |
| Hanford | Stream bottoms, floodplains, and alluvial fans | Typic Xerorthents |
| Hueneme | Alluvial plains and basins | Oxyaquic Xerofluvents |
| Metz | Floodplains, alluvial fans | Typic Xerofluvents |
| Mocho | Alluvial fans | Fluventic Haploxerolls |
| Pits | Not applicable | Not applicable |
| Ramona | Alluvial fans, floodplains | Typic Haploxeralfs |
| Riverwash | Rivers and streams, floodplains | Not applicable |
| San Emigdio | Alluvial fans, floodplains, and narrow valleys | Typic Xerofluvents |
| Sorrento | Floodplains, alluvial fans | Calcic Haploxerolls |
| Urban Land | Not applicable | Not applicable |
| Xeralfic Arents | Terraces | Haploxeralfs and Palexeralfs |
| Zamora | Sloping fans and terraces | Mollic Haploxeralfs |

*Sources: USDA/NRCS 2016a, 2016b, 2024a, 2024b*

A description of each soil series included within the State Soil Geographic database and Soil Survey Geographic database mapping units is provided below based on the official soil descriptions provided by USDA (USDA/NRCS 2011).




*Sources: Authority 2025; USDA/NRCS 2024a, 2024b*

**Figure 4-2 Soil Map Units and Associations in the Resource Study Area**

### 4.3.1 Soil Map Units

#### *4.3.1.1 Chino*

The Chino series consists of poorly to somewhat poorly drained soils that formed in alluvium derived from granitic rocks. These soils are in basins and floodplains at elevations of near sea level to 3,100 feet. Textures of this series include silt loam and silty clay loam. Chino soils have slow to very slow runoff and moderately slow permeability. The series is moderately extensive and is in the coastal valleys and intermountain valleys of Southern California and the southern San Joaquin Valley (USDA/NRCS 2011).

#### *4.3.1.2 Hanford*

The Hanford series consists of very deep, well-drained soils formed in coarse-textured alluvium, primarily from granite. These soils are in stream bottoms, floodplains, and alluvial fans, with slopes of 0 to 15 percent at elevations of 150 to 3,500 feet. Textures include coarse loams, especially fine sandy loam, and coarse fragments ranging from 0 to 35 percent. Hanford soils have negligible to low runoff and moderately rapid permeability. They are in the valleys of central and Southern California (USDA/NRCS 2011).

#### *4.3.1.3 Hueneme*

Stratified alluvium material derived from alkaline sedimentary sources from below 1,000 feet mean sea level forms the Hueneme series. The soils have relatively poor drainage, although many areas have been artificially drained. Permeability is rapid and runoff is slow. These soils are subject to periodic flooding. They are in nearly level alluvial plains and basins of the coastal plains and valleys of Southern California (USDA/NRCS 2011).

#### *4.3.1.4 Metz*

The Metz series consists of very deep, somewhat excessively drained soils that formed in alluvial material from mixed but dominantly sedimentary rocks. These soils are on floodplains and alluvial fans and have slopes of 0 to 15 percent at elevations of 25 to 2,500 feet. Textures of this soil series are primarily loamy sands. Metz soils have negligible to low runoff and moderately rapid permeability. They are in the coastal valleys of the central and south Coast Range of California (USDA/NRCS 2011).

#### *4.3.1.5 Mocho*

The Mocho series consists of very deep, well-drained soils that formed in alluvium derived mostly from sandstone and shale rock sources. The soils are on alluvial fans and have slopes of 0 to 9 percent at elevations of 20 to 3,500 feet. Textures include loam, silt loam, clay loam, or silty clay loam. Mocho soils have slow or medium runoff with moderate or moderately slow permeability. They are in the valleys of the Coast Range in central and Southern California (USDA/NRCS 2011).

#### *4.3.1.6 Pits*

Pits are open excavations from which soil and underlying material, mostly sand and gravel, have been removed by construction.

#### *4.3.1.7 Ramona*

The Ramona series consists of well-drained soils formed in alluvium derived mostly from granitic and related rock sources. The soils are on terraces and fans at elevations of 250 to 3,500 feet with nearly level to moderately steep slopes. Textures are fine-loamy or sandy loam but may contain coarse sand, fine gravel, and small rock fragments in low concentrations. Ramona soils have slow to rapid runoff and moderately slow permeability. The series is extensive and found in the interior valleys of central California and the western part of Southern California (USDA/NRCS 2011).

#### 4.3.1.8 Riverwash

Riverwash is unstabilized sandy, silty, clayey, or gravelly sediment that is flooded, washed, and reworked frequently by rivers.

#### 4.3.1.9 San Emigdio

The San Emigdio series consists of very deep, well-drained soils that formed in dominantly sedimentary alluvium. These soils are on fans and floodplains with slopes of 0 to 15 percent at elevations of 100 to 2,000 feet. Textures of this soil series are primarily loamy sands. San Emigdio soils have negligible to low runoff and moderately rapid permeability. This series is moderately extensive and found in the intermountain valleys in the western part of Southern California (USDA/NRCS 2011).

#### 4.3.1.10 Sorrento

The Sorrento soil series consists of very deep, well-drained soils that formed in medium-textured alluvium, mostly from sedimentary rocks. Soils occur on alluvial fans and stabilized floodplains with slopes of 0 to 15 percent at elevations of 25 to 2,100 feet. Textures of this soil series are primarily fine loams that are typically dry near the surface (5 to 15 inches) from late April to November/early December and moist the remainder of the year. Sorrento soils have negligible to medium runoff and moderate to moderately slow permeability, depending on the dominant texture and stratification of the lower horizons. This series is extensively through the valleys of the southern part of the Coast Range in California (USDA/NRCS 2011).

#### 4.3.1.11 Urban Land

Urban land consists of city areas where impervious surfaces (e.g., buildings, parking lots, roads) cover the soil surface. Land in these areas is highly altered, with various depths to bedrock or the water table and slopes. Urban areas generally have low permeability and high amounts of stormwater runoff.

#### 4.3.1.12 Xeralfic Arents

Xeralfic Arents consist of loamy moderately well drained or well-drained soils. Approximately 85 percent of areas mapped as Xeralfic Arents in Orange County is cut and fill land resulting from mechanical manipulation of terrace areas, with the remaining 15 percent occurring as undisturbed soils. Xeralfic Arents occur on slopes from 2 to 15 percent at elevation of 50 to 1,500 feet. Permeability is slow to very slow depending on compaction and mixing during construction. Runoff is rapid and the erosion potential is high.

#### 4.3.1.13 Zamora

Zamora soils are on nearly level to strongly sloping fans and terraces of 0 to 9 percent slopes at elevations of 30 to 1,300 feet. The soils formed in alluvium from material that weathered from mixed sedimentary rocks. This series is a member of the fine-silty, mixed, thermic family of Mollic Haploxeralfs. Zamora soils have slow to medium runoff with moderately slow permeability. The series is primarily along the west side of the Sacramento Valley in central California but occurs in other parts of California (USDA/NRCS 2011).

### 4.3.2 Hydric Soils

Identification of hydric soils that may occur within the Los Angeles County portion of the RSA was not possible because of the lack of detailed soils series–specific hydric soil information associated with the State Soil Geographic (STATSGO) dataset (USDA/NRCS 2016a, 2024a). In addition, no mapped hydric soil series are associated with the wetlands delineation data point locations for the Orange County portion of the RSA. However, hydric soils may occur in other areas of the RSA as inclusions within map units, or as unmapped hydric soils identified in the field during the wetland delineation. Below is a description of Riverwash, a hydric soil in Orange County.

**Riverwash**—The STATSGO data lists Riverwash as hydric in Orange County (USDA/NRCS 2016b, 2024b). Riverwash consists of areas of deep sand and gravel that are adjacent to, or islands within, the low water channels of rivers and small intermittent streams. At normal, episodic flow conditions, many of these areas are flooded, while under flood conditions, nearly all are flooded (USDA/NRCS 2011). Riverwash as a mapped soil series is not associated with an Orange County wetland delineation data point locations; however, mapped Riverwash is associated with the Santa Ana River within the Orange County portion of the RSA.

## 4.4 National Wetlands Inventory and Mapped Wetlands

The U.S. Fish and Wildlife Service National Wetlands Inventory remote dataset was reviewed to preliminarily identify potential wetland and riparian communities within the RSA. Within the RSA, the U.S. Fish and Wildlife Service National Wetlands Inventory identified several types of wetlands, including Riverine, Lake, and Freshwater Pond. It should be noted that the National Wetlands Inventory maps are based on remote imagery modeling and interpretation, and are not intended to substitute for more detailed, site-specific evaluations. Accordingly, wetland features identified under the National Wetlands Inventory may not reflect current conditions or meet the USACE or SWRCB wetland definitions. The results of the inventory review are provided in Appendix A, National Wetlands Inventory, Mapped Wetlands.

# 5 METHODS

## 5.1 Pre-Survey Investigations

The following publicly available resources were reviewed prior to and following field investigations to obtain information on wetlands and other water features that may occur within the RSA:

- U.S. Geological Survey 7.5-minute topographic quadrangles, including the Los Angeles, South Gate, Whittier, La Habra, Anaheim, and Orange quadrangles (USGS 2015, 2024a)
- National Wetlands Inventory maps (USFWS 2016, 2024)
- National Hydrography Dataset (USGS 2016, 2024b)
- California Natural Diversity Database Biogeographic Information and Observation System (CDFW 2016, 2023)
- USDA/NRCS Soil Survey Map Units (USDA/NRCS 2011, 2016a, 2016b, 2024a, 2024b)
- Google Earth Pro aerial photographs (May 1994 to September 2024) (Google Earth 2017, 2024) and ArcGIS 10 imagery (ESRI 2024)
- Climate and precipitation data (WRCC 2016a, 2016b)

### 5.1.1 Aerial Imagery Mapping Methods

Prior to field investigations, detailed land cover and preliminary wetlands and nonwetlands delineation maps were generated using ArcGIS 10 software based on interpretation of Google Earth Pro imagery series and soil survey data. A standard mapping scale of 1 inch = 200 feet (1:2,400) and a minimum standard mapping unit for wetlands of 0.001 acre were used.

Following the above preliminary analysis, the RSA was visually assessed in ArcGIS and Google Earth Pro across the same aerial imagery series to confirm the location and extent of aquatic features identified in the first step, and also identify the presence of additional aquatic features. Once this two-stage remote exercise was completed, the jurisdictional limits for potential wetland and nonwetland waters of the U.S. were mapped in ArcGIS in preparation for field surveys.

## 5.2 Reconnaissance-Level Field Survey

Field surveys were conducted on June 22, 2015; October 8–9, 2015; February 25–26, 2016; March 2, 2016; March 17, 2016; and August 23, 2016. In addition, on August 16, 2017, USACE regulatory staff (Veronica Li and Miriam Yemane) conducted a field verification of wetland and nonwetland aquatic resources within the study area portion of the San Gabriel River. The results of the verification are discussed in Section 6.1, Wetlands in the Resource Study Area. Maps prepared under the remote assessment were field-verified from areas where access was granted and from public right-of-way where access was not feasible. Field verification included assessment of wetland features and ordinary high-water mark measurements. Where feasible, a handheld global positioning system unit with sub-meter accuracy was used to map the extents of observed wetlands and nonwetland waters of the U.S. Representative photographs of accessible features (including from public right-of-way) were taken to document physical characteristics (Appendix E, Wetland and Nonwetland Waters of the U.S. Photographs). Characteristics of wetland features were recorded on USACE Wetland Determination Data Forms, Arid West Region (version 2.0) (USACE 2008:121–122), including landforms, vegetation, hydrology, and soil characteristics (Appendix D, Wetlands Determination Data Sheets).

### 5.2.1 Nonwetland Waters of the U.S. Field Delineation Methods

The landward limits of nonwetland waters of the U.S. regulated under CWA Sections 404 and 401, excluding wetlands and tidal waters, is based on the ordinary high-water mark, defined in CFR Part 328.3(e) as “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving,

changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

Nonwetland waters of the U.S. in the RSA were delineated using the methods described in *A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* (Lichvar and McColley 2008) and USACE Regulatory Guidance Letter No. 05-05 (USACE 2005), where appropriate. These guidance materials provide an approach for identifying the lateral limits of nonwetland waters based on remote aerial imagery, stream geomorphology, and vegetation communities.

Neither SWRCB nor the Los Angeles and Santa Ana RWQCBs, which both have jurisdiction over the drainage basins that the project section could affect, have adopted a methodology for defining nonwetland waters. Therefore, this report uses the definitions for nonwetland waters of the U.S. set forth under Section 404 of the CWA and the USACE technical criteria for nonwetland waters of the U.S.

### 5.2.2 Wetland Field Delineation Methods

The lateral limits of wetland waters of the U.S. regulated under CWA Section 404/401 were delineated using the methods described in the *USACE Wetlands Delineation Manual* (USACE 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008), and the *State Wetland Definition and Procedures for Discharges of Dredge or Fill Material to Waters of the State* (SWRCB 2021).

Normally, three criteria must be satisfied to classify an area as USACE-jurisdictional (3-parameter) wetland regulated under CWA Section 404:

1. A predominance of plant life that is adapted to life in wet conditions (hydrophytic vegetation)
2. Soils that saturate, flood, or pond long enough during the growing season to develop anaerobic conditions in the upper part (hydric soils)
3. Permanent or periodic inundation or soils saturation, at least seasonally (wetland hydrology) (USACE 1987)

Under certain circumstances, morphologic characteristics normally found in hydric soils may not be visible for certain "problematic" categories of hydric soils (e.g., riverwash) because of prevailing environmental conditions (USACE 2008).

For purposes of this report, the *State Wetland Definition and Procedures for Discharges of Dredge or Fill Material to Waters of the State* (SWRCB 2021) is used to identify resources considered wetlands under the state policy. Under this definition, an area is a wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation. Similar to USACE, SWRCB uses indicators of wetland hydrology, hydric soils, and wetland vegetation, but also includes features that lack hydrophytic vegetation if hydrology and hydric soils are present. Although the USACE and SWRCB definitions deviate with respect to the vegetation as an indicator, the definitions are otherwise the same, and both use the same USACE technical guidance documents for conducting wetland delineations (USACE 1987, 2008).

Wetland boundaries for accessible properties were determined using paired data points in wetland and adjacent upland areas (Appendix C). Landforms, vegetation, soil characteristics, and hydrology indicators were recorded for each sample point (SP) on USACE Wetland Determination Data Forms, Arid West Region (version 2.0) (USACE 2008:121–122) (Appendix D). For large complexes of features, or features exhibiting similar characteristics, paired points were recorded at representative features but not at each individual feature. Boundaries of aquatic features that were determined to meet all three USACE wetland criteria were mapped as polygons using a global positioning system unit, aerial imagery interpretation, or a combination

thereof. Wetland boundaries were extrapolated by following topographic contours, wetland vegetation boundaries, and clear hydrologic boundaries.

In circumstances where access was not feasible, binoculars were used within public rights-of-way to identify plant species composition and estimate cover for the various applicable vegetation stratum plots (tree, shrub, herb, and vine). Pursuant to the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008), aquatic features exhibiting both wetland hydrology indicators and hydrophytic vegetation were assumed to also contain hydric soils and thus were determined to be USACE-jurisdictional wetlands. Wetland hydrology was determined based on visual observation (where feasible), aerial photo interpretation, topography, landscape position, and best professional judgment.

## 5.3 Aquatic Resource Classifications

Jurisdictional aquatic resource categories are based on the *U.S. Army Corps of Engineers Wetland Delineation Manual* (USACE 1987), *U.S. Fish and Wildlife Service National Wetland Inventory* (USFWS 2016, 2024), and *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). These jurisdictional aquatic resource categories are based on vegetative growth form (e.g., herbaceous, emergent, shrub) and hydrogeomorphic category (e.g., riverine, basin), with the exception of built watercourses.

Potentially jurisdictional aquatic resources identified within the RSA include freshwater wetlands; freshwater forested/shrub wetland; and nonwetland riverine, built watercourse, and basin features.

### 5.3.1 Freshwater Emergent Wetland

Within the Los Angeles basin, freshwater emergent wetlands are nontidal wetlands generally classified as palustrine emergent semipermanently flooded wetlands (Cowardin et al. 1979). Freshwater emergent wetland habitats typically support perennial emergent vegetation such as cattails (*Typha* spp., obligate wetland [OBL[15]]), sedges (*Carex* spp., facultative [FAC[16]] or wetter[17]), bulrushes (*Schoenoplectus* spp., OBL), and rushes (*Juncus* spp., FAC or wetter[18]). These wetland communities are generally found on floodplains, in backwater areas, and within the active channels of rivers and sloughs, and may include sensitive wetland communities, such as coastal and valley freshwater marsh (CDFG 2003). Within the RSA, this aquatic resource category is consistent with the California bulrush marsh herbaceous alliance described in Section 4.1.2.1 (Sawyer et al. 2009).

### 5.3.2 Freshwater Forested/Shrub Wetland

Freshwater forested/shrub wetlands within the Los Angeles basin are generally on floodplains or on the banks of natural or modified natural waterways, including rivers and streams (USFWS 2024 and 2016). Within the RSA, this aquatic resource category is consistent with the black willow thickets shrubland alliance, described in Section 4.1.2.4, Black Willow Thickets Shrubland Alliance (Sawyer et al. 2009). These communities often support overstory species that are facultative wetland; however, soils, hydrology, and understory vegetation may not be representative of wetlands.

