California High-Speed Rail Authority

Burbank to Los Angeles Project Section

Aquatic Resources Delineation Report

December 2019

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 23, 2019, and executed by the Federal Railroad Administration and the State of California.

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TABLE OF CONTENTS

Tables

Figures

Appendices

ACRONYMS AND ABBREVIATIONS

°F	Fahrenheit
Authority	California High-Speed Rail Authority
CWA	Clean Water Act
EIR	environmental impact report
EIS	environmental impact statement
FRA	Federal Railroad Administration
HSR	high-speed rail
LAUS	Los Angeles Union Station
NWI	National Wetlands Inventory
PJD	Preliminary Jurisdictional Determination
RSA	resource study area
RWQCB	Regional Water Quality Control Board
SWRCB	State Water Resources Control Board
U.S.	United States
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency

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EXECUTIVE SUMMARY

This Aquatic Resources Delineation Report, prepared for the Burbank to Los Angeles Project Section of the California High-Speed Rail (HSR) System, provides a detailed description of the delineation of aquatic resources potentially affected by the project. 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 Clean Water Act (CWA). Furthermore, this report contains information that was used to support a Preliminary Jurisdictional Determination made for the Burbank to Los Angeles Project Section by the United States Army Corps of Engineers (USACE) in July 2018.

The Burbank to Los Angeles Project Section is approximately 14 miles in length and passes through an urban landscape within an existing railroad transportation corridor. The starting and ending points of the project section include the proposed Burbank Airport Station in the north and existing Los Angeles Union Station (LAUS) in the south. The delineation of aquatic resources within the project section is limited to the Aquatic Resource Study Area (RSA), which includes the project footprint plus 250 feet.

Delineated aquatic resources within the RSA include all wetland and nonwetland waters (rivers and their tributaries, etc.) potentially subject to Section 404 (U.S. Code Title 33, § 1344) and Section 401 (U.S. Code Title 33, § 1341) of the CWA. The CWA Section 404 program is administered by the USACE and the CWA Section 401 program is administered by the State Water Resources Control Board (SWRCB). Waters of the state defined under the Porter-Cologne Water Quality Control Act (California Water Code § 13000 et seq.) are also regulated by the SWRCB. All identified aquatic resources within the RSA are federally jurisdictional, and there are no waters of the state within the RSA that are not also waters of the U.S. under currently effective definitions.

Within the RSA, the total acreage of potential wetland habitat is 12.08 acres and of other aquatic resources is 58.61 acres. The areas containing jurisdictional aquatic resources are located in the Los Angeles River and associated tributaries, including Lockheed Channel, Burbank Western Channel, Verdugo Wash, and Arroyo Seco. No Section 10 navigable waters of the U.S. are present in the RSA.

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1 INTRODUCTION

1.1 California High-Speed Rail System Background

The California High-Speed Rail Authority (Authority) is responsible for planning, designing, building, and operating the first high-speed passenger rail service in the nation. The California High-Speed Rail (HSR) System will connect the mega-regions of the state, contribute to economic development and a cleaner environment, create jobs, and preserve agricultural and protected lands. When it is completed, it will run from San Francisco to the Los Angeles basin in under three hours at speeds capable of exceeding 200 miles per hour. The system will eventually extend to Sacramento and San Diego, totaling 800 miles with up to 25 stations, as shown on Figure 1-1.[1] In addition, the Authority is working with regional partners to implement a statewide rail modernization plan that will invest billions of dollars in local and regional rail lines to meet the state's 21st century transportation needs.

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.[2] Phase 2 would connect from the Central Valley to Sacramento, and another extension is planned from Los Angeles to San Diego. The California HSR System would meet the requirements of Proposition 1A, [3] including the requirement for a maximum nonstop service travel time between San Francisco and Los Angeles of two hours and 40 minutes.

1.2 Burbank to Los Angeles Project Section Background

The Burbank to Los Angeles Project Section would be a critical link in Phase 1 of the California HSR System connecting the San Francisco Bay Area to the Los Angeles Basin. The Authority and the Federal Railroad Administration (FRA) selected the existing railroad right-of-way as the corridor for the preferred alternative between Sylmar and Los Angeles Union Station (LAUS) in the 2005 *Statewide Program Environmental Impact Report/Environmental Impact Statement* (EIR/EIS) (Authority and FRA 2005). The Sylmar to Los Angeles railroad corridor includes Burbank, which is southeast of Sylmar. Therefore, the Project EIR/EIS for the Burbank to Los Angeles Project Section focuses on alignment alternatives along the existing Sylmar to Los Angeles railroad corridor.

The Burbank to Los Angeles Project Section was initially considered as part of the Palmdale to Los Angeles Project Section. The Authority and FRA announced their intention to prepare a joint EIR/EIS for the Palmdale to Los Angeles Project Section in March 2007. On March 12, 2007, the Authority released a Notice of Preparation, and the FRA published a Notice of Intent on March 15, 2007. Over the next several years, the Authority and FRA conducted scoping and prepared alternatives analysis documents for that section. The 2010 Palmdale to Los Angeles Preliminary Alternatives Analysis recommended alignment alternatives and station options for the Palmdale to Los Angeles Project Section based on the program-level corridor selected in 2005. The 2011 Palmdale to Los Angeles Supplemental Alternatives Analysis (SAA) focused specifically on the subsections from the community of Sylmar to LAUS, and reevaluated the alternatives and station options. In June 2014, the Authority published a Palmdale to Los Angeles SAA Report, which introduced the concept of splitting the Palmdale to Los Angeles Project Section into two sections. On July 24, 2014, the Authority released a Notice of Preparation and the FRA published a Notice of Intent to prepare EIR/EIS documents for the Palmdale to Burbank and Burbank to Los Angeles project sections. Pursuant to 23 U.S.C. 327, under the National Environmental Policy Act Memorandum of Understanding between the FRA and the State of California, effective July 23, 2019, the Authority is the federal lead agency for review of the Burbank to Los Angeles Project Section under the National Environmental Policy Act.

[1] The alignments on Figure 1-1 are based on Authority/FRA decisions made in the 2005Statewide Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS).

[2] Phase 1 may be constructed in smaller operational segments, depending on available funds.

[3] California Transportation Commission. 2014. *High Speed Passenger Train Bond Program (Proposition 1A)*, www.catc.ca.gov/programs/hsptbp.htm.

Source: California High-Speed Rail Authority, 2018

Figure 1-1 California High-Speed Rail System

One of the main reasons for the project section split was the Initial Operating Section[4] concept and its interim terminus in the San Fernando Valley, which was discussed in the Authority's 2012 and 2014 Business Plans. Additionally, the Authority and FRA determined that separate environmental documents would be more beneficial to address environmental impacts and conduct stakeholder outreach. The key environmental resources likely to be impacted were different between the two sections, and separate environmental documents better supported project phasing and sequencing.

In April 2016, the Authority released the Burbank to Los Angeles SAA, which refined the previously studied alignments. Additionally, the Authority released the 2016 Palmdale to Burbank SAA, which refined the concepts at the Burbank Airport Station and the alignments from south of the Burbank Airport Station to Alameda Avenue in the City of Burbank. The 2016 Burbank to Los Angeles SAA Report proposed to evaluate one build alternative south of Alameda Avenue to LAUS. The subsection between the Burbank Airport Station and Alameda Avenue was studied in the 2016 Palmdale to Burbank SAA, which proposed two station options and two alignment options. Table 1-1 summarizes the conclusions of the two SAA reports.

Table 1-1 2016 Supplemental Alternatives Analysis Recommendations for the Burbank to Los Angeles Project Section

Alternative	Alignment/ Station	Area/Station	Alignment/Station Type
No Project Alternative			
HSR Build Alternative	Alignments	Burbank Airport Station to Alameda Avenue	Alignment Option A (Surface) Alignment Option B (Below-Grade and Surface)
		Alameda Avenue to LAUS	Surface Alignment
	Stations	Burbank Airport Station	Station Option A (Surface) Station Option B (Below-Grade)
		LAUS	Surface Station Option

Sources: California High-Speed Rail Authority, 2016a, 2016b
HSR = High-Speed Rail
LAUS = Los Angeles Union Station

Since the release of the two SAA documents in 2016, the design has undergone further refinements. The surface options from Burbank Airport to Alameda Avenue (Alignment Option A and Station Option A) have been eliminated from consideration. The below-grade options (Alignment Option B and Station Option B) have been refined in order to minimize potential environmental effects and reduce cost. Therefore, this environmental document evaluates one build alternative for the project section.