### 5.3.3 Riverine

Riverine features within the Los Angeles basin exhibit perennial or intermittent flow regimes largely as a result of stormwater and nuisance water runoff and wastewater discharges. All are

[15] Species designated as obligate wetland (OBL) are plants adapted predominantly (estimated probability greater than 99 percent) to wetland conditions (USACE 1987).
[16] Species designated as facultative (FAC) are plants occurring with equal probability under both wetland and nonwetland conditions (estimated probability 33 percent to 67 percent) (USACE 1987).
[17] The Arid West 2016 Regional Wetland Plant List classifies the majority of *Carex* spp. as FAC, FACW, and OBL.
[18] The Arid West 2016 Regional Wetland Plant List classifies all *Juncus* spp. included in the list as FAC, FACW, or OBL.

low-gradient systems and some (e.g., earthen-bottom watercourses) support emergent vegetation along their margins, with channel bottom substrates dominated by fine sediments (i.e., sand, silt, or clay). Most of these features are subject to routine maintenance activities such as vegetation removal and sediment removal.[19] Riverine features in the region are classified as riverine lower perennial and riverine intermittent systems, depending on the persistence of their surface hydrology and their landscape position (Cowardin et al. 1979). Within the RSA, this aquatic resource category is most often consistent with the unvegetated channel aquatic habitat type described in Section 4.1.2.8, Unvegetated Channel, but also contains several small stands of mulefat thickets shrubland alliance, described in Section 4.1.2.2, Mulefat Thickets Shrubland Alliance, and salt grass flats herbaceous alliance, described in Section 4.1.2.6, Salt Grass Flats Herbaceous Alliance (Sawyer et al. 2009).

### 5.3.4 Basins

Basin features within the Los Angeles basin are generally artificially built depressional features subject to routine maintenance activities such as vegetation removal and sediment removal. Depending on substrate and management regimes, vegetation type and presence varies, although most basins generally lack wetland vegetation. Palustrine or lacustrine wetlands may be found along basin margins or in shallow areas where deep water does not preclude vegetation establishment. Hydrology also varies in relation to precipitation events, artificial sources, and other management objectives. Basins are classified as palustrine unconsolidated bottom deepwater habitats (Cowardin et al. 1979). Within the RSA, this aquatic resource category is predominantly consistent with the open water aquatic habitat and barren (developed) habitat types described in Sections 4.1.2.7, Open Water, and 4.1.3.2, Barren, respectively, but also contains several small patches of mulefat thickets shrubland alliance along bank slopes, described in Section 4.1.2.2, Mulefat Thickets Shrubland Alliance (Sawyer et al. 2009).

### 5.3.5 Built Watercourses

Built watercourses within the Los Angeles basin are generally artificially built in uplands for the purpose of conveying stormwater and nuisance flows. These features vary in dimension, but often are linear in orientation, concrete-lined, and either U-shaped or trapezoidal. Within the RSA, built watercourses consist of concrete-lined drainage channels excavated in uplands. These features are subject to routine sediment and vegetation maintenance as well as erosive flows, and are thus denuded of vegetation.

### 5.3.6 Non-Jurisdictional Aquatic Features

The *Revised Definition of "Waters of the United States"; Conforming* (33 CFR Part 328.3(a)(1)–(5); USACE and USEPA 2023) excludes the following categories of aquatic features from regulation under the CWA (refer to 33 CFR Part 328(b)):

(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;

(2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with USEPA;

[23] Channel maintenance activities conducted by the USACE and local flood control jurisdictions (e.g., the Los Angeles County Department of Public Works) include removing deposits of sediment, vegetation, and other materials that can inhibit the ability of built flood control channels to convey floodwaters. Such maintenance activities are authorized under USACE Los Angeles District Regional General Permit 41 and other pertinent regional permits (USACE 2017a), as well as the 2017 Nationwide Permits, General Conditions, District Engineer's Decision, Further Information, and Definitions (USACE 2017b). Additional information can be found on the USACE Los Angeles District website (www.spl.usace.army.mil/Media/Fact-Sheets/Article/920482/los-angeles-river-frequently-asked-questions/).

(3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;

(4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;

(5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;

(6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

(7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the U.S.; and

(8) Swales and erosional features (e.g., gullies, small washes) characterized by low volume, infrequent, or short duration flow.

The presence of these categories of non-jurisdictional aquatic features occurring within the RSA was evaluated through remote assessment and field verification. Connectivity to relatively permanent waters or traditionally navigable waters was assessed through review of Google Earth Pro aerial imagery series, Los Angeles County Flood Control Department Storm Drain System maps (Los Angeles Department of Water and Power 2024), and Orange County Flood Control Department Drainage Facilities maps (Orange County Public Works 2024). Where access was granted or observation from public right-of-way was feasible, field surveys were conducted to verify aerial imagery observations and note the presence/absence of ordinary high-water mark indicators. Based on this information, the following types of aquatic features occurring within the RSA were preliminarily determined to be non-jurisdictional under CWA Section 404/401:

- Ephemeral drainage ditches excavated wholly in and draining only uplands, exhibiting no discernable ordinary high water mark or riparian vegetation (pursuant to 33 CFR Part 328(b)(3))
- Settling basins excavated wholly in uplands and not connected to relatively permanent waters or traditionally navigable waters (pursuant to 33 CFR Part 328(b)(5))

In summary, all aquatic features within the Aquatic RSA were evaluated to determine if these features met the definitions of CWA Section 404/401 waters of the U.S. Reference materials included the relevant statutes, agency policies and guidance, and evaluation of the vegetative, hydrologic, and physical characteristics of these features. Based on this information, these two categories of aquatic features are not referenced further in this report or depicted in the Delineated Wetlands and Nonwetland Waters of the U.S. Maps (Appendix C). Although these features are excluded under the CWA, the Authority recognizes that USACE, SWRCB, and USEPA reserve the right on a case-by-case basis to determine that a particular aquatic feature is a water of the U.S. (33 CFR 320–332; USACE 1986).

# 6 RESULTS

Potentially jurisdictional aquatic resources identified within the RSA include freshwater wetlands, freshwater forested/shrub wetland, and nonwetland riverine, built watercourse, and basin features.

Aerial imagery interpretation and field investigations in the 3,612.73-acre RSA identified a total of 99.04 acres of CWA Section 404/401 waters of the U.S. (including wetlands). This acreage consists of 1.89 acre of wetlands (i.e., freshwater emergent wetland, freshwater forested/shrub wetland) and 97.15 acres of nonwetland waters of the U.S. (i.e., basin, built watercourse, and riverine), as presented in Table 6-1. No Section 10 navigable waters of the U.S. were identified in the RSA.

**Table 6-1 Total Acreages of Potential Wetland and Nonwetland Waters of the U.S. Identified in the Resource Study Area[1]**

| Wetlands/Nonwetland Waters of the U.S. | Total Acreage in Resource Study Area |
|---|---|
| **Wetlands** | |
| Freshwater Emergent Wetland | 1.83 |
| Freshwater Forested/Shrub Wetland | 0.06 |
| *Wetlands subtotal* | *1.89* |
| **Nonwetland Waters of the U.S.** | |
| Basin | 20.81 |
| Built Watercourse | 0.43 |
| Riverine | 75.91 |
| *Nonwetland Waters of the U.S. subtotal* | *97.15* |
| **Total Potential Wetlands and Nonwetland Waters of the U.S.** | **99.04** |

*Source: ESRI 2024*

[1] Aquatic resource acreages are based on the project footprint dated August 2024 and include both of the Shared Passenger Track Alternatives. There is no difference in aquatic resource acreages between the Shared Passenger Track Alternatives.

Total wetlands and nonwetland waters of the U.S acreage values presented in Table 6-1 differ slightly from the corresponding acreage values described and mapped in Appendix C because of rounding differences. Section 6.1, Wetlands in the Resource Study Area, and Section 6.2, Nonwetland Waters of the U.S. in the Resource Study Area, summarize the wetlands and nonwetland waters identified in the RSA, respectively. Appendix C provides an index table and map book of CWA Section 404/401 aquatic resources identified within the RSA.

## 6.1 Wetlands in the Resource Study Area

Two general wetland classes were identified within the RSA, consisting of freshwater emergent wetland and freshwater forested/shrub wetland. These classes are described below.

### 6.1.1 Freshwater Emergent Wetland

Within the RSA, freshwater emergent wetland is found only within the San Gabriel River. Specifically, a moderate-sized area of freshwater emergent wetlands (Feature 12 – Wetland 3) was identified in the vicinity of the existing railroad crossing and the dominant low flow channel of the River (1.73 acres), and a smaller area of freshwater emergent wetlands (Feature 12 – Wetland 2) was identified along the left descending (eastern) bank in the vicinity of a large (~7.5-foot-wide) stormwater outlet (0.10 acres). Five representative wetland SPs were established within Feature 12 – Wetland 3: SP-9, SP-10, SP-11, SP-12, SP-13, and two representative

wetland SPs were established within and adjacent to Feature 12 – Wetland 1: SP-16 and SP-17 (Appendix D). Photo stations (PS) PS-58, PS-59, PS-60a, PS-60b, and PS-61 provide representative photographs of Feature 12 – Wetland 3 and adjacent upland areas. Photo stations PS-66 and PS-67 provide representative photographs of Feature 12 – Wetland 1 and adjacent upland areas (Appendix E).

Perennial, emergent monocots that create defined uniform stands dominate the freshwater emergent wetlands at the SPs within the San Gabriel River. Dominant hydrophytic species at the SPs included bulrush (*Schoenoplectus californicus,* obligate [OBL]), willow smartweed (*Persicaria lapathifolium*, facultative wetland [FACW]), southern cattail (*Typha domingensis*, OBL), black willow (*Salix gooddingii*, FACW), barnyard grass (*Echinochloa crus-galli*, FACW), curly dock (*Rumex crispus*, FAC), and African umbrella sedge (*Cyperus involucratus*, FACW) (Appendix F, Wetland Plant Species List).

Wetland soils within the San Gabriel River freshwater emergent wetland SPs consisted predominantly of silts and sands (loamy sand). Observed hydric soil indicators consisted of redoximorphic conditions (oxidized iron concentrations) within soil matrices, classified as redox dark surface.

Observed primary indicators of hydrology included high water table (A2), saturation (A3), inundation visible on aerial imagery (B7), and biotic crust (B12). Observed secondary indicators of hydrology include water marks (B1, riverine), sediment deposits (B2, riverine), drift deposits (B3, riverine), drainage patterns (B10), and saturation visible on aerial imagery (C9).

On August 16, 2017, USACE regulatory staff (Veronica Li and Miriam Yemane) conducted a field verification of wetland and nonwetland aquatic resources within the study area portion of the San Gabriel River. Based on inspection of soils, vegetation, and hydrology adjacent to Feature 12- Wetland 3, USACE advised the Authority to expand the delineated limits of this wetland feature. In addition, USACE agreed with the delineation of the freshwater forested/shrub wetland described below (Feature 12 – Wetland 2). Based on feedback from USACE during the verification, the Authority has amended the original wetland delineation data forms (Appendix D) for SP-10 and SP-12 and the accompanying maps (Appendix C) to reflect USACE's observations and direction.

### 6.1.2 Freshwater Forested/Shrub Wetlands

Within the RSA, one area of freshwater forested/shrub wetland was identified within the San Gabriel River.

One small stand of freshwater forested/shrub wetland (0.06 acre) was identified within the RSA in the San Gabriel River (Feature 12 – Wetland 1), along the right descending (western) bank in the vicinity of a large (~7.5-foot-wide) stormwater outlet. Vegetation observed associated with this stand included black willow (FACW) with an understory of barnyard grass (FACW), willow smartweed (FACW), and rough cocklebur (FAC) (Appendix F). Two representative wetland SPs (SP-14 and SP-15) were established within and in the vicinity of the freshwater forested/shrub wetlands (Appendix D). PS-62 and PS-63 provide representative photographs of these wetlands and adjacent upland areas.

Wetland soils within the San Gabriel River freshwater forested/shrub wetland SPs consisted predominantly of sands and silt (sandy loam). Observed hydric soil indicators consisted of redoximorphic conditions (oxidized iron concentrations) within soil matrices, classified as redox dark surface.

No primary indicators of hydrology were present at the time of the field survey. This is likely because of several factors, including routine maintenance of this reach of the river, the seasonal timing of the survey (August 2016), and the extended drought cycle leading up to the survey. Observed secondary indicators of hydrology consisted of drift deposits (B3, riverine) drainage patterns (B10), and saturation visible on aerial imagery (C9). Two secondary indicators are required to meet the hydrology parameter.

## 6.2 Nonwetland Waters of the U.S. in the Resource Study Area

Delineators identified and mapped three types of nonwetland waters of the U.S. in the RSA, consisting of basins, built watercourses, and riverine features. Table 6-2 provides a brief description of each type of feature.

**Table 6-2 Description of Nonwetland Waters of the U.S. Mapped within the Resource Study Area**

| Feature Name | Description of Feature |
|---|---|
| Features 1 (Los Angeles River), 5 (Rio Hondo), 14 (North Fork Coyote Creek), 15 (Milan Creek), 19 (La Mirada Creek), 20 (Coyote Creek)[1], and 28 (Fullerton Creek)[1] | Riverine: concrete bed and bank trapezoidal channel |
| Features 18 (La Mirada Creek), 20 (Coyote Creek), 30 (Fullerton Creek), 38 (Carbon Creek), and 41 (Brea Creek) | Riverine: concrete bed and bank box channel |
| Features 12 (San Gabriel River) and 40 (Santa Ana River) | Riverine: earthen bed and concrete/riprap bank trapezoidal channel |
| Feature 29 (unnamed) | Built watercourse; concrete bed and bank trapezoidal channel |
| Feature 31 (unnamed) | Built watercourse: concrete bed and bank box channel |
| Features 7-10 and 56-58 (Rio Hondo Spreading Grounds), 23 (Lakeside Residential Community Pond), 37 (Raymond Retarding Basin northwest), and 39 (Raymond Retarding Basin southeast) | Basin: earthen bed and bank basin |

*Source: ESRI 2024*

[1] Feature 20 (Coyote Creek) and Features 28/30 (Fullerton Creek) are both a concrete bed and bank box trapezoidal channel and a concrete bed and bank box channel within the RSA.

RSA = resource study area

Appendix C provides acreages and maps for each of the wetland and nonwetland waters of the U.S. identified within the RSA. The sections below describe these types of waters within the RSA.

### 6.2.1 Basins

A total of ten basins encompassing 20.81 acres of nonwetland waters of the U.S. were identified within the RSA. The basins consist of seven spreading grounds associated with Rio Hondo, the Lakeside Residential Community pond, and the two Raymond Retarding Basins. The Rio Hondo spreading ground basins are dry throughout most of the year. The Lakeside Residential Community pond is inundated throughout the year for recreational boating and aesthetics. The Raymond Retarding Basins are periodically inundated throughout the year.

Given the frequency and extent of routine maintenance within the Rio Hondo spreading grounds and the Raymond Retarding Basins, evidence of an ordinary high-water mark was not discernable. In these circumstances, the ordinary high-water mark was estimated based on aerial imagery and consisted of the entire basin floor from toe of bank to toe of bank. The ordinary high-water mark for the Lakeside Residential Community pond was also estimated based on aerial imagery, and consisted of the entire inundated area. The Rio Hondo spreading grounds support Bermuda grass (*Cynodon dactylon*, facultative upland [FACU]) on the basin floor and sparse isolated thickets of mulefat (FAC) along bank slopes, landward of CWA Section 404/401 jurisdictional limits (ordinary high-water mark). The Raymond Retarding Basins support sparse patches (less than 5 percent cover) of hydrophytic vegetation including dense-flowered sprangletop (*Leptochloa fusca,* FACW), willow smartweed (FACW), and rough cocklebur (*Xanthium strumarium*, FAC), but are dominated by upland vegetation consisting of ruderal native and nonnative species, including common horseweed (*Erigeron canadensis*, FACU), Bermuda grass (FACU), prickly Russian-thistle (*Salsola tragus*, FACU), and annual sunflower (*Helianthus*

*annuus*, FACU). Based on aerial photograph interpretation, the Lakeside Residential Community pond supports only ornamental vegetation, along its upland margins.

PS-7, PS-8, and PS-43 provide representative photographs of the Rio Hondo spreading ground basins and Raymond Retarding Basins (Appendix E).

### 6.2.2 Built Watercourses

Two built watercourses encompassing 0.43 acre of nonwetland waters of the U.S. were identified in the RSA (features 29 and 31). These two features are concrete-lined, unvegetated channels excavated in uplands for drainage of stormwater and nuisance flows. Based on the results of pre-survey investigations and reconnaissance-level field surveys, delineators determined that these built watercourses appear to exhibit relatively permanent surface water flows[20] and have faint indicators of an ordinary high-water mark observable from public rights-of-way (water stains along concrete banks). Access restrictions limited further field reconnaissance. Features 29 and 31 discharge to Fullerton Creek approximately 1,959 linear feet and 56 linear feet from the RSA, respectively. Fullerton Creek is a tributary to North Fork Coyote Creek, which in turn is a tributary to the San Gabriel River. The San Gabriel River discharges to the Pacific Ocean (a traditionally navigable water) approximately 4.2 miles downstream from the North Fork Coyote Creek confluence.