FRA requires logical termini for project level analysis. The Authority has determined that logical termini are defined by stations, with Burbank Airport Station as the northern terminus and LAUS as the southern terminus for the Burbank to Los Angeles Project Section. These two stations are also termini for the Palmdale to Burbank and Los Angeles to Anaheim Project Sections. The analysis for the Burbank Airport Station is consistent with what is included in the Palmdale to Burbank EIR/EIS. Similarly, the analysis for LAUS is consistent with what is included in the Los Angeles to Anaheim EIR/EIS

This report documents the aquatic resources delineation conducted for the Burbank to Los Angeles Project Section of the California HSR System. This report includes the following:

[4] The Initial Operating Section was the first segment planned for construction and operations, as outlined in the 2014 Business Plan. The segment permitted operation of HSR service from Merced to the San Fernando Valley. The 2016 Business Plan revised the initial segment termini to the Central Valley and Silicon Valley.

- A description of the project setting for the alternative under study
- A discussion of the statutes and regulations pertinent to aquatic resources
- A description of the existing conditions, including aquatic resources in the study area
- A description of the analytical methodologies and assumptions used for this study

1.3 Purpose of the Assessment

This project-level study determines the location, nature, and extent of potential waters of the state and waters of the U.S., including wetlands, as defined by the CWA and pertinent USACE guidance within the RSA of the Burbank to Los Angeles Project Section.

This technical report fulfills the requirements of the project-level study for the Burbank to Los Angeles Project Section as it identifies and delineates the type and extent of surface water resources, including wetlands that are potentially subject to jurisdiction under CWA Sections 404 and 401, as well as the Porter-Cologne Water Quality Control Act. The information contained herein is intended to satisfy the USACE's *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports* (USACE 2017a).

The determinations and conclusions made in this report have been reviewed by the USACE during a request for a Preliminary Jurisdictional Determination (PJD), consistent with requirements set forth in Regulatory Guidance Letter 16-01. USACE concurrence regarding the extent of all mapped features was received in July 2018. As set forth in Regulatory Guidance Letter 16-01, PJDs are nonbinding written indications that "may include the delineation limits of all aquatic resources on a parcel without determining the jurisdictional status of such aquatic resources." A permit decision made on the basis of a PJD will treat all aquatic resources that would be affected in any way by the permitted activity on the parcel as jurisdictional. By assuming jurisdiction over waters, PJDs obviate the need to perform "significant nexus" and "relatively permanent water" analysis for water features. PJDs also provide for quick and efficient USACE review and concurrence at the District level, eliminating the need for higher-level inter-agency concurrence by the U.S. Environmental Protection Agency (USEPA). A PJD is appropriate in the area because the USACE has administratively affirmed/determined the jurisdictional status of the Los Angeles River and other features within the respective watershed. Furthermore, under the 2015 Clean Water Rule,[5] each of the features presented herein are jurisdictional waters of the U.S. by rule. Because all identified aquatic resources within the Aquatic RSA are jurisdictional under Sections 404/401 of the CWA, there are no waters of the state within the Aquatic RSA that are not also waters of the U.S. under the currently effective definitions. As such, the term "waters of the U.S.," as used herein, includes aquatic resources regulated under currently effective SWRCB permitting requirements.

This Aquatic Resources Delineation Report is for the Burbank to Los Angeles Project Section. The appendices to this technical report provide additional supporting information and maps. Information from this technical report will be summarized in the Burbank to Los Angeles Project Section EIR/EIS and will be part of the administrative record supporting the environmental review of the proposed project.

1.4 Resource Study Area

The delineation of aquatic resources within the project section is limited to the RSA, which includes the project footprint plus 250 feet. The RSA was developed to encompass 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

[5] On August 16, 2018, the U.S. District Court for the District of South Carolina enjoined the delay of the 2015 Clean Water Rule implementation for failure to comply with the Administrative Procedure Act. This decision means that the formerly stayed 2015 definition of waters of the U.S. is currently in effect in 26 states where federal district court judges have not stayed it, including California. On October 22, 2019, the USEPA and USACE issued a final rule to repeal the 2015 Clean Water Rule, effective December 23, 2019.

250-foot buffer around these features. The RSA is sized appropriately to allow for analysis of potential project impacts to waters of the U.S.

1.5 Summary of Regulations

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

1.5.1 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, all practicable measures to minimize harm must be included.

1.5.2 Section 401 of the Clean Water Act

Pursuant to Section 401 of the CWA (U.S. Code Title 33, § 1341), the SWRCB or Regional Water Quality Control Board (RWQCB) must certify that any 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. In circumstances where a proposed project crosses multiple RWQCB jurisdictional boundaries, the SWRCB will generally assume regulatory responsibilities pursuant to CWA Section 401 and the Porter-Cologne Water Quality Control Act (California Water Code § 13000 et seq.), which issues National Pollutant Discharge Elimination System permits for point-source discharges and waste discharge requirements for nonpoint-source discharges. In general, SWRCB and RWQCB Section 401 jurisdiction is consistent with the jurisdictional boundaries identified under CWA Section 404, which USACE administers. The SWRCB or RWQCB(s), as delegated by the USEPA, have principal authority to issue a CWA Section 401 water quality certification or waiver.

The SWRCB is processing Section 401 permits for each of the HSR project sections in consultation with the appropriate RWQCB to ensure compliance with requirements set forth in the regional basin plan.

1.5.3 Section 404 of the Clean Water Act

Pursuant to Section 404 of the CWA, USACE is authorized to regulate any 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 Code of Federal Regulations Title 33, § 328.3(a) (Definitions of Waters of the U.S.). USACE, with oversight by the USEPA, has principal authority to issue CWA Section 404 permits.

1.5.4 Rivers and Harbors Act of 1899

Section 10 of the Rivers and Harbors Act of 1899 (U.S. Code Title 33, § 403) requires authorization from USACE for the construction of any structure in, over, or under any navigable waters of the U.S. Section 14 of the Rivers and Harbors Act (U.S. Code Title 33, § 408) (hereinafter referred to as “Section 408”) authorizes the Secretary of the Army to approve modifications to existing USACE-constructed public works projects. Such public works projects include dams, basins, levees, channels, navigational channels, and any other local flood protection works constructed by the USACE.

1.5.5 Wild and Scenic Rivers Act of 1968

The National Wild and Scenic Rivers Act of 1968 (Public Law 90-542) was created by Congress to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. A listing of designated streams and stream segments can be found on the National Park Service’s Wild and Scenic Rivers website.

1.6 Relationship of Waters of the United States to Waters of the State

The Los Angeles RWQCB, which has jurisdiction over the drainage basins that the project could affect, has not yet adopted a wetland definition within the basin plans. Therefore, this jurisdictional delineation uses the definitions for wetlands and nonwetland waters of the U.S. set forth under Section 404 of the CWA, Code of Federal Regulations Title 33, § 328. Section 404 of the CWA, Code of Federal Regulations Title 33, § 328.3, defines waters of the U.S. as follows:

(a) For purposes of the Clean Water Act, 33 U.S.C. 1251 et seq. and its implementing regulations, subject to the exclusions in paragraph (b) of this section, the term "waters of the United States" means:

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

(2) All interstate waters, including interstate wetlands;

(3) The territorial seas;

(4) All impoundments of waters otherwise identified as waters of the United States under this section;

(5) All tributaries, as defined in paragraph (c)(3) of this section, of waters identified in paragraphs (a)(1) through (3) of this section;

(6) All waters adjacent to a water identified in paragraphs (a)(1) through (5) of this section, including wetlands, ponds, lakes, oxbows, impoundments, and similar waters;

(7) All waters in paragraphs (a)(7)(i) through (v) of this section where they are determined, on a case-specific basis, to have a significant nexus to a water identified in paragraphs (a)(1) through (3) of this section. The waters identified in each of paragraphs (a)(7)(i) through (v) of this section are similarly situated and shall be combined, for purposes of a significant nexus analysis, in the watershed that drains to the nearest water identified in paragraphs (a)(1) through (3) of this section. Waters identified in this paragraph shall not be combined with waters identified in paragraph (a)(6) of this section when performing a significant nexus analysis. If waters identified in this paragraph are also an adjacent water under paragraph (a)(6), they are an adjacent water and no case-specific significant nexus analysis is required.

(i) Prairie potholes. Prairie potholes are a complex of glacially formed wetlands, usually occurring in depressions that lack permanent natural outlets, located in the upper Midwest.

(ii) Carolina bays and Delmarva bays. Carolina bays and Delmarva bays are ponded, depressional wetlands that occur along the Atlantic coastal plain.

(iii) Pocosins. Pocosins are evergreen shrub and tree dominated wetlands found predominantly along the Central Atlantic coastal plain.

(iv) Western vernal pools. Western vernal pools are seasonal wetlands located in parts of California and associated with topographic depression, soils with poor drainage, mild, wet winters and hot, dry summers.

(v) Texas coastal prairie wetlands. Texas coastal prairie wetlands are freshwater wetlands that occur as a mosaic of depressions, ridges,

intermound flats, and mima mound wetlands located along the Texas Gulf Coast.

(8) All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1) through (3) of this section and all waters located within 4,000 feet of the high tide line or ordinary high water mark of a water identified in paragraphs (a)(1) through (5) of this section where they are determined on a case-specific basis to have a significant nexus to a water identified in paragraphs (a)(1) through (3) of this section. For waters determined to have a significant nexus, the entire water is a water of the United States if a portion is located within the 100-year floodplain of a water identified in paragraphs (a)(1) through (3) of this section or within 4,000 feet of the high tide line or ordinary high water mark. Waters identified in this paragraph shall not be combined with waters identified in paragraph (a)(6) of this section when performing a significant nexus analysis. If waters identified in this paragraph are also an adjacent water under paragraph (a)(6), they are an adjacent water and no case-specific significant nexus analysis is required.

(b) The following are not "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(4) through (8) of this section.

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

(2) Prior converted cropland. 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 EPA.

(3) The following ditches:

(i) Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary.
(ii) Ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands.
(iii) Ditches that do not flow, either directly or through another water, into a water identified in paragraphs (a)(1) through (3) of this section.

(4) The following features:

(i) Artificially irrigated areas that would revert to dry land should application of water to that area cease;

(ii) Artificial, constructed lakes and ponds created in dry land such as farm and stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, log cleaning ponds, or cooling ponds;

(iii) Artificial reflecting pools or swimming pools created in dry land;

(iv) Small ornamental waters created in dry land;

(v) Water-filled depressions created in dry land incidental to mining or construction activity, including pits excavated for obtaining fill, sand, or gravel that fill with water;

(vi) Erosional features, including gullies, rills, and other ephemeral features that do not meet the definition of tributary, non-wetland swales, and lawfully constructed grassed waterways; and

(vii) Puddles.

(5) Groundwater, including groundwater drained through subsurface drainage systems.

(6) Stormwater control features constructed to convey, treat, or store stormwater that are created in dry land.

(7) Wastewater recycling structures constructed in dry land; detention and retention basins built for wastewater recycling; groundwater recharge basins; percolation ponds built for wastewater recycling; and water distributary structures built for wastewater recycling.

The aquatic features shown in Appendix A and Appendix B were mapped based on whether they appeared to meet the regulatory definition of waters of the U.S., as well as the technical criteria for wetlands (3-parameter) or nonwetland waters of the U.S. (ordinary high-water mark). Reference Section 3.2.2, Field Delineation Methods, for a description of the technical criteria used during the preparation of this report.

On April 2, 2019, the SWRCB adopted its proposed State Wetland Definition and Procedures for Discharges of Dredge or Fill Material to Waters of the State ("Procedures"), which become effective May 28, 2020. Among other provisions, the Procedures define certain "wetlands" as "waters of the State" under the Porter-Cologne Water Quality Control Act. The Procedures also provide a jurisdictional framework for the determination of aquatic features as "wetlands." Compliance with the SWRCB Procedures for the Burbank to Los Angeles Project Section will be achieved through adherence to the provisions set forth in a Memorandum of Understanding between the SWRCB and the Authority (dated January 19, 2017; amended March 11, 2019). Because all identified aquatic resources within the RSA are jurisdictional under Sections 404/401 of the CWA, there are no waters of the state within the RSA that are not also waters of the U.S. under currently effective SWRCB definitions.

2 PROJECT SETTING

The RSA is approximately 14 linear miles and is located on the U.S. Geological Survey *Burbank, Hollywood,* and *Los Angeles, California* 7.5-minute series topographical quadrangles (Figure 2-1). The RSA passes through mostly urban settings consisting of residential, industrialized warehouse, and commercial business uses that run along the existing transportation facilities.

Elevations within the RSA range from approximately 300 feet (above sea level) near LAUS and the low-lying areas along the Los Angeles River to approximately 500 feet in the northern part of the RSA in the City of Burbank. The topography is relatively flat throughout the length of the RSA.

The Los Angeles River, which flows into the Pacific Ocean, runs parallel to the RSA. Three drainages within the RSA, Burbank Western Channel, Verdugo Wash, and Arroyo Seco, are tributaries to the Los Angeles River and are mainly concrete-lined channels. Within the RSA, the Los Angeles River channel includes one section in the Glendale Narrows where an earthen bottom supports potential wetland waters of the U.S., and Verdugo Wash includes an area where sediment has accumulated on the concrete lining and supports potential wetland waters of the U.S.

2.1 Vegetation Communities

The RSA is located in an urban setting. Water flowing in the Los Angeles River and its tributaries consists of freshwater, with a significant portion of the water sourced from urban runoff and treated effluent. Fragments of riparian scrub and freshwater emergent marsh habitats have been identified in the RSA within a section of the Los Angeles River and a small area at the river's confluence with Verdugo Wash. Within the RSA, Verdugo Wash is a concrete trapezoidal channel until it passes beneath San Fernando Road, where it transitions into an area containing vegetation characteristic of wetlands before joining the Los Angeles River. Vegetation communities associated with the delineated aquatic resources within the RSA are illustrated in Appendix B, Vegetation Communities Associated with Aquatic Resources within Resource Study Area.

2.1.1 Developed Lands

The developed lands category consists of developed areas such as existing buildings, paved roads, ornamental vegetation, and commercial and residential properties. Some of the areas mapped under this vegetation community category consist predominantly of nonnative ornamental vegetation and ruderal (i.e., weedy) species. These upland disturbed areas are not associated with wetland communities or other waters and have low habitat value for native plant and wildlife species. Any aquatic resources that occur within developed areas of the RSA are discussed under Section 2.1.3.

2.1.2 Natural and Naturalized Habitats

Natural and naturalized habitats consist of native or mostly native upland (i.e., not associated with aquatic resources) vegetation, which may offer medium to high habitat value for wildlife species. There are few natural or semi-natural habitat areas within the RSA. Such upland areas were not surveyed as part of the aquatic resources delineation. Rather, they have been surveyed under the investigation of biological resources and are discussed in the corresponding *Burbank to Los Angeles Project Section: Biological and Aquatic Resources Technical Report* (Authority 2019). Any aquatic resources that occur within natural or naturalized habitats of the RSA are discussed under Section 2.1.3.

2.1.3 Aquatic Resources, Including Wetlands

The RSA contains the following aquatic resource communities: Riverine, Freshwater-Forested and Shrub Wetland, and Freshwater Emergent Wetland, as identified by the U.S. Fish and Wildlife Service National Wetlands Inventory (NWI).