Based on the PJD methodology (USACE 2016) and the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (USACE and USEPA 2007) and revised guidance (USACE and USEPA 2008), built watercourse features 29 and 31 are potentially jurisdictional under CWA Section 404/401.

PS-36 provides a representative photograph of built watercourse feature 29 (Appendix E).

### 6.2.3 Riverine

A total of 14 riverine features were identified within the RSA, encompassing 75.91 acres of nonwetland waters of the U.S. These features consist of (north to south): Los Angeles River (two mapped features), Rio Hondo, San Gabriel River, North Fork Coyote Creek, Milan Creek, La Mirada Creek (two mapped features), Coyote Creek, Brea Creek, Fullerton Creek (two mapped features), Carbon Creek, and Santa Ana River. These watercourses exhibit perennial or intermittent surface water flows and generally have less than 5 percent cover of hydrophytic vegetation.[21]

Within the RSA, riverine features are predominantly concrete-lined, unvegetated channels. These include the Los Angeles River, Rio Hondo, North Fork Coyote Creek, Milan Creek, La Mirada Creek, Coyote Creek, Brea Creek, Fullerton Creek, and Carbon Creek. The most common physical indicators of an ordinary high-water mark consisted of water stains and debris wrack. However, pioneer wetland and riparian vegetation (early seral stages) was observed in a subset of these channels, as described below.

The concrete-lined portions of the Los Angeles River and Brea Creek falling within the RSA periodically support duckweed blooms within still or slow moving water or on ground surfaces where water levels have dropped. Access constraints prohibited delineators from identifying species supported at these locations; common species found within such blooms include water

[20] Relatively permanent waters are defined as non-navigable tributaries of traditionally navigable waters that typically flow year-round or have continuous flow at least seasonally, and can include man-made ditches and canals (*U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* [USACE and USEPA 2007] and revised guidance [USACE and USEPA 2008].

[21] The portion of the San Gabriel River within the RSA contains areas of USACE and SWRCB-defined freshwater emergent wetlands and freshwater forested/shrub wetland. The portion of La Mirada Creek within the RSA contained areas of hydrophytic vegetation but was determined to not contain USACE or SWRCB-jurisdictional wetlands because of a relatively thin soil profile (~6 inches depth), the absence of redoximorphic features, and the presence of an (artificial) restrictive barrier to the underlying substrate.

fern, Mexican mosquito fern, and Brazilian waterweed. Species falling within the duckweed blooms herbaceous alliance are generally hydrophytic. However, based on the absence of soils and the presence of an (artificial) restrictive barrier to the underlying substrate, as well as the landscape position of these blooms (uniform, flat riverbed), delineators preliminarily determined these features would not meet the USACE and SWRCB wetland definitions.

In addition, modest sediment accumulation in the portion of La Mirada Creek (up to 6 inches) falling within the RSA has allowed the establishment of sparse patches of hydrophytic (rooted) vegetation over the grouted riprap lining. This consists of pioneer species adapted to disturbance, including southern cattail (*Typha domingensis*, OBL), umbrella plant (FACW), willow smartweed (FACW), barnyard grass (FACW), and dense-flowered sprangletop (*Leptochloa fusca*, FACW). Similar to the above circumstance, these aquatic features were also determined to not meet the USACE and SWRCB wetland definitions, based on the relatively thin soil profile, the confirmed absence of redoximorphic features, and the presence of an (artificial) restrictive barrier to the underlying substrate. Two representative wetland SPs were established within the potential wetland feature in La Mirada Creek (SP-18 and SP-19, PS-22, PS-74, and PS-75).

The earthen-bottom San Gabriel River supports a moderate-sized area of freshwater emergent wetland vegetation, and one stand of freshwater forested/shrub wetland, as described in Section 6.1.1, Freshwater Emergent Wetland, and Section 6.1.2, Freshwater Forested/Shrub Wetlands. In addition, two small stands of mulefat (FAC) are along the toe of the western bank within the RSA, approximately 384 square feet and 187 square feet in size. One representative wetland SP was established within one of the potential wetland features in the San Gabriel River (SP-8, PS-68). Both features supported an overstory of mulefat (FAC), and an understory of predominantly upland species, consisting of tocalote (obligate upland [UPL]), foxtail brome (UPL), and wild radish (*Raphanus sativus*, UPL). Based on the vegetative composition, these stands did not meet the three-parameter criteria for USACE-defined wetlands. The remaining portion of the San Gabriel River within the RSA is composed of unvegetated channel, interspersed with salt grass (FAC), annual brome grassland (FACU and UPL), and curly dock (FAC).

The earthen-bottom portion of the Santa Ana River within the RSA is generally denuded of vegetation, but does support some nonnative annual grasses.

Upland vegetation along the margins of riverine channels occurring within the RSA is largely composed of nonnative, invasive species including castor bean (FACU), shortpod mustard (UPL), fountain grass (UPL), London rocket (UPL), Mexican fan palm (FACW), rough cocklebur (FAC), prickly Russian-thistle (FACU), tree of heaven (*Ailanthus altissima*, FACU), and Bermuda grass (FACU).

PS-2, PS-5, PS-68, PS-72, PS-18, PS-21, PS-22, PS-26, PS-47, PS-35, PS 41, and PS-45 provide representative photographs of a subset of these riverine features (Appendix E).

# 7 SUMMARY

## 7.1 Wetlands and Nonwetland Waters of the U.S. in the Resource Study Area by Category

This project-level study provides the location, type, and extent of potentially jurisdictional features, including wetlands, within the RSA of the project section pursuant to CWA Section 404/401 and USACE regulations and guidance.

A PJD form was submitted to USACE, consistent with requirements set forth in Regulatory Guidance Letter 16-01,[22] to obtain USACE concurrence on the extent of mapped features presented in this report. On July 31, 2018, USACE, Los Angeles District, issued a PJD for the project section stating that on review of the mapped aquatic resources, waters of the U.S. may be present in the project section in the locations identified by the Authority.

Based on a comprehensive evaluation of the aquatic resources pursuant to the current regulations (*Revised Definition of "Waters of the United States"; Conforming*) (USACE and USEPA 2023), the Authority has determined that the location, type, and extent of waters of the U.S. within the Aquatic RSA, including wetlands, are entirely consistent under both pre- and post-Sackett definitions of waters of the U.S.; therefore, they are not described separately in this report. Accordingly, the Authority will not request a new or amended PJD from USACE. The extent of these features is identified and quantified in linear feet and acreage to support future impact analysis for the Draft EIR/EIS, and permit applications and notifications.

In summary, 99.04 acres of potential waters of the U.S. were identified within the RSA, consisting of 97.15 acres of nonwetland waters and 1.89 acres of wetlands. Waters of the U.S. resource types consist predominantly of concrete-lined riverine features, but also include freshwater emergent wetland, freshwater forested/shrub wetland, basins, and built watercourses at select locations. No Section 10 navigable waters of the U.S. were identified in the RSA.

Aquatic features within the RSA were reviewed to determine if they met the definition of waters of the U.S. pursuant to the PJD methodology (USACE 2016), *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (USACE and USEPA 2007) and revised guidance (USACE and USEPA 2008), the *Revised Definition of "Waters of the United States"; Conforming* (33 CFR Part 328.3(a)(1)–(5); USACE and USEPA 2023), and the preamble to the USACE regulatory program operating regulations (33 CFR 320–332; USACE 1986).

### 7.1.1 Wetlands and Nonwetland Waters of the U.S. in the Resource Study Area by Resource Type

Chapter 6, Results, provides a detailed discussion of potential jurisdictional aquatic resources, including wetlands and nonwetland waters of the U.S. identified within the RSA. Table 6-1 provides a summary of wetlands and nonwetland waters of the U.S. identified within the RSA by aquatic resource category.

The information and results presented herein document the investigation, best professional judgment, and conclusions of the delineators and report preparers. It is correct and complete to the best of our knowledge.

[22] Regulatory Guidance Letter 16-01 (USACE October 2016).

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# 9 PREPARER QUALIFICATIONS

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| Lanika Cervantes | • MS, Biology (emphasis in ecology), California State University, San Marcos, BA, Biology (emphasis in ecology), California State University, San Marcos<br>• 11 years of wetland and nonwetland delineation experience<br>• Senior review |
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| Rebecca Payne<br>Regulatory Specialist | • Masters of Environmental Science and Management, University of California, Santa Barbara, *in progress;* BS, Environmental Biology and Management, University of California, Davis<br>• 17 years of experience<br>• Technical QA/QC |
| Elizabeth Irvin<br>Technical Editor | • BA, English, University of California, Irvine<br>• 22 years of experience editing environmental documents<br>• Formatting and editing |

| Preparer | Qualifications |
|---|---|
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| Doreen Zhao, AICP<br>QA/QC Reviewer | • Master of Urban and Regional Planning, University of California, Los Angeles<br>• B.S., Business Management, Arizona State University<br>• 9 years of experience |

# APPENDIX A: NATIONAL WETLANDS INVENTORY, MAPPED WETLANDS

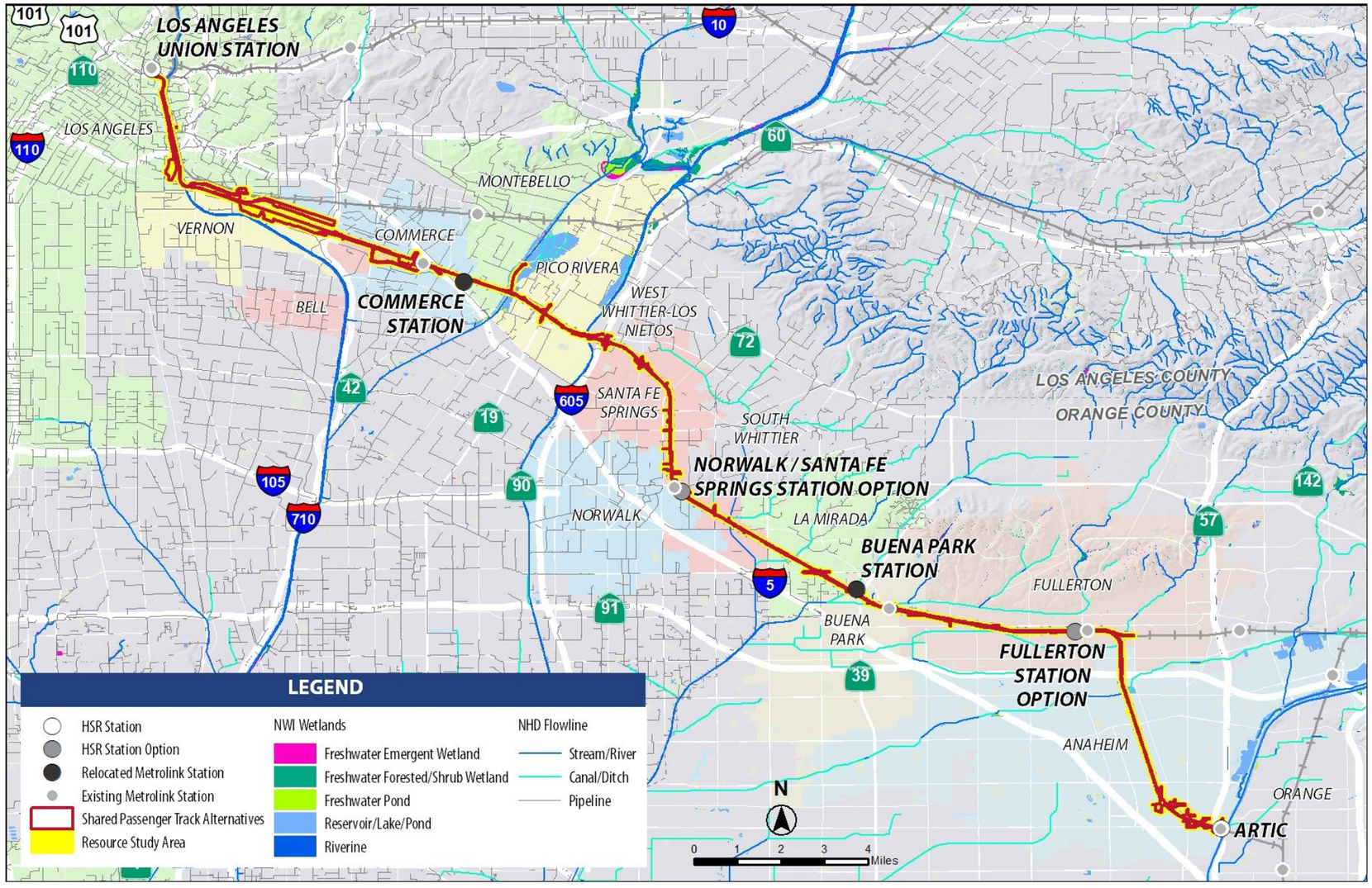



**Figure A-1 National Wetlands Inventory Map**

# APPENDIX B: U.S. GEOLOGICAL SURVEY TOPOGRAPHIC MAPS

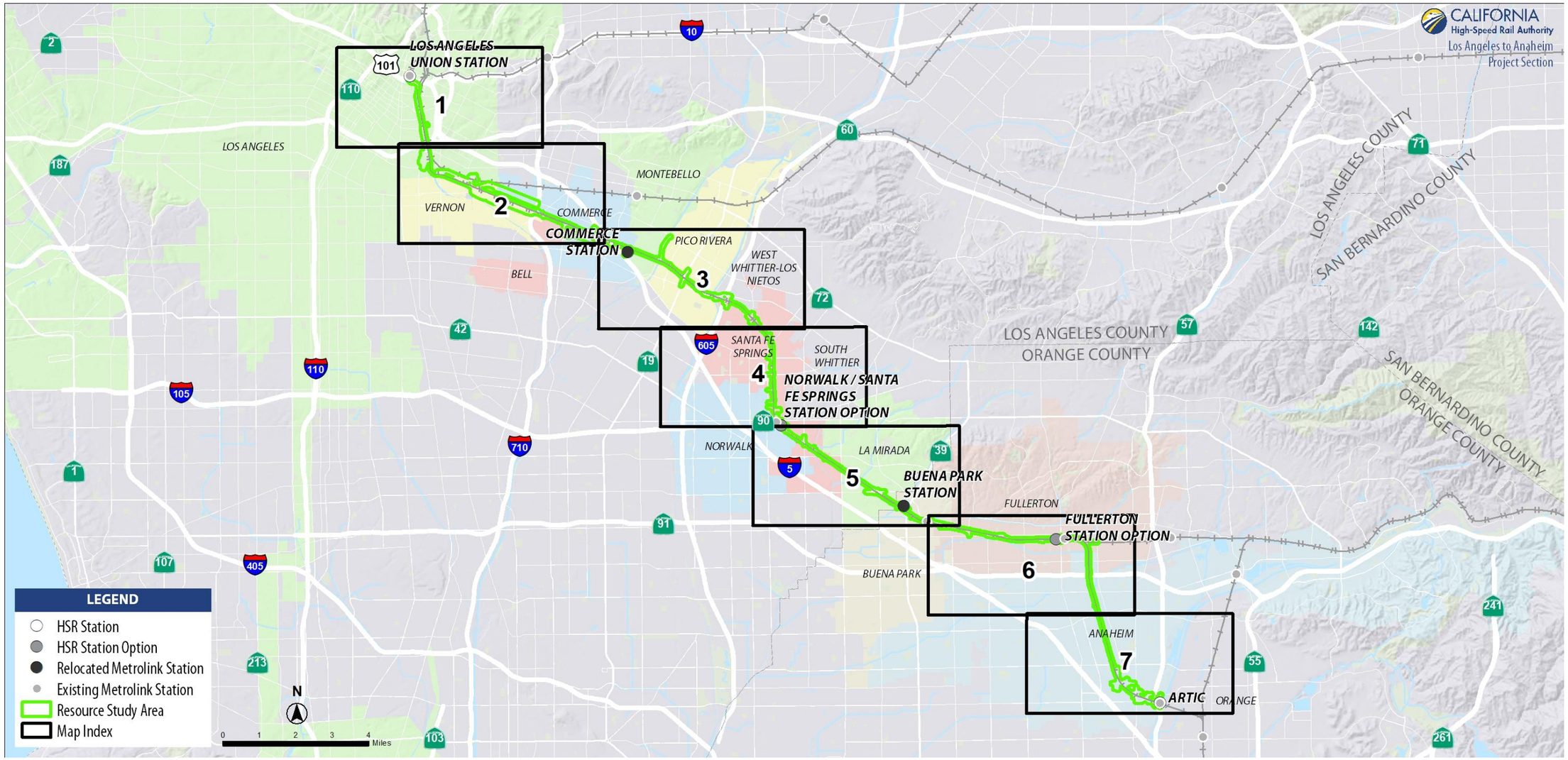



**Figure B-1 U.S. Geological Survey Topographic Map, Index**

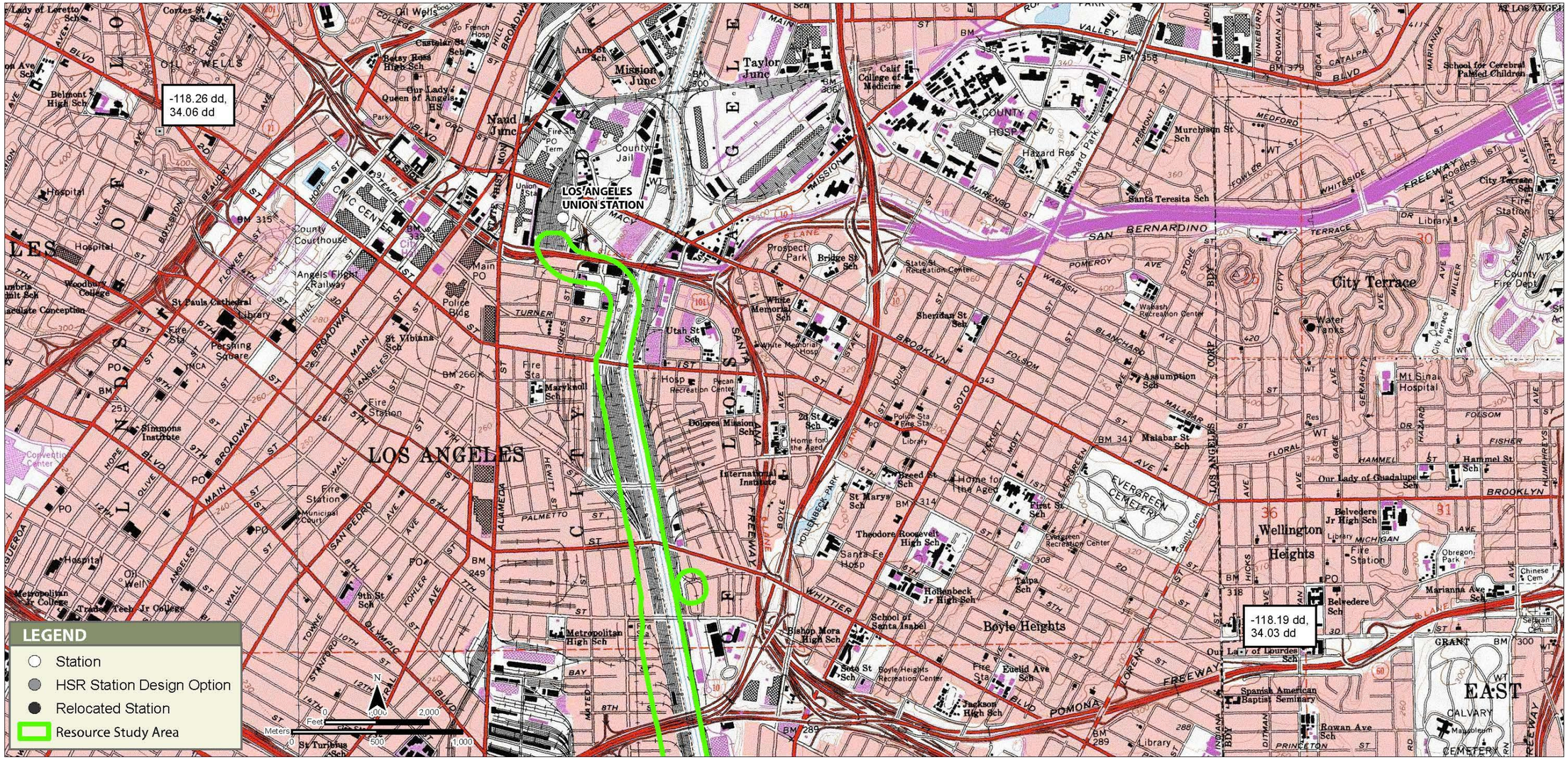



**Figure B-1 U.S. Geological Survey Topographic Map, Sheet 1 of 7**

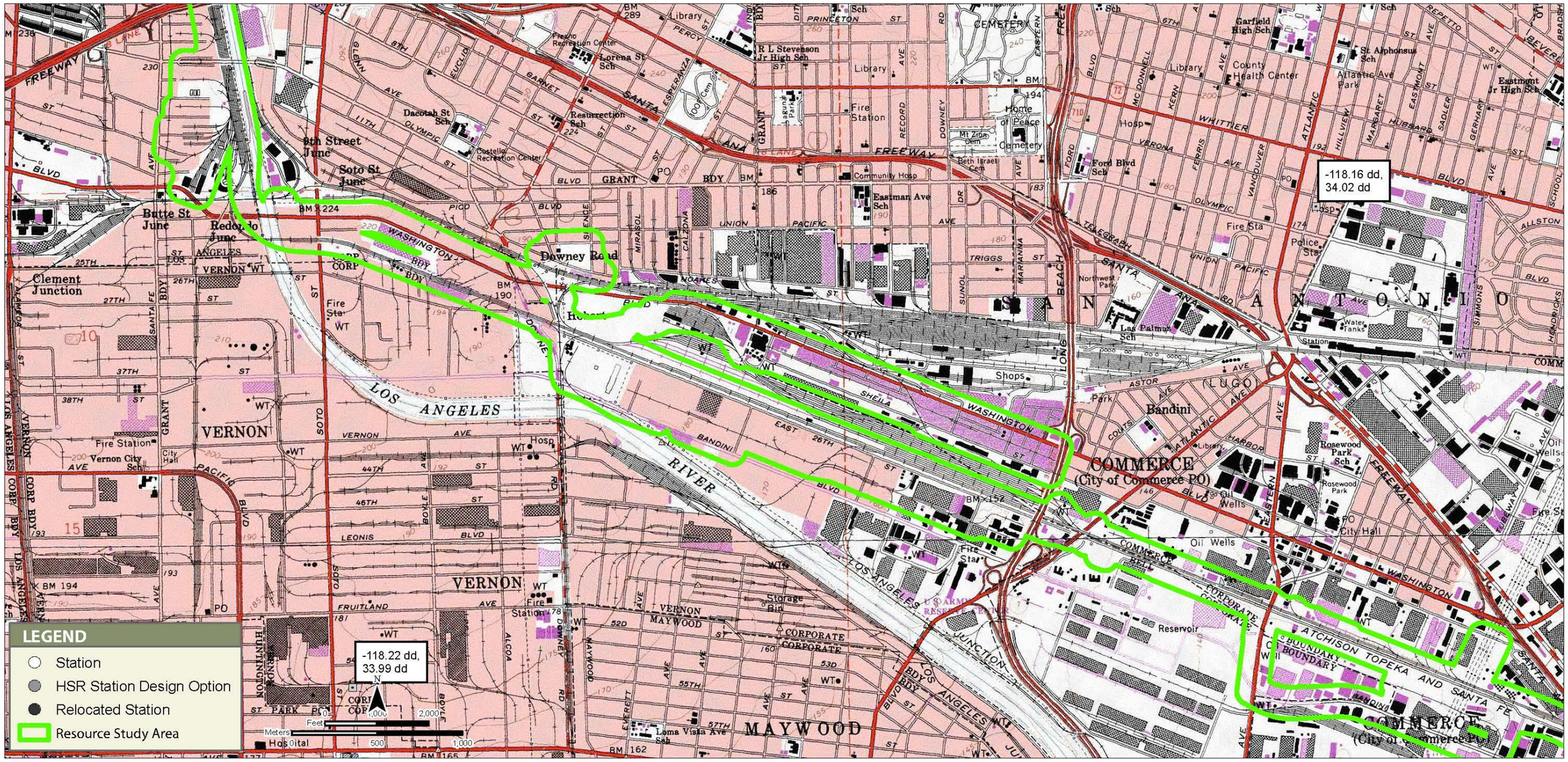



**Figure B-1 U.S. Geological Survey Topographic Map, Sheet 2 of 7**

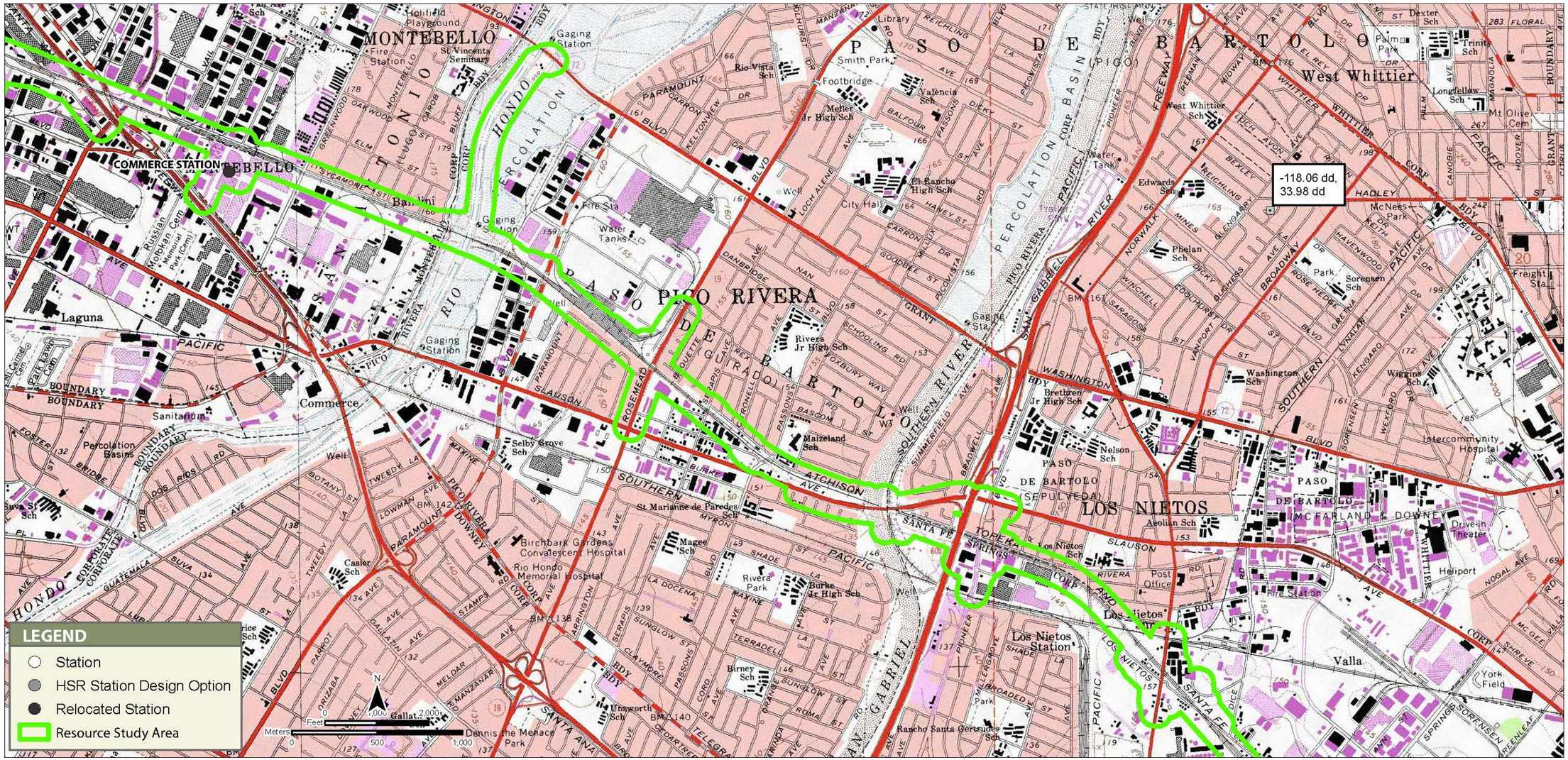



**Figure B-1 U.S. Geological Survey Topographic Map, Sheet 3 of 7**

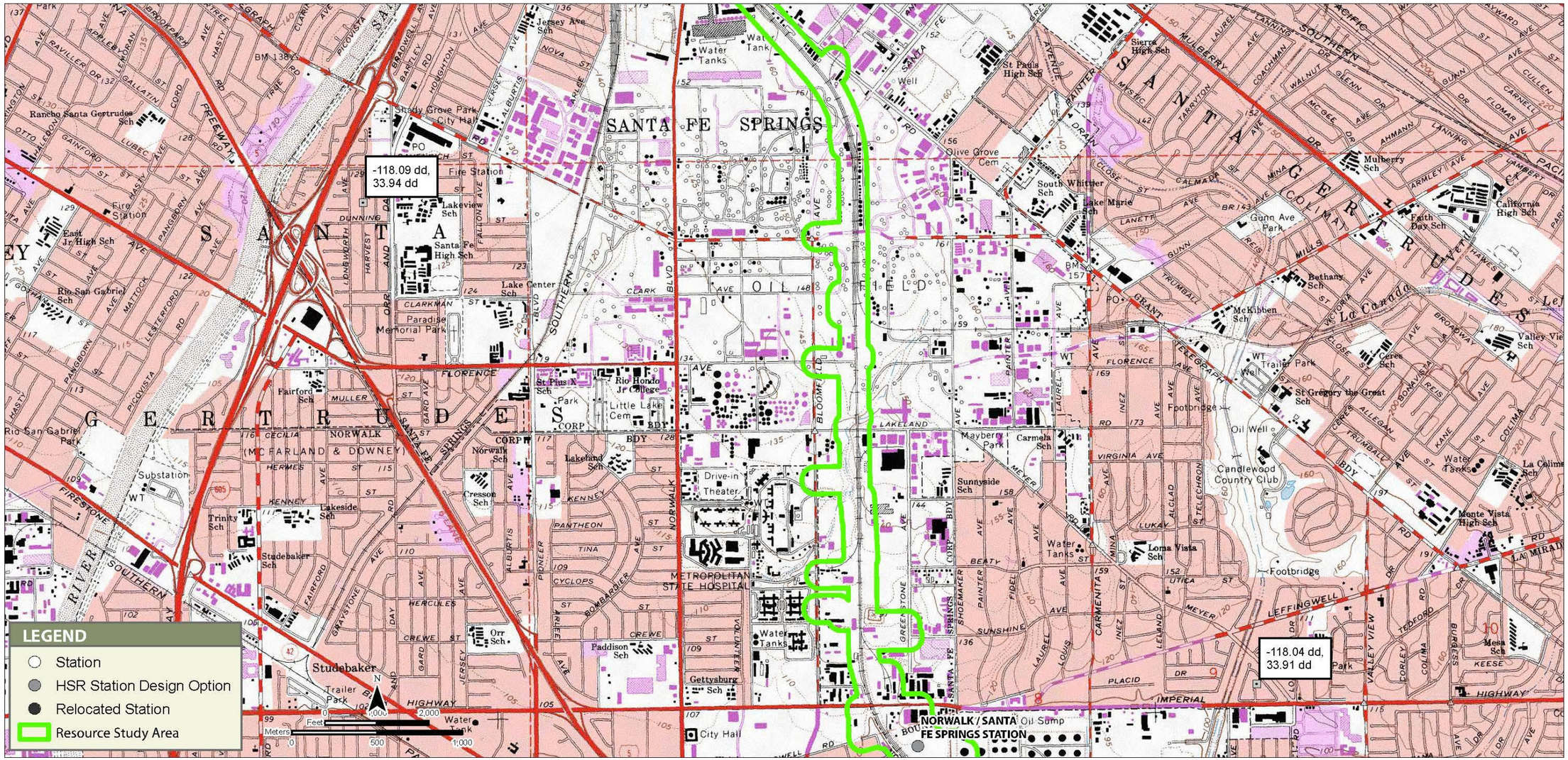



**Figure B-1 U.S. Geological Survey Topographic Map, Sheet 4 of 7**

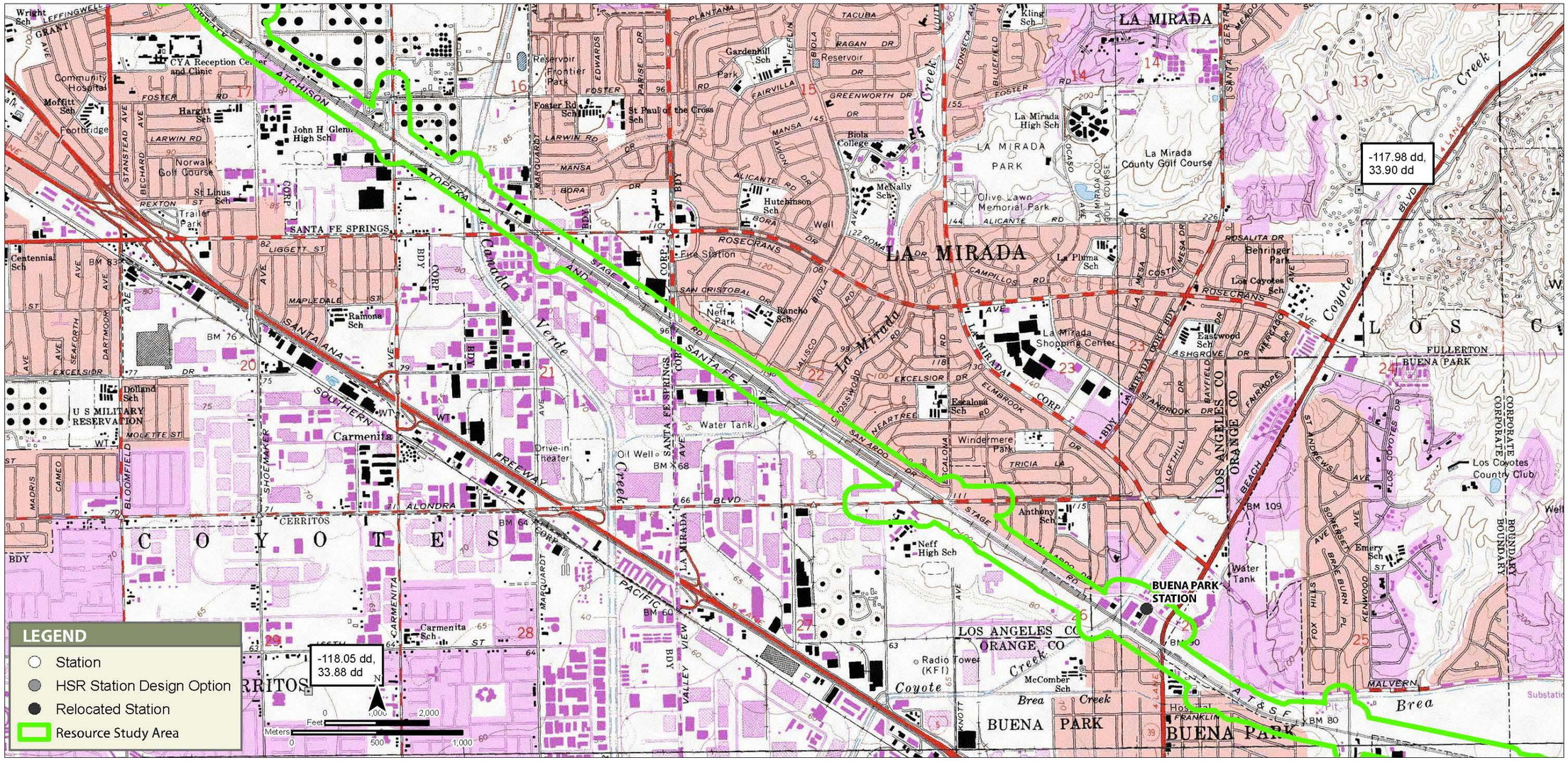



**Figure B-1 U.S. Geological Survey Topographic Map, Sheet 5 of 7**

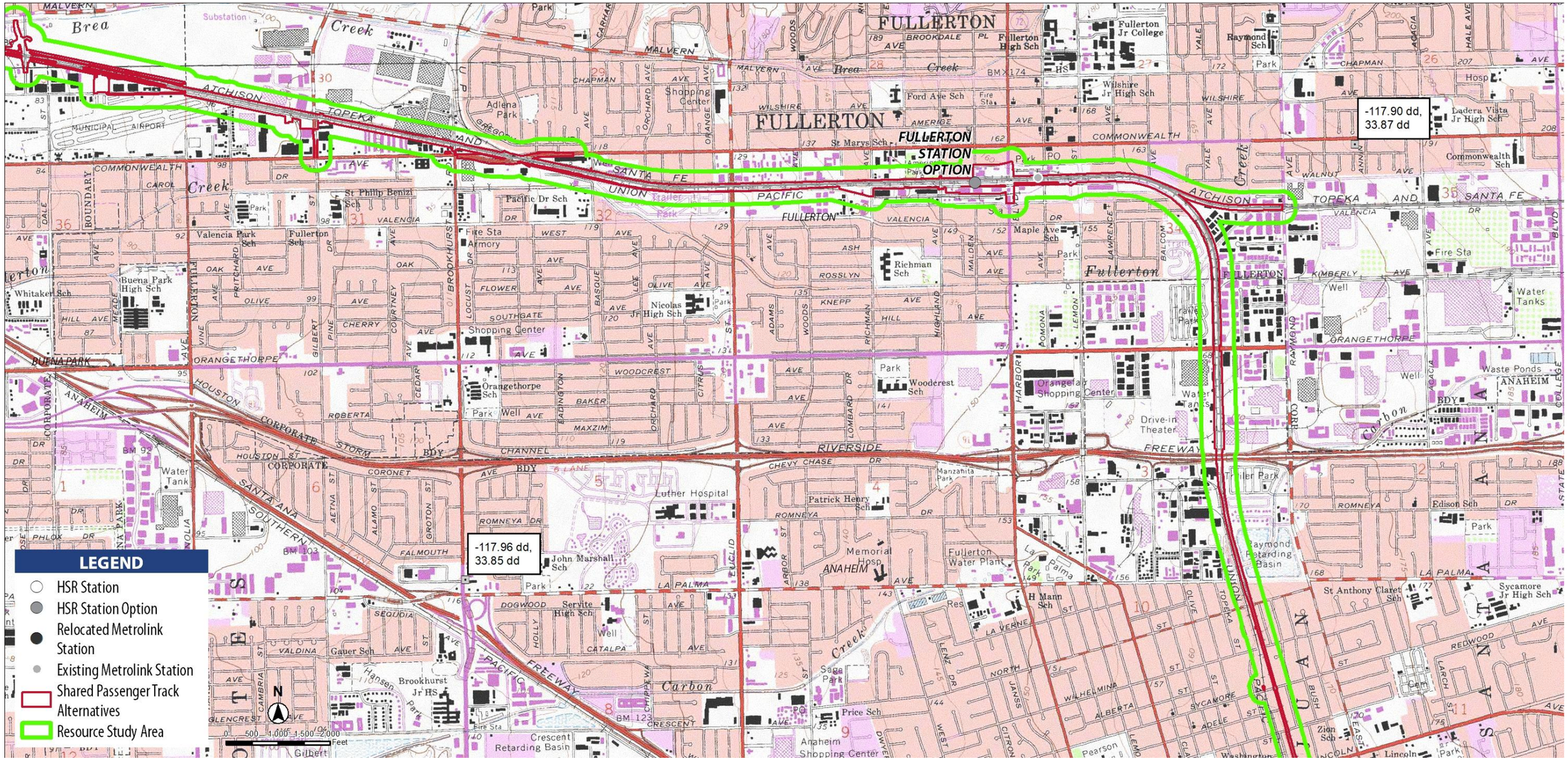



**Figure B-1 U.S. Geological Survey Topographic Map, Sheet 6 of 7**

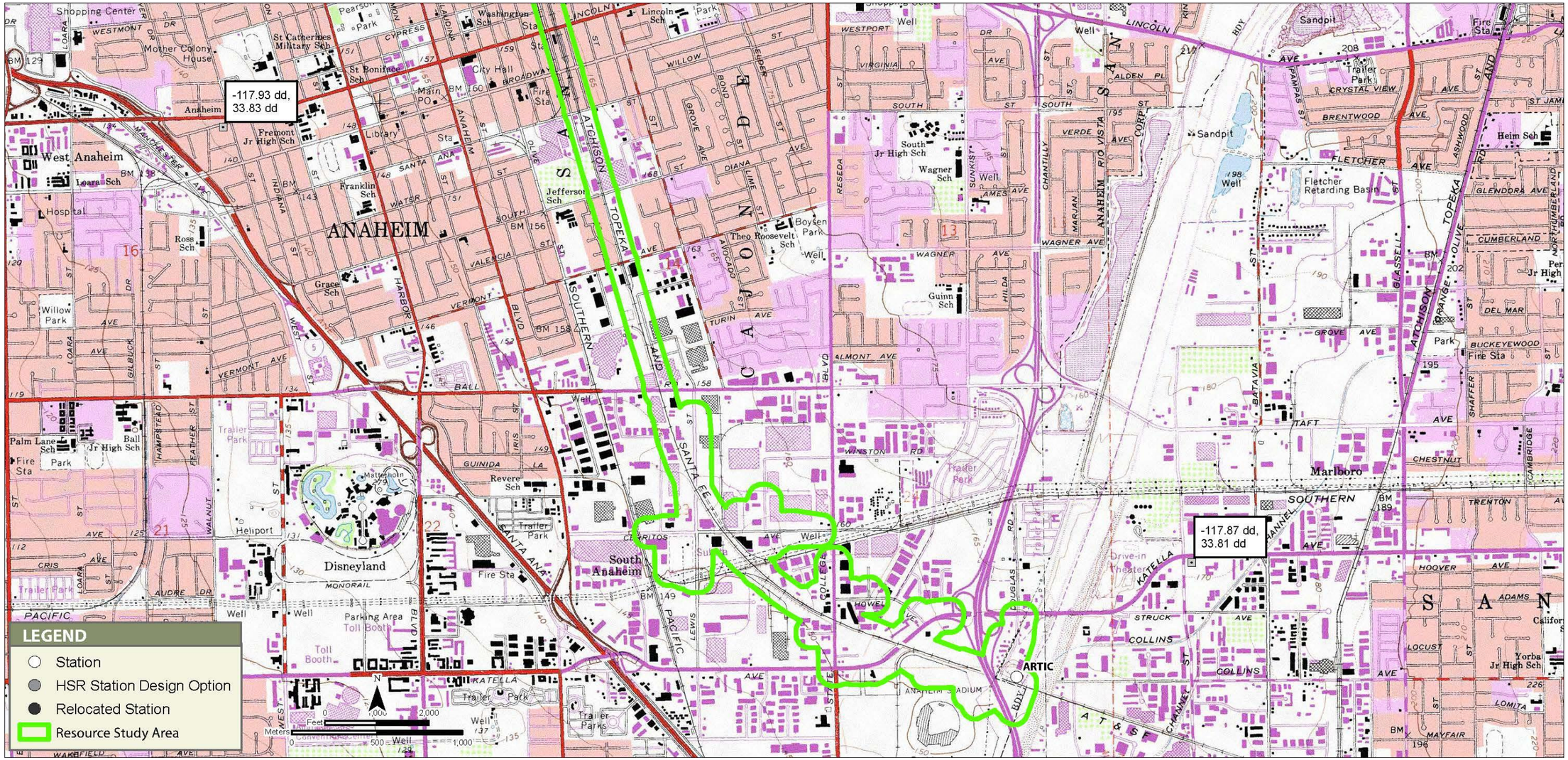



**Figure B-1 U.S. Geological Survey Topographic Map, Sheet 7 of 7**

# APPENDIX C: DELINEATED WETLANDS AND NONWETLAND WATERS OF THE U.S. MAPS

**Table C-1 Summary of U.S. Army Corps of Engineers/State Water Resources Control Board Wetlands and Nonwetland Waters of the U.S. within the Aquatic Resource Study Area**

| Feature | Page Number | Linear Feet | Total (acres) |
|---|---|---|---|
| **Basin: Nonwetland Waters of the U.S.** | | | |
| Feature 7 (Rio Hondo Basin # 1) | 8 | 174 | 0.93 |
| Feature 8 (Rio Hondo Basin # 2) | 8 | 992 | 4.62 |
| Feature 9 (Rio Hondo Basin # 3) | 8 | 207 | 0.47 |
| Feature 10 (Rio Hondo Basin # 4) | 8 | 164 | 1.33 |
| Feature 23 (Lakeside Residential Community Pond) | 14 | 1,181 | 1.61 |
| Feature 37 (Raymond Northwest Basin) | 18 | 568 | 1.50 |
| Feature 39 (Raymond Southeast Basin) | 18 | 169 | 0.36 |
| Feature 56 (Rio Hondo Basin # 6) | 7 | 2,375 | 9.64 |
| Feature 57 (Rio Hondo Basin # 7) | 7 | 69 | 0.08 |