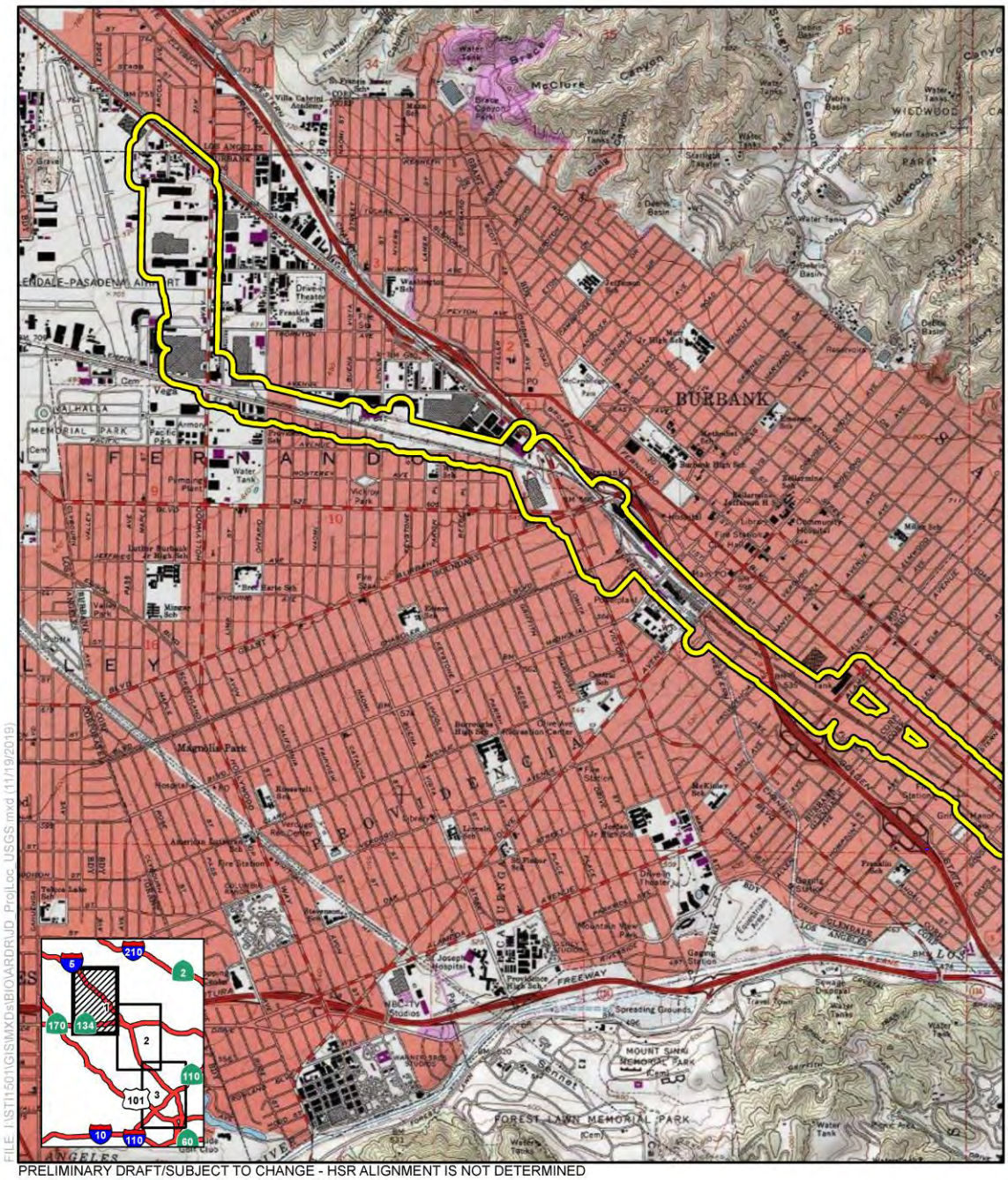
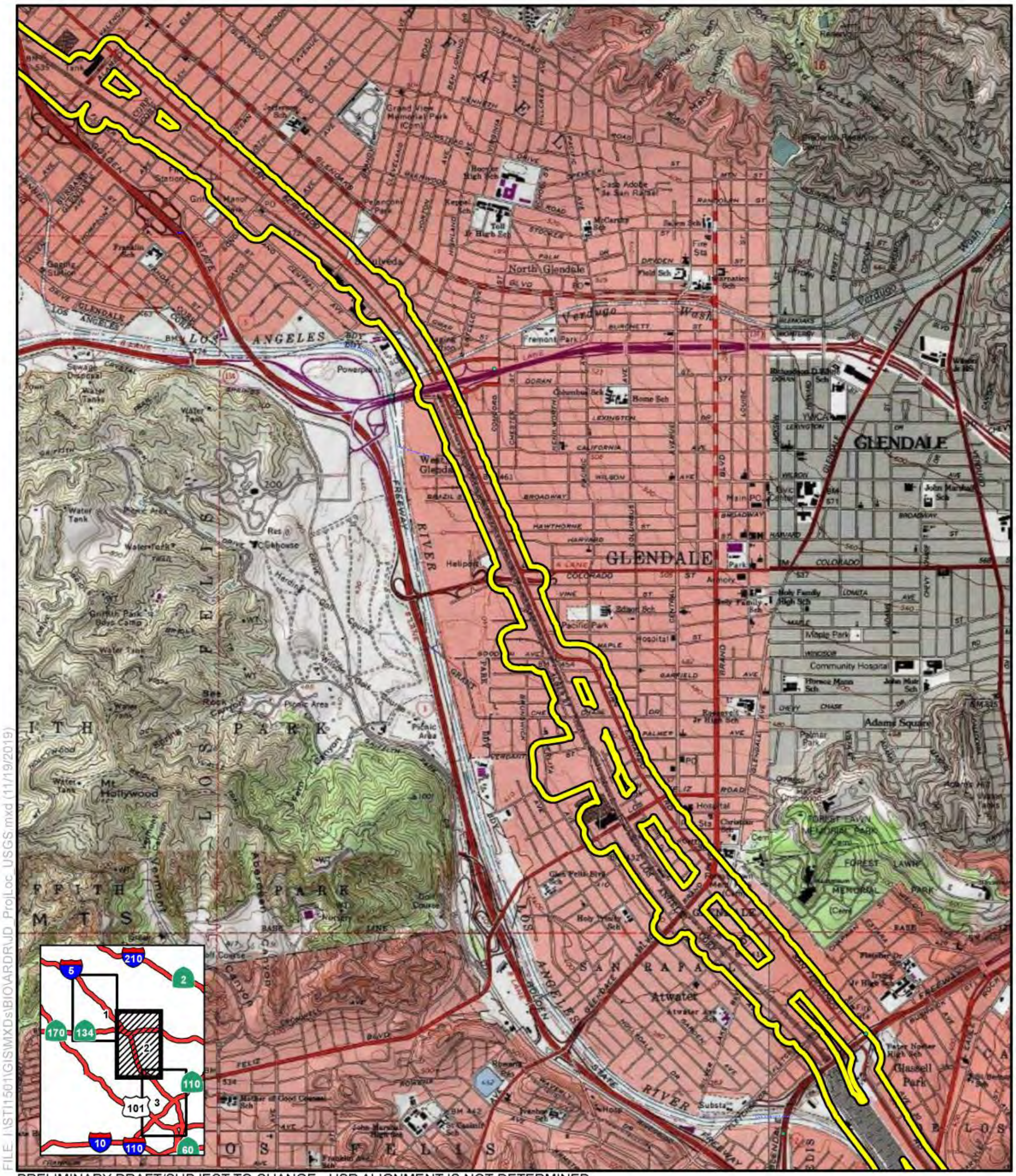


Figure 2-1 Project Location

(Page 1 of 3)



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: USA Topo Maps (2018); CHSRA (11/2019)

Resource Study Area

N

0 1,750 3,500
Feet

0 535 1,070
Meters

Figure 2-1 Project Location

(Page 2 of 3)

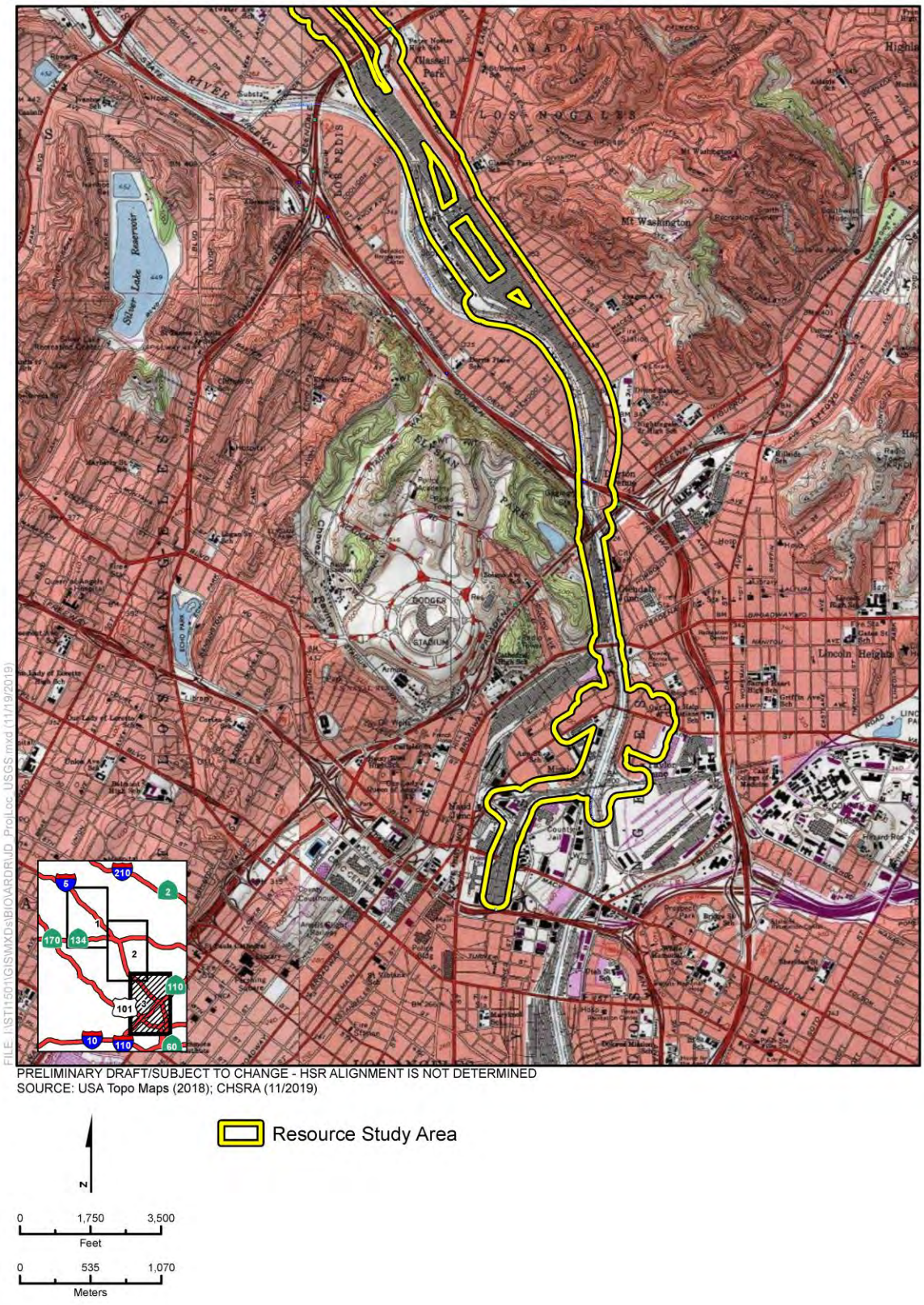


Figure 2-1 Project Location

(Page 3 of 3)

2.1.3.1 Riverine

The areas categorized by the NWI as Riverine within the RSA consist of concrete-lined freshwater drainages. These human-altered areas were identified within the Lockheed Channel, Burbank Western Channel, Los Angeles River, Verdugo Wash, and Arroyo Seco, and typically lack vegetation due to the concrete lining and maintenance activities conducted by the USACE and local flood control jurisdictions.[6] Although the areas have been altered, the Los Angeles District of the USACE has previously asserted jurisdiction over the aquatic resources therein. Islands of sand, rock, or silt are occasionally found within the concrete channels and can be colonized by riparian plants that are covered during flood periods; however, the colonization is typically short-lived. These islands either shift position or are washed away during high-flow events.

2.1.3.2 Freshwater-Forested and Shrub Wetland

Freshwater-Forested and Shrub Wetland consists generally of riparian scrub habitat and occurs within distinct sections of the Los Angeles River, where the river has an earthen bottom, and within Verdugo Wash at its confluence with the Los Angeles River, where enough sediment has accumulated atop a concrete lining to support vegetation (USACE 2013). Dominant species in riparian scrub include mulefat (*Baccharis salicifolia*), willow (*Salix* spp.) trees, and Fremont's cottonwood (*Populus fremontii*). Occasionally, small stands of marsh species such as California bulrush (*Schoenoplectus californicus*) and cattails (*Typha* sp.) are interspersed with riparian scrub. Nonnative weedy species commonly observed included giant reed (*Arundo donax*), poison hemlock (*Conium maculatum*), and broad-leaved peppergrass (*Lepidium latifolium*). Much of the Freshwater-Forested and Shrub Wetland within the RSA is impacted by trash and other disturbances stemming from unauthorized access and pollution (homeless encampments, and urban runoff, etc.). Nonnative species components constitute approximately 25 percent of the vegetative cover within these areas.

2.1.3.3 Freshwater Emergent Wetland

Freshwater Emergent Wetland occurs in the Glendale Narrows area within the earthen-bottom sections of the Los Angeles River and at the confluence of Verdugo Wash with the Los Angeles River. This area of Verdugo Wash contains accumulated sediment on a concrete lining, which supports Freshwater Emergent Wetland. Species typically found in freshwater marsh habitat include California bulrush, cattails, nonnative smartweed (*Persicaria* sp.), and water speedwell (*Veronica anagallis-aquatica*). Much of the Freshwater Emergent Wetland within the RSA is impacted by trash and other disturbances stemming from unauthorized access and pollution (homeless encampments, and urban runoff, etc.), and is subject to shift or being washed away during high-flow events. Nonnative species components constitute up to 50 percent of the vegetative cover within these areas.

[6] 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 constructed 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 2017b), as well as the 2017 Nationwide Permits, General Conditions, District Engineer's Decision, Further Information, and Definitions (USACE 2017c). 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/.

2.2 Hydrology and Climate

2.2.1 Hydrology, Regional Conditions

The RSA is located within the Los Angeles River Hydrologic Unit, which drains a watershed of approximately 530,000 acres (824 square miles), as shown on Figure 2-2. Flows within the Los Angeles River Hydrologic Unit travel south to the Pacific Ocean in the City of Long Beach. The Los Angeles River begins where Arroyo Calabasas and Bell Creek converge in Canoga Park. The river travels about 51 miles, making its way east to Griffith Park and then heading south through the Glendale Narrows and past downtown Los Angeles, before emptying into Long Beach Harbor. There is a diverse pattern of land use in the Los Angeles River watershed. The upper portion (approximately 360 square miles) is covered by wildland (including National Forest) or open space, while the remaining watershed is highly developed with commercial, industrial, and residential uses. The river and most of its tributaries in the urbanized portions of the Los Angeles Basin have been channelized. The river is considered a flood damage reduction channel rather than a meandering natural river system; nearly all of its bed and banks are lined with concrete for approximately 37 of its 51 miles.

The Los Angeles River has been modified substantially for flood control purposes. With the exception of portions of a 7-mile area in the Glendale Narrows,[7] the entire river within the RSA has been lined with concrete. The upper reaches of the river carry urban runoff and flood flows from the San Fernando Valley. Below the Sepulveda Basin, flows are dominated by tertiary treated effluent from several municipal wastewater treatment plants. Because the watershed is highly urbanized, urban runoff and illegal dumping are major contributors to impaired water in the Los Angeles River and its tributaries (Verdugo Wash, etc.).

2.2.2 Climate and Precipitation Data

Los Angeles County is typically dry during the late spring, summer, and early fall and receives most of its rain during the winter months (November through April). The average precipitation in Los Angeles between 1877 and the first half of 2018 was 14.70 inches per year; however, several seasons of very high rainfall levels skews this average upwards (Los Angeles Almanac 2019).

The Los Angeles River has flooded approximately 30 times since 1811. However, there are fluctuations in annual precipitation within the Los Angeles Basin and the region experiences periods of drought followed by periods of above-average rainfall, which led to the river's channelization in the 1930s. The river flooded every year between 1889 and 1891 and flooded five times from 1941 to 1944. Conversely, from 1896 to 1914, and again from 1945 to 1969, the river did not have serious floods (County of Los Angeles 2014). Large floods occur approximately every 5 to 6 years in the City of Los Angeles (City of Los Angeles 2018). Figure 2-3 shows the Federal Emergency Management Agency flood and hazard zones in the RSA.

[7] Due to high groundwater levels in this portion of the Los Angeles River, the USACE did not pave this area.

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: NatGeo (2018); CalWater (11/2004); CHSRA (11/2019)

FILE: I:\ST\1501\GIS\MXDs\BIO\ARDR\JD_Watersheds.mxd (11/19/2019)