| Feature 58 (Rio Hondo Basin # 8) | 7 | 153 | 0.27 |
| | **Basin Total** | **6,052** | **20.81** |
| **Built Watercourse: Nonwetland Waters of the U.S.** | | | |
| Feature 29 (unnamed) | 16 | 687 | 0.13 |
| Feature 31 (unnamed) | 17 | 777 | 0.30 |
| | **Built Watercourse Total** | **1,464** | **0.43** |
| **Riverine: Nonwetland Waters of the U.S.** | | | |
| Feature 1 (Los Angeles River, LAUS to 1st Street) | 1 | 987 | 2.58 |
| Feature 1 (Los Angeles River, 1st Street to Hobart Yard) | 1-6 | 13,026 | 48.15 |
| Feature 5 (Rio Hondo) | 7-8 | 4,321 | 10.30 |
| Feature 12 (San Gabriel River) | 9 | 1,083 | 4.55 |
| Feature 14 (North Fork Coyote Creek) | 10 | 1,062 | 1.91 |
| Feature 15 (Milan Creek) | 10 | 232 | 0.05 |
| Feature 18 (La Mirada Creek) | 11 | 411 | 0.46 |
| Feature 19 (La Mirada Creek) | 11 | 294 | 0.25 |
| Feature 20 (Coyote Creek) | 12 | 1,501 | 1.57 |
| Feature 41 (Brea Creek) | 13-14 | 2,213 | 2.38 |
| Feature 28 (Fullerton Creek) | 15 | 730 | 0.25 |
| Feature 30 (Fullerton Creek) | 17 | 1,076 | 0.59 |
| Feature 38 (Carbon Creek) | 18 | 488 | 0.09 |

| Feature | Page Number | Linear Feet | Total (acres) |
|---|---|---|---|
| Feature 40 (Santa Ana River) | 19 | 936 | 2.78 |
| **Riverine Feature Total** | | **28,360** | **75.91** |
| **Wetland Waters of the U.S.** | | | |
| Freshwater Emergent Wetland (Feature 12, Wetlands 2 and 3, San Gabriel River) | 9 | 660 | 1.83 |
| Freshwater Forested/Shrub Wetland (Feature 12, Wetland 1, San Gabriel River) | 9 | 54 | 0.06 |
| **Wetland Waters of the U.S. Total** | | **714** | **1.89** |
| ***Wetland and Nonwetland Waters of the U.S. Grand Total*** | | **36,590** | **99.04** |

LAUS = Los Angeles Union Station

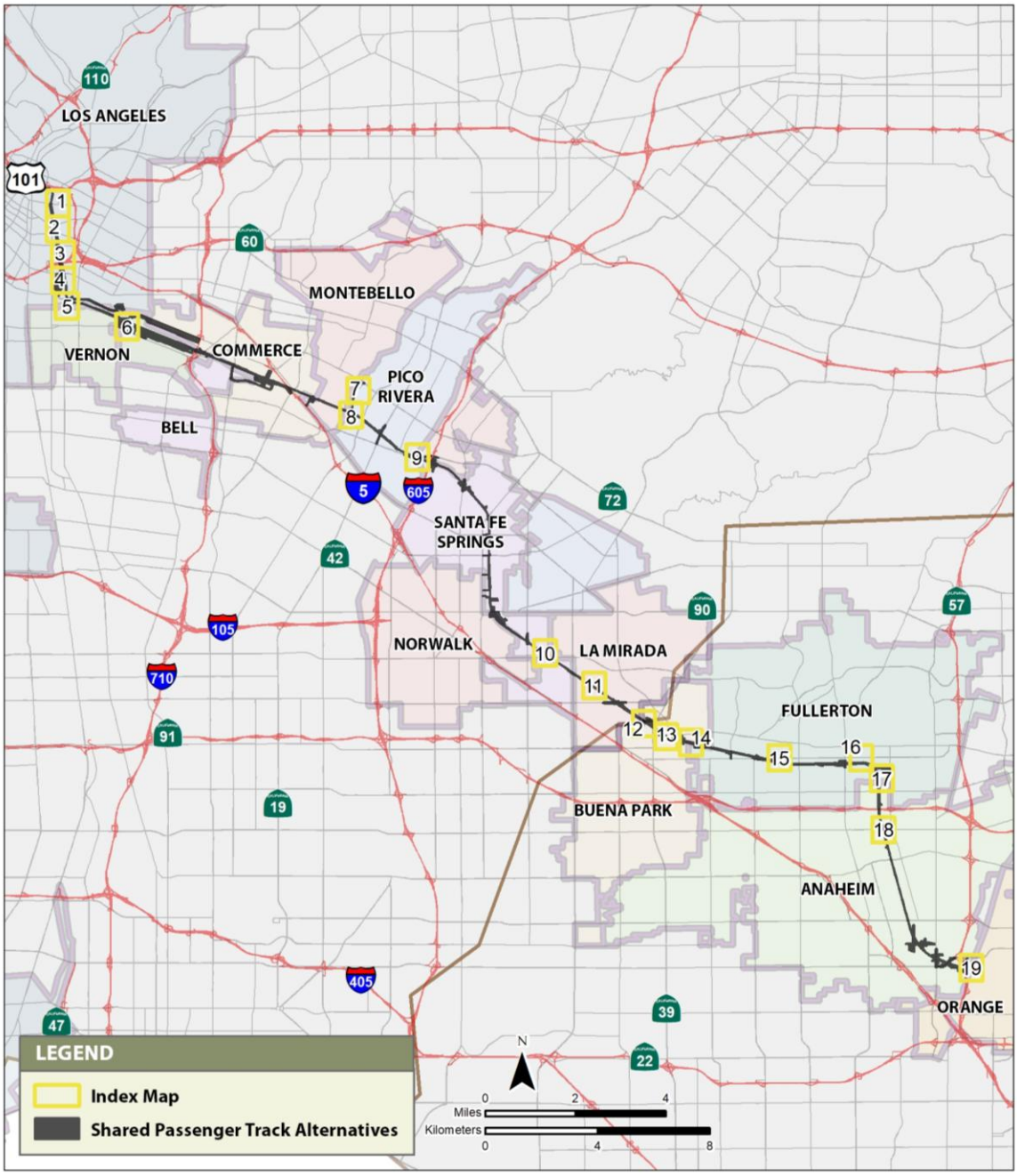



**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Index**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 1 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 2 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 3 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 4 of 19**