Figure 2-2 Watersheds and Surface Waters

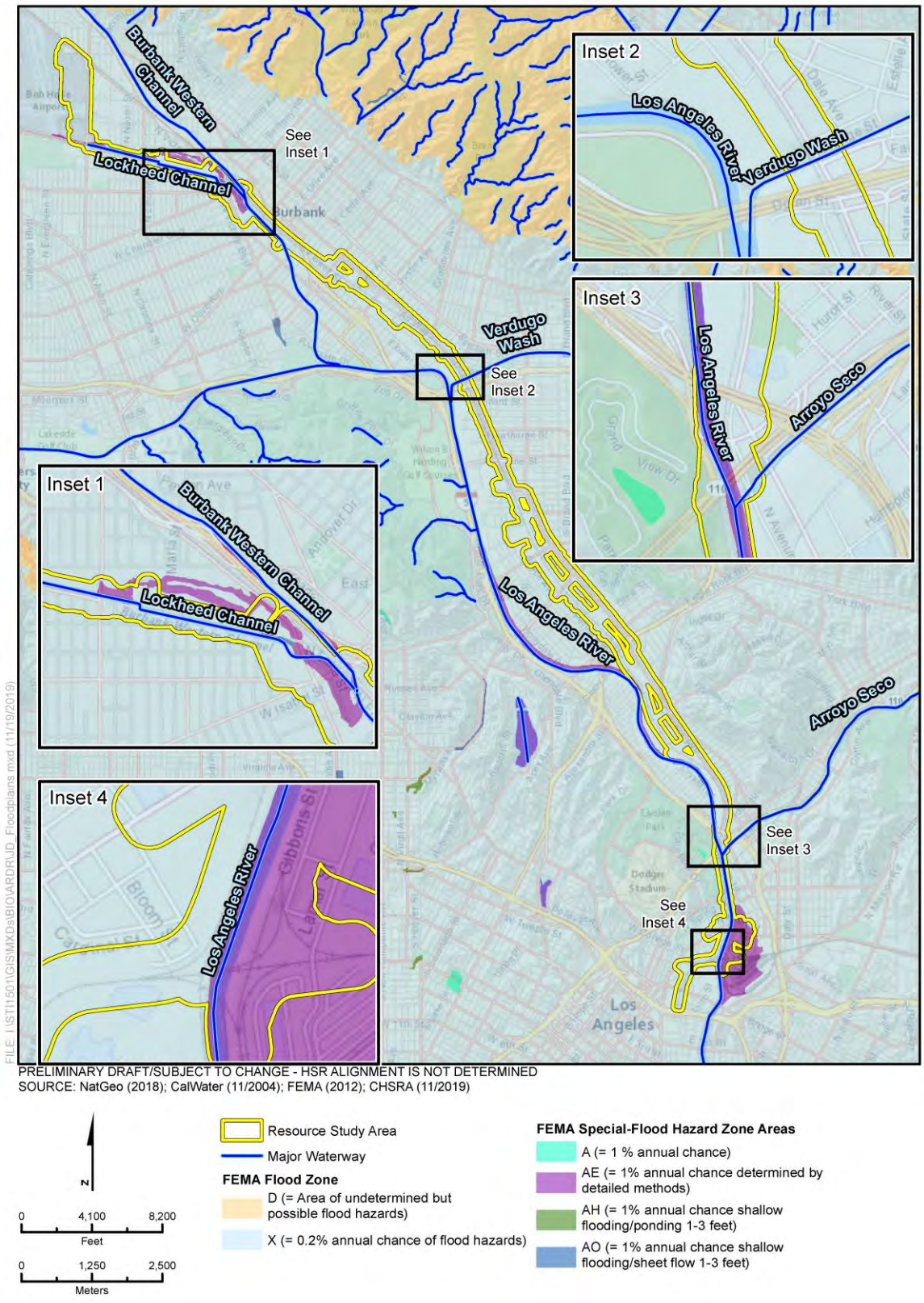


Figure 2-3 Floodplains

2.3 Soils

Descriptions of each soil series and subtype identified within the RSA are contained in the subsections below and summarized in Table 2-1, using the Official Soil Series Descriptions from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service.[8] Soils identified within the RSA are shown on Figure 2-4.

Table 2-1 Overview of Soils Identified Within the Resource Study Area

General Soil Map Unit (map symbol)	Geomorphic Surface	Primary Soil Classifications	Hydric Rating
Altamont	Sloping to steep uplands	Aridic Haploxerolls	No
Chino	Floodplains, basins	Aquic Haploxerolls	No
Hanford	Stream bottoms, floodplains, and alluvial fans	Typic Xerorthents	No
Ramona	Alluvial fans and terraces	Typic Haploxeralfs	No
Tujunga	Alluvial fans and floodplains	Typic Xeropsamments	No
Yolo	Nearly level to moderately sloping alluvial fans	Mollic Xerofluvents	No

2.3.1 Altamont Series

The Altamont series consists of deep, well-drained soils that formed in material weathered from fine-grained sandstone and shale. These soils are on gently sloping to very steep uplands. These soils are typically found in areas with average annual precipitation of about 17 inches, and the mean annual temperature of about 59 degrees Fahrenheit (°F). Typical vegetation is annual grasses, forbs, and scattered oak trees.

The RSA contains Altamont clay loam soils.

2.3.2 Chino Series

The Chino series consists of poorly to somewhat poorly drained soils typically occurring in basins and floodplains at elevations near sea level to 3,100 feet. They formed in alluvium derived from granitic rocks. The climate is dry subhumid mesothermal with hot, dry summers and cool, moist winters. These soils are typically found in areas with mean annual rainfall of 8 to 20 inches and mean annual temperature of 60 to 65°F. Drained areas are used for growing irrigated truck and row crops. Typical vegetation is annual grasses, weeds, and shrubs.

The RSA contains Chino silt loam soils.

2.3.3 Hanford Series

The Hanford series consists of very deep, well-drained soils that formed in moderately coarse textured alluvium predominantly from granite. Hanford soils are on stream bottoms, floodplains, and alluvial fans at elevations of 150 to 3,500 feet. Slopes range from 0 to 15 percent. These soils are typically found in areas with mean annual precipitation of about 12 inches and mean annual air temperature of about 63°F. Hanford soils are used for growing a wide range of fruits, vegetables, and general farm crops. They are also used for urban development and dairies. Vegetation in uncultivated areas is mainly annual grasses and associated herbaceous plants.

The RSA contains Hanford fine sandy loam and Hanford gravelly sandy loam soils.

[8] USDA NRCS Soil Survey Staff, Official Soil Series Descriptions. https://soilseries.sc.egov.usda.gov/ (last accessed December 2018).

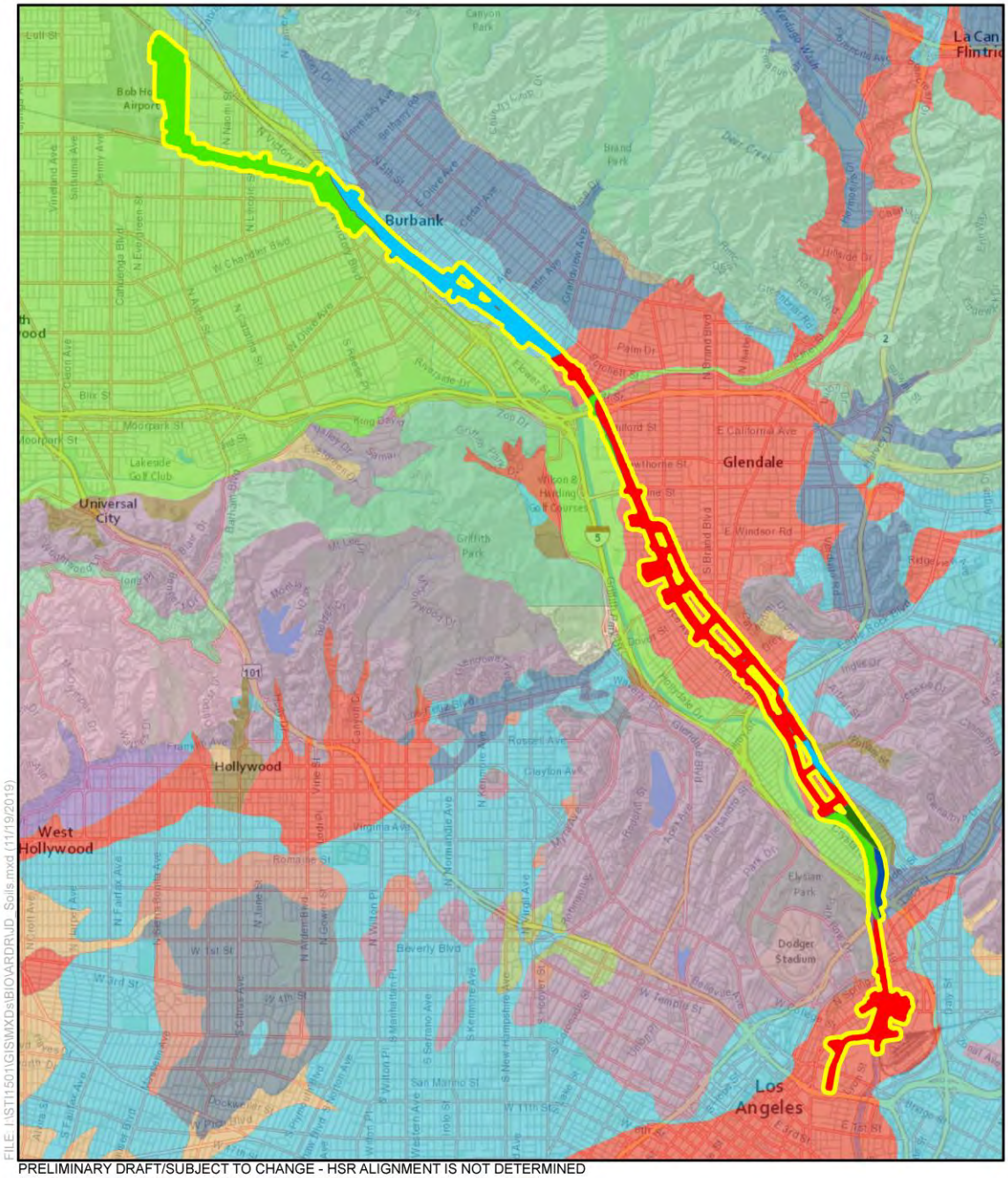


Figure 2-4 Soils

2.3.4 Ramona Series

The Ramona series consists of well-drained soils found on nearly level to moderately sloping terraces and fans at elevations of 250 to 3,500 feet. They formed in alluvium derived mostly from granitic and related rock sources. These soils are typically found where the climate is dry subhumid, mesothermal with warm, dry summers and cool, moist winters, mean annual precipitation of 10 to 20 inches, and average annual temperatures of 60 to 66°F. Uncultivated areas typically have a cover of annual grasses, forbs, chamise, or chaparral.

The RSA contains Ramona loam soils.

2.3.5 Tujunga Series

The Tujunga series consists of very deep, somewhat excessively drained soils that formed in alluvium from granitic sources. Tujunga soils are on alluvial fans and floodplains, including urban areas. Slopes range from 0 to 9 percent. These soils are typically found where the mean annual precipitation is about 14 inches and the mean annual temperature is about 63°F. Uncultivated areas have a cover of shrubs, annual grasses, and forbs. In urban areas, ornamentals and turf-grass are common.

The RSA contains Tujunga fine sandy loam soils.

2.3.6 Yolo Series

The Yolo series consists of well-drained soils found on nearly level to moderately sloping alluvial fans. The soils formed in fine-loamy alluvium derived from sedimentary formations. They are at elevations of near sea level to 2,400 feet in a dry subhumid, mesothermal climate having a mean annual rainfall of 12 to 40 inches and a mean annual temperature of about 58 to 63°F. The soil is used for intensive row, field, and orchard crops.

The RSA contains Yolo loam soils.

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3 METHODS

3.1 Pre-Survey Investigations

3.1.1 Aerial Imagery Mapping Methods

Prior to conducting the field work for this assessment, aerial imagery of the RSA (including aerial photographs from the years 1994, 2003, 2007, 2009, 2012, and 2016), resources mapped by the NWI, soils survey data mapped by the USDA, climate and precipitation data, and prior HSR delineation reports were reviewed to identify specific areas of potential jurisdiction for further investigation during the field survey.

3.2 Field Survey Methods

Areas of potential jurisdiction in the RSA were evaluated according to USACE criteria. The boundaries of the potential jurisdictional areas were observed in the field and mapped on a series of aerial photographs (each with a scale of 1 inch = approximately 300 feet), which together show the entire RSA. Permission to enter restricted parcels was not granted prior to the initial field surveys, but was obtained for subsequent field work. Areas that were inaccessible by foot or due to lack of permission to enter were visually assessed from the nearest accessible public right-of-way. Aerial photographs of inaccessible areas were also used to verify the presence or absence of potential jurisdictional areas. Measurements of federal jurisdictional areas mapped during the course of the field investigation were determined by a combination of direct measurements taken in the field and measurements taken from the aerial photographs.

3.2.1 Reconnaissance-Level Field Surveys

Reconnaissance-level field surveys were conducted by biologists Blake Selna and Erin Martinelli on February 25, March 24, and August 22, 2016. These field surveys confirmed the presence of potential wetlands identified by the NWI and during the aerial imagery search. Mr. Selna and Ms. Martinelli drove and walked the RSA within public right-of-way areas and investigated potentially jurisdictional areas with permission to enter from the USACE. Representative photographs of water features are in Appendix C, Aquatic Resource Delineation Photographs.

3.2.2 Field Delineation Methods

Areas mapped by the NWI as wetland were confirmed by further investigation in the field. Two representative sample areas were selected and examined in the field in order to confirm their status as mapped by the NWI. The locations of the sample areas and the potential jurisdictional areas are shown on figures in Appendix B. The sample areas were evaluated according to routine wetland delineation procedures described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008) and other guidance published by USACE for the Arid West Region, as well as the Federal Interagency Committee for Wetland Delineation (1989). At each sample area, the dominant and subdominant plant species were identified and their wetland indicator status was noted according the National Wetland Plant List (Lichvar et al. 2016). When possible and when justified, a small sample pit (approximately 24 inches deep) was dug to examine soil characteristics and composition. Soil matrix colors were classified according to the Munsell Soil Color Charts (Munsell Color 2000). Hydrological conditions, including any surface inundation, saturated soils, and/or other wetland hydrology indicators, were noted. General site characteristics were also noted. Wetland Determination Data Forms for each of the two sample areas are included in Appendix D.

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4 RESULTS

4.1 Wetlands in the Resource Study Area

The following two wetland types identified by the NWI were observed within the RSA: Freshwater-Forested and Shrub Wetland and Freshwater Emergent Wetland (Table 4-1). The Los Angeles River channel and Verdugo Wash at its confluence with the Los Angeles River contain sections in the RSA where there is an earthen bottom or where sufficient sediment has accumulated to support wetland waters of the U.S.

Table 4-1 Summary of Aquatic Resources Within the Resource Study Area

Waters Type	Acreage
Freshwater Emergent Wetland	
Los Angeles River	0.77
Verdugo Wash	0.58
Freshwater Forested/Shrub Wetland	
Los Angeles River	10.28
Verdugo Wash	0.45
Riverine	
Los Angeles River	50.11
Verdugo Wash	0.42
Arroyo Seco	0.41
Lockheed Channel	3.42
Burbank Western Channel	4.25
Total Acreage	70.69

The total acreage of wetland habitats within the RSA is 12.08 acres. These areas are classified by the NWI as Freshwater-Forested and Shrub Wetland and Freshwater Emergent Wetland (refer to Appendix A and Appendix B).

4.2 Nonwetland Waters in the Resource Study Area

The NWI categorizes areas within the Lockheed Channel, Burbank Western Channel, Los Angeles River, Verdugo Wash, and Arroyo Seco that lack vegetation and are concrete-lined as Riverine. The Los Angeles River generally runs parallel to the HSR project alignment throughout the RSA. Based on the findings presented in the July 6, 2010, letter from the USEPA Region IX Administrator to Colonel Mark Toy, P.E., the Los Angeles River has been designated a traditional navigable water from its origins at the confluence of Arroyo Calabasas and Bell Creek to San Pedro Bay at the Pacific Ocean, a distance of approximately 51 miles. The USEPA letter documents the CWA jurisdictional determination for the Los Angeles River based on a “special case” made by USEPA Region IX pursuant to the USEPA-USACE 1989 memorandum of agreement regarding coordination on matters of geographic jurisdiction. Therefore, the Los Angeles River is a jurisdictional water of the U.S. by rule. The Lockheed Channel, Burbank Western Channel, Verdugo Wash, and Arroyo Seco appear to have relatively permanent waters that flow directly into the Los Angeles River and are therefore jurisdictional waters of the U.S. by rule as tributaries. The Los Angeles River flows into the Pacific Ocean.

There are no waters subject to Section 10 of the Rivers and Harbors Act within the RSA, and no rivers in the RSA are designated as wild and scenic. The total acreage of nonwetland waters within the RSA is 58.61 acres. These areas are classified by the NWI as Riverine and are shown in Appendix A and Appendix B.

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5 SUMMARY

5.1 Jurisdictional Aquatic Resources

The total area of jurisdictional aquatic resources within the RSA is 70.69 acres, consisting of the following three classifications: Riverine (58.61 acres), Freshwater-Forested and Shrub Wetland (10.73 acres), and Freshwater Emergent Wetland (1.35 acres).

There are no Section 10 waters within the RSA. The proposed project will require Section 404 authorization from the USACE. Based on conversations with the USACE that took place in November 2016, the Verdugo Wash, Los Angeles River, Burbank Western Channel, and Lockheed Channel are USACE facilities, and any proposed alterations thereto are subject to Section 408 compliance. The total area of potential SWRCB jurisdiction is coincident with the USACE jurisdictional areas under currently effective definitions, and the proposed project is expected to also require a Section 401 Water Quality Certification from the SWRCB. For a complete listing of aquatic resource regulations and other jurisdictional areas within the RSA, including resources protected under the California Fish and Game Code, see the *Burbank to Los Angeles Project Section: Biological and Aquatic Resources Technical Report* (Authority 2019).

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7 PREPARER QUALIFICATIONS

Blake Selna has a B.S. in Environmental and Resource Sciences and 18 years of experience in Southern California biological assessment and analysis. As a Principal Biologist at LSA, he manages LSA's Irvine and Riverside Natural Resources Group. Mr. Selna participated in the field reconnaissance and research, and oversaw and assisted with the preparation of this report.

Erin Martinelli has an M.S. and B.A. in Environmental Studies and 10 years of experience in Southern California biology. As a Senior Biologist at LSA, Ms. Martinelli assisted with the field reconnaissance and research and was the lead preparer of this report.

Bo Gould has a B.A. in Environmental Studies and Science and five years of experience in Southern California biology. As a Biologist at LSA, Mr. Gould assisted with the field reconnaissance and preparation of this report.