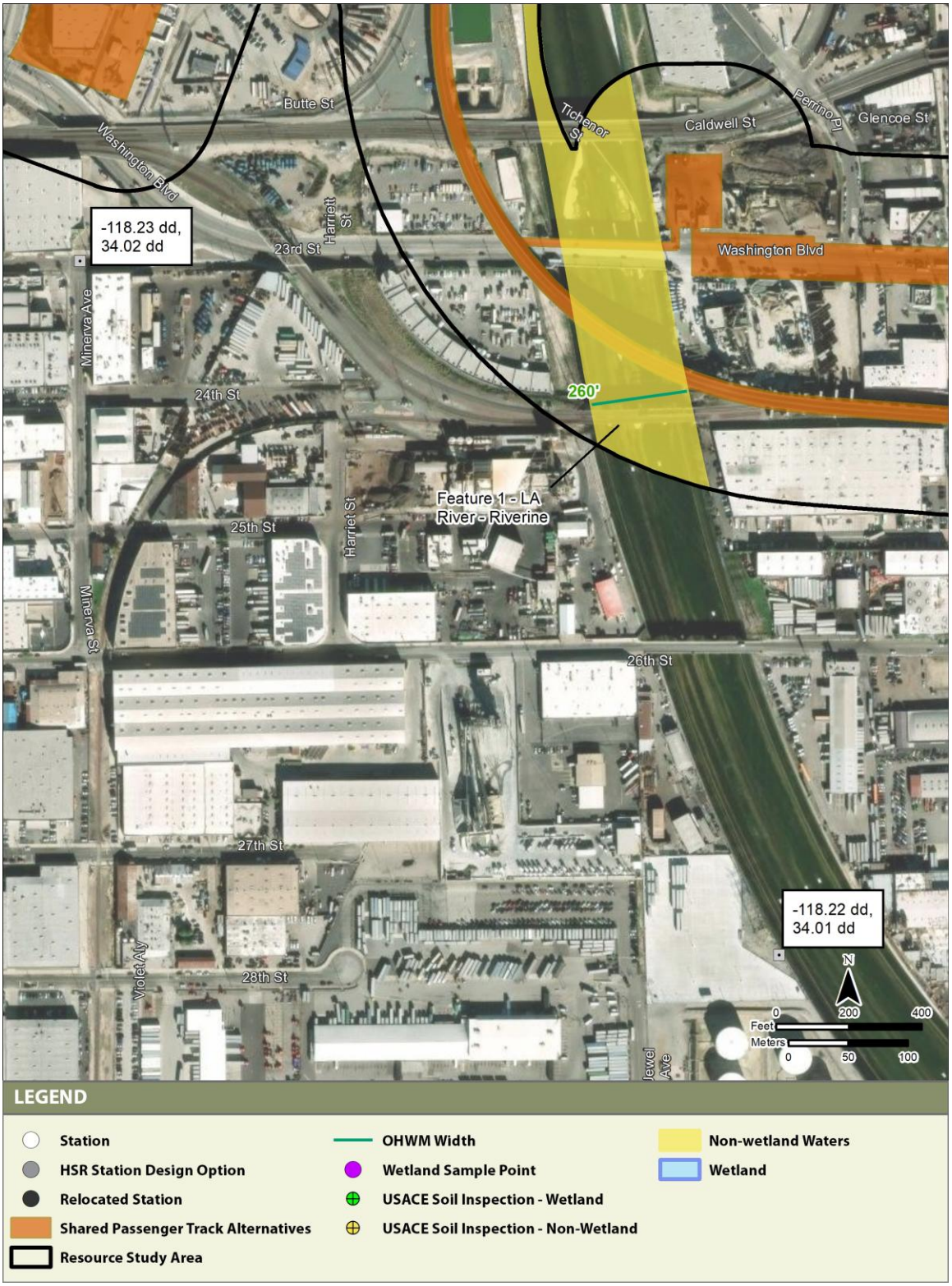



**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 5 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 6 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 7 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 8 of 19**

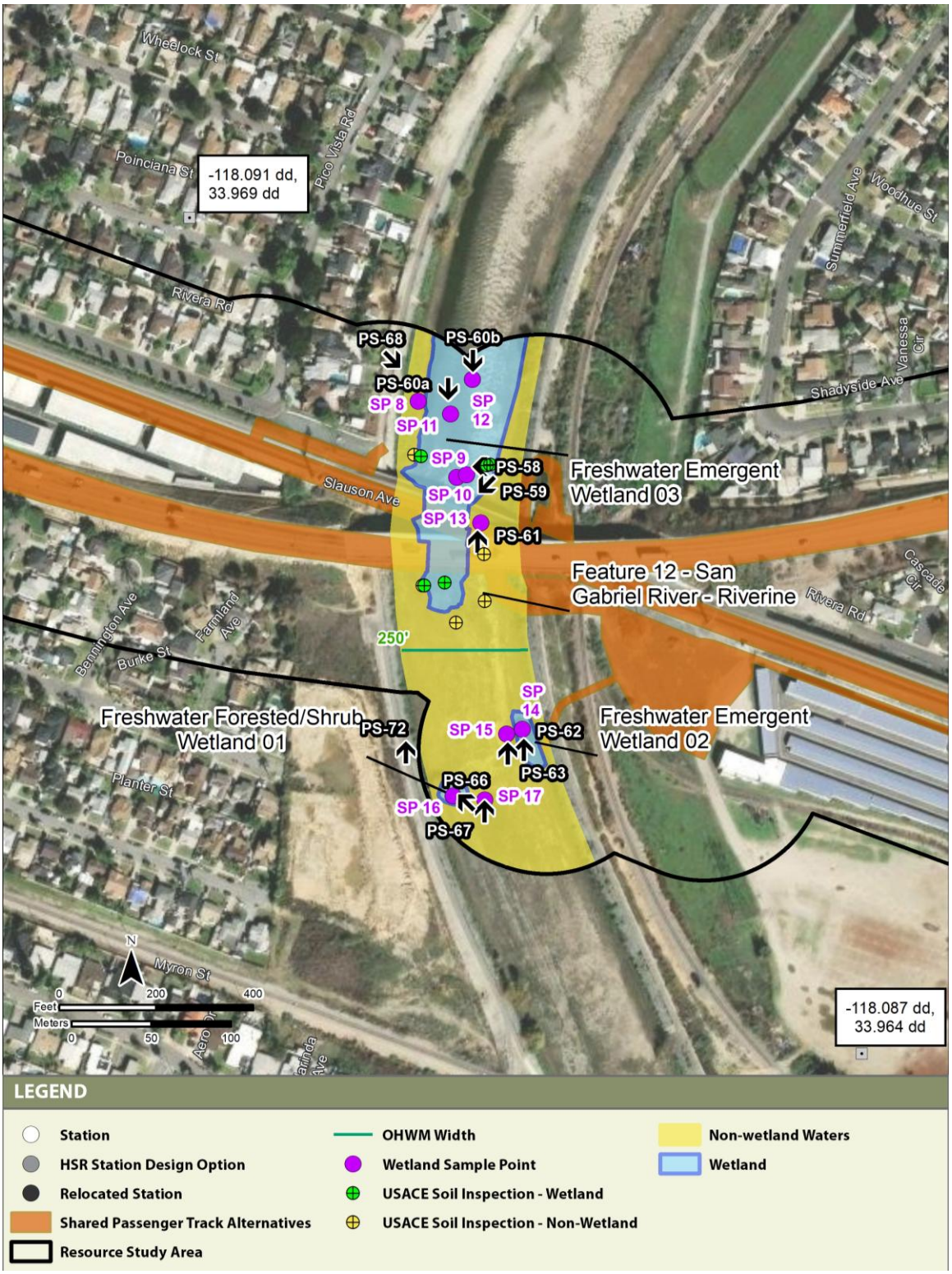



**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 9 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 10 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 11 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 12 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 13 of 19**

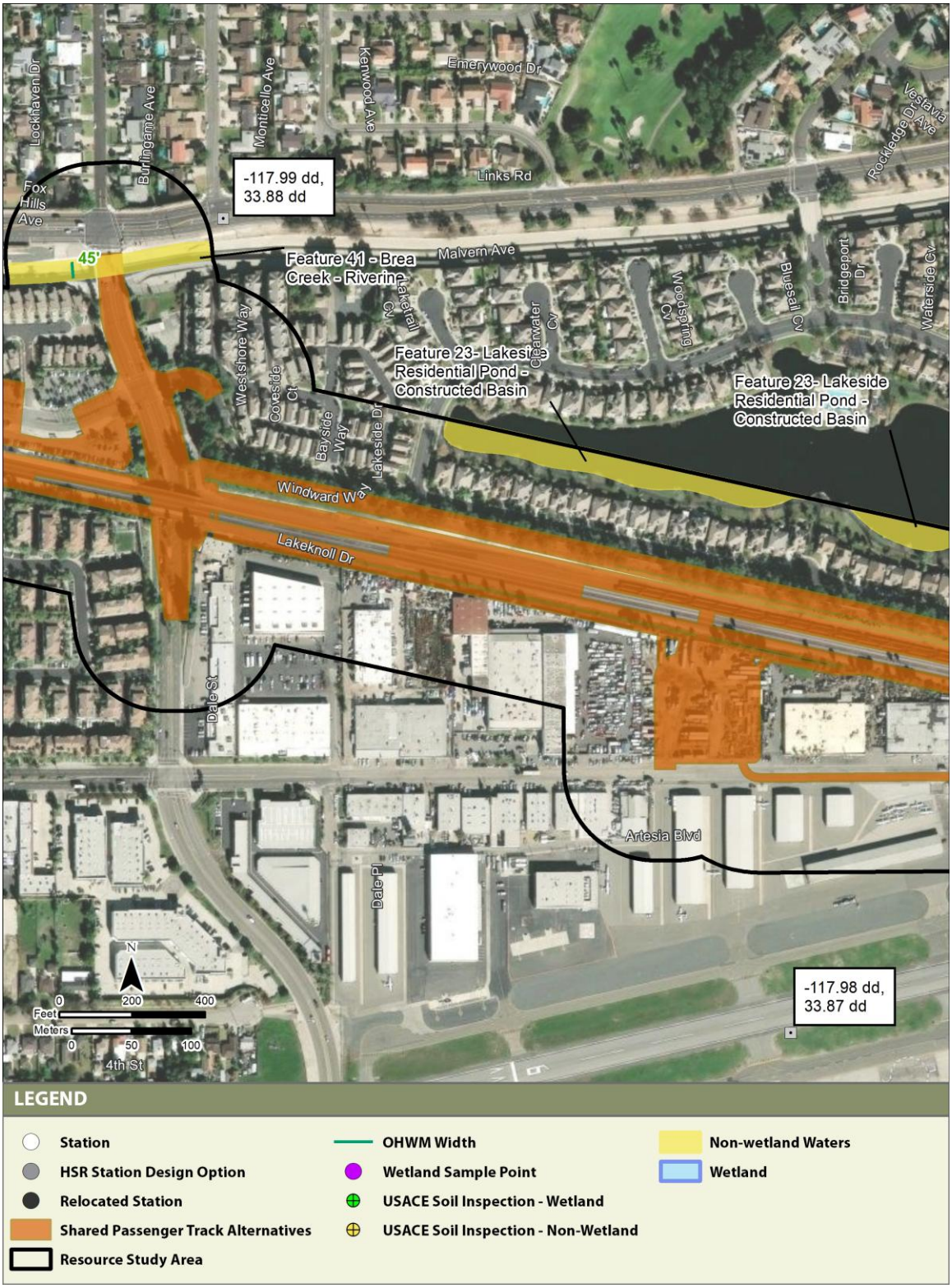



**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 14 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 15 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 16 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 17 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 18 of 19**




**Figure C-1 Delineated Wetlands and Nonwetland Waters of the U.S. Maps, Sheet 19 of 19**

# APPENDIX D: WETLANDS DETERMINATION DATA SHEETS

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: HSR: LA to Anaheim City/County: Anaheim/Orange Sampling Date: 3/2/2016
Applicant/Owner: STV State: CA Sampling Point: 7
Investigator(s): Paul Schwartz, Zack West Section, Township, Range: Sec. 3 T4S R10W
Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 1-3
Subregion (LRR): C-med Lat: 33°50'51.71"N Long: 117°54'33.22"W Datum: WGS84
Soil Map Unit Name: Metz loamy Sand (SSURGO) NWI classification: Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.) Normal for feature

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ____ | No ✓ | Is the Sampled Area within a Wetland? Yes ____ No ✓ |
| Hydric Soil Present? | Yes ✓ | No ____ | |
| Wetland Hydrology Present? | Yes ✓ | No ____ | |

Remarks: SE Raymond Basin, No access to basin so veg composition + cover estimated from ~250' distance (binos). Soils assumed. Basin likely fills up with water.

**VEGETATION – Use scientific names of plants.**

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: N/A) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | N/A = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: N/A) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | N/A = Total Cover | | |
| Herb Stratum (Plot size: 5') | | | |
| 1. Cynodon dactylon | 55 | Y | FACU |
| 2. Erigeron canadensis | 25 | Y | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 70 = Total Cover | | |
| Woody Vine Stratum (Plot size: N/A) | | | |
| 1. | | | |
| 2. | | | |
| | N/A = Total Cover | | |

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species | x 1 = |
| FACW species | x 2 = |
| FAC species | x 3 = |
| FACU species | x 4 = |
| UPL species | x 5 = |
| Column Totals: (A) | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**
__ Dominance Test is >50% No
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ____ No ✓

Remarks:

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**SOIL** Sampling Point: 7

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✓ No ___

Remarks: Soils assumed as no access to basin is permitted.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✓ Water Marks (B1) (**Nonriverine**)
- ✓ Sediment Deposits (B2) (**Nonriverine**)
- ✓ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

**Wetland Hydrology Present?** Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology w/n basin is managed. Water present w/n basin during delineation

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## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR: LA to Anaheim City/County: Pico Rivera / Los Angeles Sampling Date: 3/2/2016
Applicant/Owner: STV State: CA Sampling Point: 8
Investigator(s): Paul Schwartz Zack West Section, Township, Range: No Section T2S R12W, Whittier CA
Landform (hillslope, terrace, etc.): River bottom Local relief (concave, convex, none): convex Slope (%): < 1
Subregion (LRR): C - Med Lat: 33° 58' 4.13" N Long: 118° 5' 22.79" W Datum: WGS 84
Soil Map Unit Name: No soil data avail (STATSGO / SSURGO) NWI classification: WGS84
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Yes Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.) Normal for area.

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✓ | Is the Sampled Area within a Wetland? Yes _____ No ✓ |
| Hydric Soil Present? | Yes ✓ | No _____ | |
| Wetland Hydrology Present? | Yes ✓ | No _____ | |

Remarks: Vegetation w/n channel is likely maintained regularly. Vegetation covers estimated from ~30' distance since no access is permitted. Water was being diverted into River (side channel) during delineation. Soils assumed to be hydric.

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: N/A) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | N/A = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: 10') | | | |
| 1. Baccharis salicifolia | 25 | Y | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 25 = Total Cover | | |
| Herb Stratum (Plot size: 5') | | | |
| 1. Centaurea melitensis | 20 | Y | UPL |
| 2. Bromus madritensis | 20 | Y | UPL |
| 3. Rhaphanus sativa | 15 | Y | UPL |
| 4. Ricinus communis | 7 | N | FACU |
| 5. Bromus diandrus | 12 | N | UPL |
| 6. Plantago lanceolata | 11 | N | FAC |
| 7. Solanum americanus | 5 | N | FACU |
| 8. | | | |
| | 90 = Total Cover | | |
| Woody Vine Stratum (Plot size: N/A) | | | |
| 1. | | | |
| 2. | | | |
| | N/A = Total Cover | | |

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species 0 | x 1 = 0 |
| FACW species 0 | x 2 = 0 |
| FAC species 36 | x 3 = 108 |
| FACU species 12 | x 4 = 48 |
| UPL species 67 | x 5 = 335 |
| Column Totals: 115 (A) | 491 (B) |

Prevalence Index = B/A = 4.26

**Hydrophytic Vegetation Indicators:**
___ Dominance Test is >50% No
___ Prevalence Index is ≤3.0[1] No
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks: Veg cover est. mated from ~30' due to no access to River.

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**SOIL** Sampling Point: 8

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| * | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✓* No _____

Remarks:

*Soils assumed since no access to River is available at time of site visit.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? ✓ see notes below Yes ✓ No ___ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

**Wetland Hydrology Present?** Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: San Gabriel River has a managed hydrology. Water was being released into River during delineation. Water was approx 6"-12" in some areas of River bottom but not within SP.

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## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR LA to Anaheim City/County: Pico Rivera, Los Angeles Sampling Date: 8/23/16
Applicant/Owner: STV State: CA Sampling Point: SP-9
Investigator(s): PTS, MCM Section, Township, Range: No Section T2S R12W Whittier CA
Landform (hillslope, terrace, etc.): River bed Local relief (concave, convex, none): concave Slope (%): <1
Subregion (LRR): C - Med Lat: 33.96715317 Long: -118.089412883 Datum: WGS 84
Soil Map Unit Name: Sorrento - Hanford SIOZK STATSGO NWI classification: Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ____ | **Is the Sampled Area within a Wetland?** Yes ✓ No ____ |
| Hydric Soil Present? | Yes ✓ | No ____ | |
| Wetland Hydrology Present? | Yes ✓ | No ____ | |

Remarks: Sample pit conducted within the River bed of the San Gabriel River.

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| **Tree Stratum** (Plot size: 30) | | | |
| 1. NA | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 10) | | | |
| 1. NA | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: 5) | | | |
| 1. Echinochloa crus-galli | 50 | Y | FACW |
| 2. Schinoplectus californicus | 25 | Y | OBL |
| 3. Persicaria lapathifolia | 15 | N | FACW |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: NA) | | | |
| 1. NA | | | |
| 2. | | | |
| | NA = Total Cover | | |

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species 40 | x 1 = 40 |
| FACW species 50 | x 2 = 100 |
| FAC species ____ | x 3 = ____ |
| FACU species ____ | x 4 = ____ |
| UPL species ____ | x 5 = ____ |
| Column Totals: 90 (A) | 140 (B) |

Prevalence Index = B/A = 1.56

**Hydrophytic Vegetation Indicators:**
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No ____

Remarks:

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**SOIL** Sampling Point: SP9

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 3/2 | 97 | 10YR 5/6 | 3 | C | M | loam | |
| 6-14+ | 10YR 3/1 | 80 | 10YR 4/6 | 20 | C | M | sandy loam | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: N/A

Depth (inches): ___

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

**Wetland Hydrology Present?** Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers Arid West – Version 2.0

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR LA-ANAHEIM City/County: Los Angeles LA Sampling Date: 8/23/16
Applicant/Owner: STV State: CA Sampling Point: SP 10
Investigator(s): PTS, MCM Section, Township, Range: No Section T2S R12W Whittier QA
Landform (hillslope, terrace, etc.): River bottom Local relief (concave, convex, none): concave Slope (%): <1
Subregion (LRR): C-Med Lat: 33.967116667 Long: -118.089363500 Datum: WGS 84
Soil Map Unit Name: Sorrento-Hanford SI126 STATSGO NWI classification: Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes ✓ No ____
Hydric Soil Present? Yes ✓ No ✓
Wetland Hydrology Present? Yes ✓ No ____
**Is the Sampled Area within a Wetland?** Yes ✓ No ✓

Remarks: Sample pit conducted in bottom of San Gabriel River

Based on USACE verification conducted by Veronica Li on 8-16-2017 this non-wetland data point was changed to wetland due to differences in soil evaluation. This Sample point meets all 3 wetland parameters.

| Tree Stratum (Plot size: 30) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 10) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: 5) | | | |
| 1. Echinochloa crus-galli | 40 | Y | FACW |
| 2. Persicaria lapathifolia | 30 | Y | FACW |
| 3. Cynodon dactylon | 30 | Y | FACU |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: NA) | | | |
| 1. | | | |
| 2. | | | |
| | NA = Total Cover | | |

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species 30 | x 1 = 30 |
| FACW species 40 | x 2 = 80 |
| FAC species ____ | x 3 = ____ |
| FACU species 30 | x 4 = 120 |
| UPL species ____ | x 5 = ____ |
| Column Totals: 100 (A) | 248 (B) |

Prevalence Index = B/A = 2.4

**Hydrophytic Vegetation Indicators:**
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No ____

Remarks:

US Army Corps of Engineers Arid West – Version 2.0

**SOIL**

Sampling Point: SP-10

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3 | 10YR 3/2 | 100 | | | | | Sandy loam | |
| 3-14+ | 10YR 3/1 | 100 | | | | | loam | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: NA

Depth (inches): ___

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

Some very faint redox indicators 2.5% at 3" + depth

Based on USACE verification conducted with Veronica Li on 8-16-2017 the soils associated with this Sample Point were considered to be hydric.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ✓ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

**Wetland Hydrology Present?** Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: River bed dry

US Army Corps of Engineers

Arid West – Version 2.0

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR LA-ANAHEIM City/County: Pico Rivera LA Sampling Date: 8/23/10
Applicant/Owner: STV State: CA Sampling Point: SP-11
Investigator(s): PTS, AMCM Section, Township, Range: No Section T2S R12W Whittier CA
Landform (hillslope, terrace, etc.): Riverbed Local relief (concave, convex, none): concave Slope (%): <1
Subregion (LRR): C-Med Lat: 33.96751200 Long: -118.08947150 Datum: WGS 84
Soil Map Unit Name: Sorrento - Hanford 61020 STATSGO NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ____ | **Is the Sampled Area within a Wetland?** Yes ✓ No ____ |
| Hydric Soil Present? | Yes ✓ | No ____ | |
| Wetland Hydrology Present? | Yes ✓ | No ____ | |

Remarks: Sample pit conducted in San Gabriel River bed

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| **Tree Stratum** (Plot size: 30) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 10) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: 5) | | | |
| 1. Persicaria lapathifolia | 50% | Y | FACW |
| 2. Echinochloa crus-galli | 25 | Y | FACW |
| 3. Cynodon dactylon | 25 | Y | FAC |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: NA) | | | |
| 1. | | | |
| 2. | | | |
| | NA = Total Cover | | |

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species 50 | x 1 = 50 |
| FACW species 25 | x 2 = 50 |
| FAC species ____ | x 3 = ____ |
| FACU species 25 | x 4 = 100 |
| UPL species ____ | x 5 = ____ |
| Column Totals: 100 (A) | 200 (B) |

Prevalence Index = B/A = 2

**Hydrophytic Vegetation Indicators:**
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No ____

Remarks:

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**SOIL** Sampling Point: SP11

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 10YR 2/2 | 100 | | | | | Silt loam | |
| 4-12 | 10YR 3/1 | 97 | 10YR 5/6 | 3% | C | M | Sandy loam | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: N-A

Depth (inches): ___

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ✓ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

**Wetland Hydrology Present?** Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers Arid West – Version 2.0

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR LA to ANAHEIM City/County: Pico Rivera LA Sampling Date: 8/23/16
Applicant/Owner: STV State: CA Sampling Point: SP12
Investigator(s): PTS, MCM Section, Township, Range: No Section T2S R12W Whittier CA
Landform (hillslope, terrace, etc.): River bed Local relief (concave, convex, none): Concave Slope (%): <1
Subregion (LRR): C-Med Lat: 33.96770650 Long: -118.08932383 Datum: WGS 84
Soil Map Unit Name: Sorrento-Hanford SL026 STATSGO NWI classification: Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? N Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? N (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes ✓ No ____
Hydric Soil Present? Yes ✓ No ____
Wetland Hydrology Present? Yes ✓ No ____
**Is the Sampled Area within a Wetland?** Yes ✓ No ____

Remarks: Sample pit conducted in river bed of San Gabriel River

Based on USACE verification conducted by Veronica Li on 8-16-2017 this non-wetland data point was changed to wetland due to differences in soil evaluation. This Sample point meets all 3 wetland parameters.

| Tree Stratum (Plot size: 30) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 10) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: 5) | | | |
| 1. Persicaria lapathifolia | 50 | Y | FACW |
| 2. Echinochloa crus-galli | 48 | Y | FACW |
| 3. Rumex crispus | 2 | N | FAC |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: NA) | | | |
| 1. | | | |
| 2. | | | |
| | NA = Total Cover | | |

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species 50 | x 1 = 50 |
| FACW species 98 | x 2 = 96 |
| FAC species 2 | x 3 = 6 |
| FACU species | x 4 = |
| UPL species | x 5 = |
| Column Totals: 100 (A) | 152 (B) |

Prevalence Index = B/A = 1.52

**Hydrophytic Vegetation Indicators:**
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No ____

Remarks:

US Army Corps of Engineers Arid West – Version 2.0

**SOIL**

Sampling Point: SP12

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-18 | 10YR 3/1 | 100 | | | | | Sandy loam | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: NA

Depth (inches): ___

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

Based on USACE verification conducted with Veronica Li on 8-16-2017 the soils associated with this Sample Point were considered to be hydric.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ✓ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ___ | No ✓ | Depth (inches): ___ |
| Water Table Present? | Yes ___ | No ✓ | Depth (inches): ___ |
| Saturation Present? (includes capillary fringe) | Yes ___ | No ✓ | Depth (inches): ___ |

**Wetland Hydrology Present?** Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers

Arid West – Version 2.0

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR LA to ANAHEIM City/County: Pico Rivera, Los Angeles Sampling Date: 8/23/16
Applicant/Owner: STV State: CA Sampling Point: SP13
Investigator(s): PMT MCM Section, Township, Range: No Section T2S R12W Whittier CA
Landform (hillslope, terrace, etc.): River bed Local relief (concave, convex, none): Concave Slope (%): <1
Subregion (LRR): C-Med Lat: 33,96689616 Long: -118.08926501 Datum: WGS 84
Soil Map Unit Name: Sorrento Hartford SIOZV STATSGO NWI classification: Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ✓ No ____
Hydric Soil Present? Yes ____ No ✓
Wetland Hydrology Present? Yes ✓ No ____
**Is the Sampled Area within a Wetland?** Yes ____ No ✓

Remarks: Sample Pit conducted in River bed of San Gabriel River under railroad bridge

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: N/A) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: N/A) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | = Total Cover | | |
| Herb Stratum (Plot size: 5) | | | |
| 1. Cyperus esculentus | 35 | Y | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 35 = Total Cover | | |
| Woody Vine Stratum (Plot size: NA) | | | |
| 1. | | | |
| 2. | | | |
| | NA = Total Cover | | |

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust Ø

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: | |
|---|---|---|
| OBL species | x 1 = | |
| FACW species | x 2 = | |
| FAC species | x 3 = | |
| FACU species | x 4 = | |
| UPL species | x 5 = | |
| Column Totals: | (A) | (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No ____

Remarks:

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**SOIL**

Sampling Point: SP 13

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14" | 10YR 4/2 | 100 | – | – | – | – | Sand | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: None

Depth (inches): N/A

**Hydric Soil Present?** Yes ____ No ✓

Remarks: No hydric soil indicators

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ____

**Wetland Hydrology Present?** Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers

Arid West – Version 2.0

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR LA to ANAHEIM City/County: Pico Rivera, Los Angeles Sampling Date: 8/23/16
Applicant/Owner: STV State: CA Sampling Point: SP14
Investigator(s): FTS, MCM Section, Township, Range: ND Section 725 R12W Whittier CA
Landform (hillslope, terrace, etc.): River bed Local relief (concave, convex, none): concave Slope (%): ~1
Subregion (LRR): C-Med Lat: 33.96572607 Long: -118.08898317 Datum: WGS 84
Soil Map Unit Name: Sorrento-Hanford 0-10% SEA-5612 NWI classification: Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ____ | **Is the Sampled Area within a Wetland?** Yes ✓ No ____ |
| Hydric Soil Present? | Yes ✓ | No ____ | |
| Wetland Hydrology Present? | Yes ✓ | No ____ | |

Remarks: Sample pit conducted in San Gabriel River bed near culvert

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: 30) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | N/A = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: 10) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | N/A = Total Cover | | |
| Herb Stratum (Plot size: 5) | | | |
| 1. Schoenoplectus californica | 70 | Y | OBL |
| 2. Perisccaria lapathifolia | 15 | N | FACW |
| 3. Rumex crispus | 15 | N | FAC |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 = Total Cover | | |
| Woody Vine Stratum (Plot size: NA) | | | |
| 1. | | | |
| 2. | | | |
| | NA = Total Cover | | |

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: | |
|---|---|---|
| OBL species 70 | x 1 = | 70 |
| FACW species 15 | x 2 = | 30 |
| FAC species 15 | x 3 = | 45 |
| FACU species | x 4 = | |
| UPL species | x 5 = | |
| Column Totals: 100 (A) | | 145 (B) |

Prevalence Index = B/A = 1.45

**Hydrophytic Vegetation Indicators:**
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No ____

Remarks:

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**SOIL**

Sampling Point: SP14

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5 | 10YR 3/2 | 100 | — | — | — | — | loamy Sandy | |
| 5-14 | 10YR 3/2 | 95 | 10YR 5/6 | 5 | C | M | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: None

Depth (inches): N/A

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

**Wetland Hydrology Present?** Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers

Arid West – Version 2.0

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR LA-ANAHEIM City/County: Pico Rivera, LA Sampling Date: 8/23/16
Applicant/Owner: STV State: CA Sampling Point: SP15
Investigator(s): PTS, MCM Section, Township, Range: No Section T2S R12W Whittier CA
Landform (hillslope, terrace, etc.): River bed Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): C-Med Lat: 33.96570085 Long: -118.08908893 Datum: WGS 84
Soil Map Unit Name: Sorrento-Hanford clays STATSGO NWI classification: Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ____ | No ✓ | **Is the Sampled Area within a Wetland?** Yes ____ No ✓ |
| Hydric Soil Present? | Yes ____ | No ✓ | |
| Wetland Hydrology Present? | Yes ✓ | No ____ | |

Remarks: Sample pit conducted in riverbed away from culvert

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| **Tree Stratum** (Plot size: 30) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 15) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 = Total Cover | | |
| **Herb Stratum** (Plot size: 5) | | | |
| 1. Cynodon dactylon | 100 | Y | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: ____) | | | |
| 1. N/A | | | |
| 2. | | | |
| | NA = Total Cover | | |

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: | |
|---|---|---|
| OBL species ____ | x 1 = ____ | |
| FACW species ____ | x 2 = ____ | |
| FAC species ____ | x 3 = ____ | |
| FACU species 100 | x 4 = 400 | |
| UPL species ____ | x 5 = ____ | |
| Column Totals: 100 (A) | 400 (B) | |

Prevalence Index = B/A = 4

**Hydrophytic Vegetation Indicators:**
__ Dominance Test is >50% N
__ Prevalence Index is ≤3.0[1] N
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ____ No ✓

Remarks:

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**SOIL**

Sampling Point: SP 15

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12+ | 10YR 3/2 | 100 | | | | | Sandy loam | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: None

Depth (inches): Ø

**Hydric Soil Present?** Yes ____ No ✓

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ____

**Wetland Hydrology Present?** Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers

Arid West – Version 2.0

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR LA to ANAHEIM City/County: Pico Rivera Los Angeles Sampling Date: 8/23/16
Applicant/Owner: STV State: CA Sampling Point: SP16
Investigator(s): PTS, MLM Section, Township, Range: No Section T2S R12W Whittier CA
Landform (hillslope, terrace, etc.): Riverbed Local relief (concave, convex, none): Concave Slope (%): <1
Subregion (LRR): C-Med Lat: 33.96536850 Long: -118.08946607 Datum: WGS 84
Soil Map Unit Name: Sorrento-Hanford NRCS SAMSGO NWI classification: Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ____ | **Is the Sampled Area within a Wetland?** Yes ✓ No ____ |
| Hydric Soil Present? | Yes ✓ | No ____ | |
| Wetland Hydrology Present? | Yes ✓ | No ____ | |

Remarks: Sample pit conducted in Riverbed near culvert

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: 30') | | | |
| 1. Salix gooddingii | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: 10) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | N/A = Total Cover | | |
| Herb Stratum (Plot size: 5) | | | |
| 1. Persicaria lapathifolia | 20 | Y | FACW |
| 2. Echinochloa crus galli | 75 | Y | FACW |
| 3. Xanthium strumarium | 5 | N | FAC |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 = Total Cover | | |
| Woody Vine Stratum (Plot size: NA) | | | |
| 1. | | | |
| 2. | | | |
| | NA = Total Cover | | |

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1 = ____ |
| FACW species ____ | x 2 = ____ |
| FAC species ____ | x 3 = ____ |
| FACU species ____ | x 4 = ____ |
| UPL species ____ | x 5 = ____ |
| Column Totals: ____ (A) | ____ (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**
✓ Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No ____

Remarks:

US Army Corps of Engineers Arid West – Version 2.0

**SOIL**

Sampling Point: SP16

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5 | 10YR 3/1 | 100 | — | — | — | — | Sandy loam | |
| 5-13 | 10YR 3/1 | 94 | 10YR 5/6 | 6 | C | M | " | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: None

Depth (inches): Ø

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

**Wetland Hydrology Present?** Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers

Arid West – Version 2.0

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR LA to ANAHEIM City/County: Pico Rivera, Los Angeles Sampling Date: 8/23/16
Applicant/Owner: STV State: CA Sampling Point: SP17
Investigator(s): RTS, MCM Section, Township, Range: No Section T2S R12W Whittier CA
Landform (hillslope, terrace, etc.): Riverbed Local relief (concave, convex, none): concave Slope (%): ~1
Subregion (LRR): C-Med Lat: 33.96534385 Long: -118.089281609 Datum: WGS 84
Soil Map Unit Name: Sorrento - Hanford 91024 STATSGO NWI classification: Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ____ | **Is the Sampled Area within a Wetland?** Yes ____ No ✓ |
| Hydric Soil Present? | Yes ____ | No ✓ | |
| Wetland Hydrology Present? | Yes ✓ | No ____ | |

Remarks:

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30') | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | N/A | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 10) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | N/A | = Total Cover | |
| **Herb Stratum** (Plot size: 5) | | | |
| 1. Distichlis spicata | 95 | Y | FACW |
| 2. Rumex crispus | 5 | N | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: NA) | | | |
| 1. | | | |
| 2. | | | |
| | NA | = Total Cover | |

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: | |
|---|---|---|
| OBL species | x 1 = | |
| FACW species | x 2 = | |
| FAC species | x 3 = | |
| FACU species | x 4 = | |
| UPL species | x 5 = | |
| Column Totals: (A) | | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**
✓ Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No ____

Remarks:

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**SOIL** Sampling Point: SP17

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR 3/2 | 100 | — | — | — | — | Sandy loam | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: None

Depth (inches): Ø

**Hydric Soil Present?** Yes ____ No ✓

Remarks: No redox observed.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ✓ No ____ Depth (inches): ____

Water Table Present? Yes ✓ No ____ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth (inches): ____

**Wetland Hydrology Present?** Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR LA to ANAHEIM City/County: La Mirada, Los Angeles Sampling Date: 8/23/16
Applicant/Owner: STV State: CA Sampling Point: SP 18
Investigator(s): PTS, MCM Section, Township, Range: Sec 22 T3S R11W Whittier CA
Landform (hillslope, terrace, etc.): creek bed Local relief (concave, convex, none): flat Slope (%): <1
Subregion (LRR): C-Med Lat: 33.893278 32 Long: -118.021745 00 Datum: WGS 84
Soil Map Unit Name: Sorrento - Hanford sandy SEASED NWI classification: Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ✓, or Hydrology ____ significantly disturbed? Yes Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ✓, or Hydrology ____ naturally problematic? Yes (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ No ____ | **Is the Sampled Area within a Wetland?** Yes ____ No ✓ |
| Hydric Soil Present? | Yes ____ No ✓ | |
| Wetland Hydrology Present? | Yes ✓ No ____ | |

Remarks: Substate in Creek Bottom is grouted rip-rap w/ ~ 5.6' of muck on top.

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: 30) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | N/A = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: 10) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | NA = Total Cover | | |
| Herb Stratum (Plot size: 5) | | | |
| 1. Typha domingensis | 20 | Y | OBL |
| 2. Persicaria lapathifolia | 40 | Y | FACW |
| 3. Echinochloa crus galli | 30 | Y | FACW |
| 4. Cyperus esculentus | 10 | N | FACW |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 = Total Cover | | |
| Woody Vine Stratum (Plot size: NA) | | | |
| 1. | | | |
| 2. | | | |
| | NA = Total Cover | | |

% Bare Ground in Herb Stratum Ø % Cover of Biotic Crust Ø

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species 20 | x 1 = 20 |
| FACW species 80 | x 2 = 160 |
| FAC species | x 3 = |
| FACU species | x 4 = |
| UPL species | x 5 = |
| Column Totals: 100 (A) | 180 (B) |

Prevalence Index = B/A = 1.80

**Hydrophytic Vegetation Indicators:**
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No ____

Remarks:

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**SOIL** Sampling Point: SP 18

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5 | N 2.5/- | 100 | - | - | - | - | muck | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**
Type: grouted rip-rap
Depth (inches): ~5"

**Hydric Soil Present?** Yes _____ No ✓

Remarks: grouted rip-rap present in drainage bottom. Approx 5-6" of muck built up where plants are present (see polygon). Hydric soils determined to not be present due to presence of grouted rip-rap which has eliminated any chemical connection to soil below.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ✓ Sediment Deposits (B2) **(Riverine)**
- ✓ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes _____ | No ✓ | Depth (inches): _____ |
| Water Table Present? | Yes _____ | No ✓ | Depth (inches): _____ |
| Saturation Present? (includes capillary fringe) | Yes _____ | No ✓ | Depth (inches): _____ |

**Wetland Hydrology Present?** Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR LA to ANAHEIM City/County: La Mirada, Los Angeles Sampling Date: 8/23/16
Applicant/Owner: SLV State: CA Sampling Point: SP 19
Investigator(s): PTS, MCM Section, Township, Range: Sec 22, T3S, R11W Whittier CA
Landform (hillslope, terrace, etc.): Creek bed Local relief (concave, convex, none): Concave Slope (%): <1
Subregion (LRR): C-Med Lat: 33.89325979 Long: -118.02162166 Datum: WGS 84
Soil Map Unit Name: Sorrento-Hanford sl02A STATSGO NWI classification: Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ✓, or Hydrology ____ significantly disturbed? Yes Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ✓, or Hydrology ____ naturally problematic? Yes (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ____ | **Is the Sampled Area within a Wetland?** Yes ____ No ✓ |
| Hydric Soil Present? | Yes ____ | No ✓ | |
| Wetland Hydrology Present? | Yes ✓ | No ____ | |

Remarks: Sample point conducted in creek bottom. There is grouted rip-rap present throughout channel bottom.

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| **Tree Stratum** (Plot size: 30) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | N/A = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 10) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | N/A = Total Cover | | |
| **Herb Stratum** (Plot size: 5) | | | |
| 1. Ricinus communis | 2 | N | FACU |
| 2. Sorghum bicolor | 5 | N | FACU |
| 3. Perisecavia lapathifolia | 5 | N | FACW |
| 4. Echinochloa crus galli | 5 | N | FACW |
| 5. Portulacea oleracea | 60 | Y | FAC |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 77 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: N/A) | | | |
| 1. | | | |
| 2. | | | |
| | N/A = Total Cover | | |

% Bare Ground in Herb Stratum Ø % Cover of Biotic Crust 0

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species 0 | x 1 = 0 |
| FACW species 10 | x 2 = 20 |
| FAC species 60 | x 3 = 180 |
| FACU species 7 | x 4 = 28 |
| UPL species ____ | x 5 = ____ |
| Column Totals: 77 (A) | 226 (B) |

Prevalence Index = B/A = 2.96

**Hydrophytic Vegetation Indicators:**
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No ____

Remarks: No bare ground due to grouted rip-rap

US Army Corps of Engineers — Arid West – Version 2.0

**SOIL** Sampling Point: SP19

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-5 | 10YR 3/2 | 100 | – | – | – | – | loam/silty loam | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: Grouted rip-rap

Depth (inches): 4-5"

**Hydric Soil Present?** Yes ____ No ✓

Remarks: No hydric soil indicators present

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ✓ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ✓ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ____

**Wetland Hydrology Present?** Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers

Arid West – Version 2.0

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR: LA to Anaheim City/County: Anaheim/Orange Sampling Date: 3/2/2016
Applicant/Owner: STV State: CA Sampling Point: 7
Investigator(s): Paul Schwartz, Zack West Section, Township, Range: Sec. 3 T4S R10W
Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 1-3
Subregion (LRR): C-med Lat: 33°50'51.71"N Long: 117°54'33.22"W Datum: WGS84
Soil Map Unit Name: Metz loamy Sand (SSURGO) NWI classification: Riverine
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.) Normal for feature

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes ✓ | No _____ | |
| Wetland Hydrology Present? | Yes ✓ | No _____ | |

Remarks: SE Raymond Basin, No access to basin so veg composition + cover estimated from ~250' distance (binos). Soils assumed. Basin likely fills up with water.

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: N/A) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | N/A = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: N/A) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | N/A = Total Cover | | |
| Herb Stratum (Plot size: 5') | | | |
| 1. Cynodon dactylon | 55 | Y | FACU |
| 2. Erigeron canadensis | 25 | Y | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 70 = Total Cover | | |
| Woody Vine Stratum (Plot size: N/A) | | | |
| 1. | | | |
| 2. | | | |
| | N/A = Total Cover | | |

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species | x 1 = |
| FACW species | x 2 = |
| FAC species | x 3 = |
| FACU species | x 4 = |
| UPL species | x 5 = |
| Column Totals: (A) | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**
___ Dominance Test is >50% No
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks:

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**SOIL** Sampling Point: 7

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✓ No ___

Remarks: Soils assumed as no access to basin is permitted.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✓ Water Marks (B1) (**Nonriverine**)
- ✓ Sediment Deposits (B2) (**Nonriverine**)
- ✓ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

**Wetland Hydrology Present?** Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology w/n basin is managed. Water present w/n basin during delineation

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## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HSR: LA to Anaheim City/County: Pico Rivera / Los Angeles Sampling Date: 3/2/2016
Applicant/Owner: STV State: CA Sampling Point: 8
Investigator(s): Paul Schwartz Zack West Section, Township, Range: No Section T2S R12W, Whittier CA
Landform (hillslope, terrace, etc.): River bottom Local relief (concave, convex, none): convex Slope (%): < 1
Subregion (LRR): C - Med Lat: 33° 58' 4.13" N Long: 118° 5' 22.79" W Datum: WGS 84
Soil Map Unit Name: No soil data avail (STATSGO / SSURGO) NWI classification: WGS84
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Yes Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.) Normal for area.

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✓ | Is the Sampled Area within a Wetland? Yes _____ No ✓ |
| Hydric Soil Present? | Yes ✓ | No _____ | |
| Wetland Hydrology Present? | Yes ✓ | No _____ | |

Remarks: Vegetation w/n channel is likely maintained regularly. Vegetation covers estimated from ~30' distance since no access is permitted. Water was being diverted into River (side channel) during delineation. Soils assumed to be hydric.

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: N/A) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | N/A = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: 10') | | | |
| 1. Baccharis salicifolia | 25 | Y | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 25 = Total Cover | | |
| Herb Stratum (Plot size: 5') | | | |
| 1. Centaurea melitensis | 20 | Y | UPL |
| 2. Bromus madritensis | 20 | Y | UPL |
| 3. Rhaphanus sativa | 15 | Y | UPL |
| 4. Ricinus communis | 7 | N | FACU |
| 5. Bromus diandrus | 12 | N | UPL |
| 6. Plantago lanceolata | 11 | N | FAC |
| 7. Solanum americanus | 5 | N | FACU |
| 8. | | | |
| | 90 = Total Cover | | |
| Woody Vine Stratum (Plot size: N/A) | | | |
| 1. | | | |
| 2. | | | |
| | N/A = Total Cover | | |

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

**Dominance Test worksheet:**
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | 0 | x 1 = 0 |
| FACW species | 0 | x 2 = 0 |
| FAC species | 36 | x 3 = 108 |
| FACU species | 12 | x 4 = 48 |
| UPL species | 67 | x 5 = 335 |
| Column Totals: | 115 (A) | 491 (B) |

Prevalence Index = B/A = 4.26

**Hydrophytic Vegetation Indicators:**
___ Dominance Test is >50% No
___ Prevalence Index is ≤3.0[1] No
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks: Veg cover est. mated from ~30' due to no access to River.

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# APPENDIX E: WETLAND AND NONWETLAND WATERS OF THE U.S. PHOTOGRAPHS

**Table E-1 Map and Resource Reference for Resource Study Area Photographs**

| Photo Station | Corresponding Appendix C Map Sheet | Resource Shown in Photo |
|---|---|---|
| PS-2 | 2 | Los Angeles River, Feature 1. Riverine feature |
| PS-5 | 8 | Rio Hondo, Feature 5. Riverine feature |
| PS-7 | 7 | Rio Hondo Northwest Spreading Grounds, Feature 7. Basin |
| PS-8 | 7 | Rio Hondo Southwest Spreading Grounds, Feature 9. Basin |
| PS-68 | 9 | San Gabriel River, Feature 12. Riverine feature with freshwater emergent wetland |
| PS-72 | 9 | San Gabriel River, Feature 12. Riverine feature |
| PS-58 | 9 | San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 9 location |
| PS-59 | 9 | San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 10 location |
| PS-60a | 9 | San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 11 location |
| PS-60b | 9 | San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 12 location |
| PS-61 | 9 | San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 13 location |
| PS-62 | 9 | San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 14 location |
| PS-63 | 9 | San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 15 location |
| PS-66 | 9 | San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 16 location |
| PS-67 | 9 | San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 17 location |
| PS-18 | 10 | North Fork Coyote Creek, Feature 14. Riverine feature |
| PS-22 | 11 | La Mirada Creek, Feature 18. Riverine feature |
| PS-74 | 11 | La Mirada Creek, Feature 19. Riverine feature. Wetland Sample Point 19 location |
| PS-75 | 11 | La Mirada Creek, Feature 19. Riverine feature, Wetland Sample Point 18 location |
| PS-26 | 12 | Coyote Creek, Feature 20. Riverine feature |
| PS-47 | 13–14 | Brea Creek, Feature 41. Riverine feature |
| PS-35 | 15 | Fullerton Creek, Feature 28. Riverine feature |
| PS-36 | 16 | Unnamed, Feature 29. Built Watercourse |

| Photo Station | Corresponding Appendix C Map Sheet | Resource Shown in Photo |
|---|---|---|
| PS-43 | 18 | Raymond Retarding Southeast Basin, Feature 39. Basin. Wetland Sample Point 7 location |
| PS-41 | 18 | Carbon Creek, Feature 38. Riverine feature |
| PS-45 | 19 | Santa Ana River, Feature 40. Riverine feature |



**PS-2 Los Angeles River, Feature 1. Riverine feature, facing north**



**PS-5 Rio Hondo, Feature 5. Riverine feature, facing south**



**PS-7 Rio Hondo Northwest Spreading Grounds, Feature 7. Basin, facing north**



**PS-8 Rio Hondo Southwest Spreading Grounds, Feature 9. Basin, facing south**



**PS-68 San Gabriel River, Feature 12. Riverine feature with freshwater emergent wetland, facing southeast**



**PS-72 San Gabriel River, Feature 12. Riverine feature, facing north**



**PS-58 San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 9 location, facing west**



**PS-59 San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 10 location, facing southwest**



**PS-60a San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 11 location, facing south**



**PS-60b San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 12 location, facing south**



**PS-61 San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 13 location, facing south**



**PS-62 San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 14 location, facing north**



**PS-63 San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 15 location, facing north**



**PS-66 San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 16 location, facing northwest**



**PS-67 San Gabriel River, Feature 12. Riverine feature. Wetland Sample Point 17 location, facing northwest**



**PS-18 North Fork Coyote Creek, Feature 14. Riverine feature, facing south**



**PS-22 La Mirada Creek, Feature 18. Riverine feature, facing east**



**PS-74 La Mirada Creek, Feature 19. Riverine feature. Wetland Sample Point 19 location, facing northeast**



**PS-75 La Mirada Creek, Feature 19. Riverine feature, Wetland Sample Point 18 location, facing north**



**PS-26 Coyote Creek, Feature 20. Riverine feature, facing southwest**



**PS-47 Brea Creek, Feature 41. Riverine feature, facing west**



**PS-35 Fullerton Creek, Feature 28. Riverine feature, facing west**



**PS-36 Unnamed, Feature 29. Built Watercourse, facing west**



**PS-43 Raymond Retarding Southeast Basin, Feature 39. Basin. Wetland Sample Point 7 location, facing northeast**



**PS-41 Carbon Creek, Feature 38. Riverine feature, facing northeast**



**PS-45 Santa Ana River, Feature 40. Riverine feature, facing northeast**

# APPENDIX F: WETLAND PLANT SPECIES LIST

## Table F-1 Wetland Plant Species List

| Species Name | Common Name | Arid West Indicator Status |
|---|---|---|
| **Herbaceous** | | |
| *Avena* spp. | Oat grass | UPL |
| *Bromus diandrus* | Ripgut brome | UPL |
| *Bromus madritensis* ssp. *rubens* | Foxtail brome | UPL |
| *Centaurea melitensis* | Tocalote | UPL |
| *Chenopodium album* | Lamb's quarters | UPL |
| *Cotula australis* | Australian water buttons | FAC |
| *Cynodon dactylon* | Bermuda grass | FACU |
| *Cyperus eragrostis* | Tall flatsedge | FACW |
| *Cyperus involucratus* | Alternate-leaved flat sedge | FACW |
| *Echinochloa crus-galli* | Barnyard grass | FACW |
| *Erigeron canadensis* | Horseweed | FACU |
| *Erodium cicutarium* | Redstem stork's bill | UPL |
| *Festuca perennis* | Italian rye grass | FAC |
| *Gnaphalium luteo-album* | Everlasting cudweed | FAC |
| *Helianthus annuus* | Annual sunflower | FACU |
| *Heterotheca grandiflora* | Telegraph weed | UPL |
| *Hirschfeldia incana* | Shortpod mustard | UPL |
| *Leptochloa fusca* ssp. *uninervia* | Dense-flowered sprangletop | FACW |
| *Nicotiana glauca* | Tree tobacco | FAC |
| *Pennisetum setaceum* | Fountain grass | UPL |
| *Persicaria lapathifolium* | Smartweed | FACW |
| *Plantago lanceolata* | English plantain | FAC |
| *Poa annua* | Annual bluegrass | FACU |
| *Raphanus sativus* | Cultivated radish | UPL |
| *Rumex crispus* | Curly dock | FAC |
| *Salsola tragus* | Prickly Russian thistle | FACU |
| *Schoenoplectus* spp. | Bulrush | OBL |
| *Sisymbrium irio* | London rocket | UPL |
| *Solanum americanus* | American black nightshade | FACU |
| *Sonchus oleraceus* | Sow thistle | UPL |

| Species Name | Common Name | Arid West Indicator Status |
|---|---|---|
| *Typha domingensis* | Southern cattail | OBL |
| *Urtica urens* | Annual stinging nettle | UPL |
| *Xanthium strumarium* | Rough cocklebur | FAC |
| **Shrub** | | |
| *Baccharis salicifolia* | Mule fat | FAC |
| **Tree** | | |
| *Ailanthus altissima* | Tree of heaven | FACU |
| *Washingtonia robusta* | Mexican fan palm | FACW |

*Sources: Baldwin et al. 2012; Lichvar et al. 2016*
FAC = facultative; FACU = facultative upland; FACW = facultative wetland; OBL = obligate wetland; UPL = obligate upland

## References

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. *The Jepson Manual: Vascular Plants of California.* Second Edition. University of California Press, Berkeley.

Lichvar, R. W., D. L. Banks, W. N. Kirchner, and N. C. Melvin. 2016. The National Wetlands Plant List: 2016 wetland ratings. *Phytoneuron* 2016-30:1–17. Published 28 April 2016. ISSN 2153 733X. http://wetland-plants.usace.army.mil/ (accessed May 2016).