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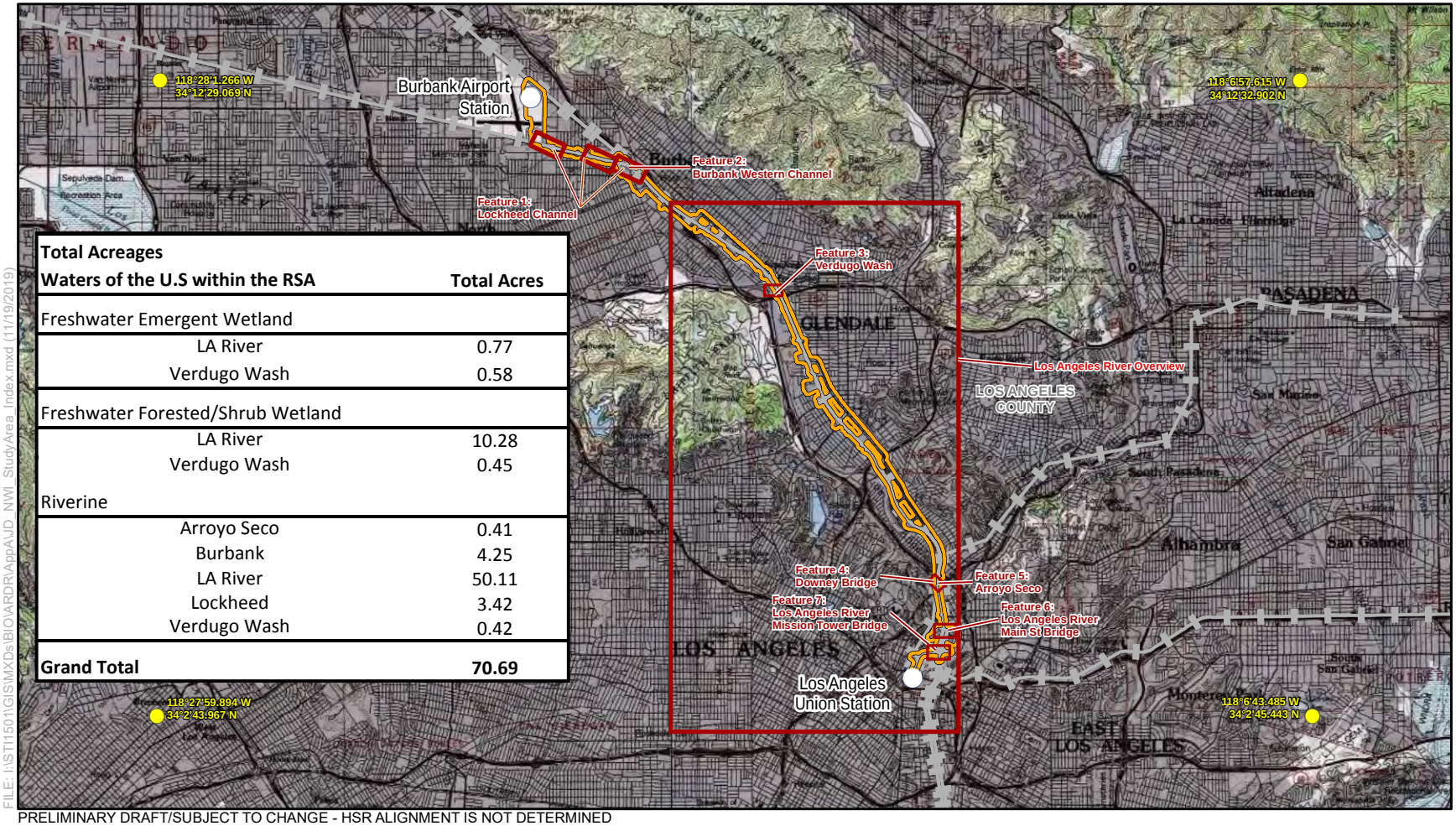
APPENDIX A: DELINEATED AQUATIC RESOURCES IN THE RESOURCE STUDY AREA AT EACH PROPOSED PROJECT FEATURE LOCATION



Total Acreages Waters of the U.S within the RSA	Total Acres
Freshwater Emergent Wetland	
LA River	0.77
Verdugo Wash	0.58
Freshwater Forested/Shrub Wetland	
LA River	10.28
Verdugo Wash	0.45
Riverine	
Arroyo Seco	0.41
Burbank	4.25
LA River	50.11
Lockheed	3.42
Verdugo Wash	0.42
Grand Total	**70.69**

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N

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Feet

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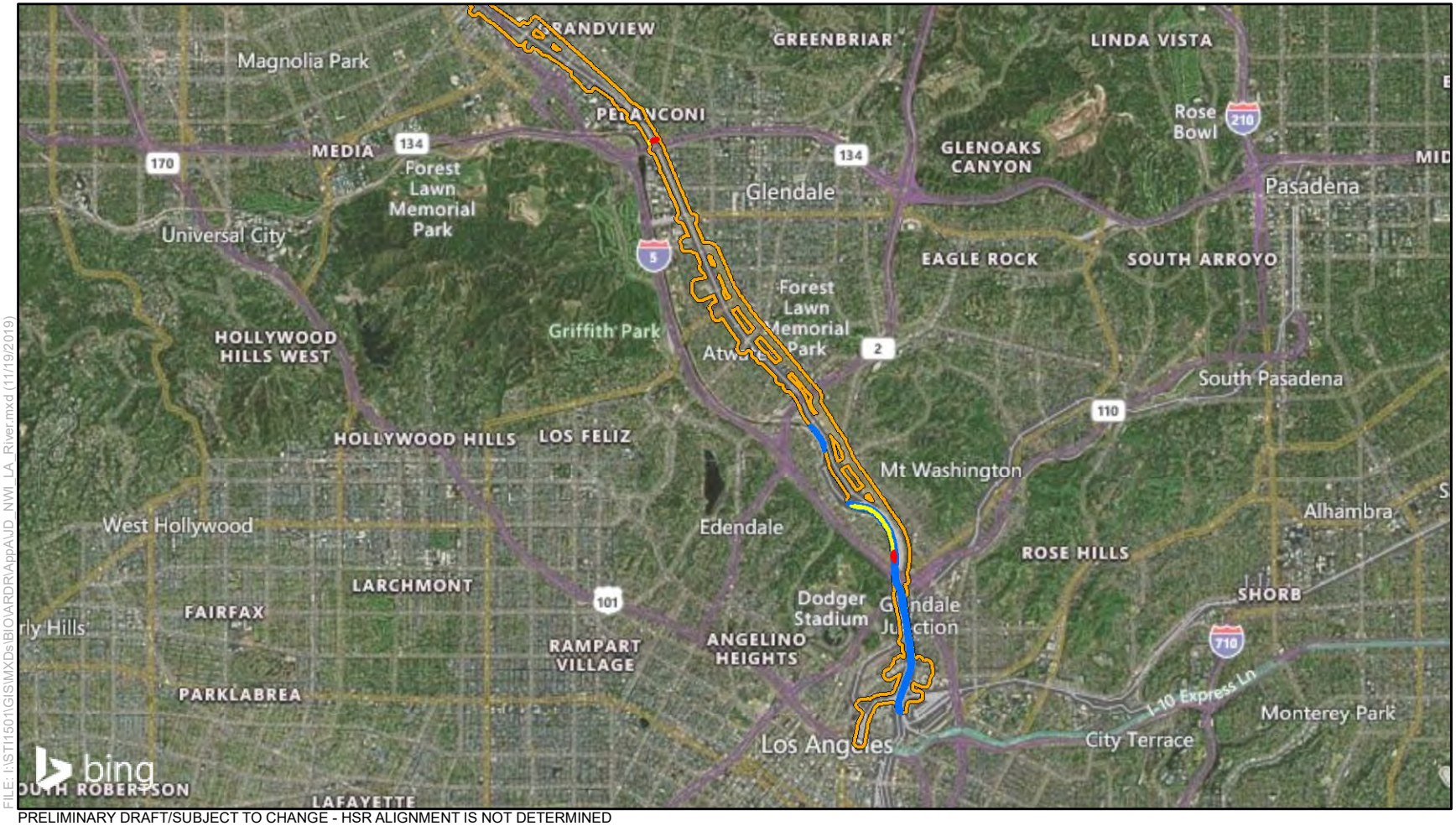
Meters

Resource Study Area
Metrolink Tracks
HSR Stations
Control Points

Appendix A
Sheet 1 of 9

Delineated Aquatic Resources in the Resource Study Area



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Feet

0 1,486 2,972
Meters

Resource Study Area
Los Angeles River
Waters of the U.S.
Riverine (50.11 ac)*
Freshwater Emergent Wetland (0.77 ac)*
Freshwater Forested/Shrub Wetland (10.28 ac)*

* Verdugo Wash acreages shown on sheet 5

Appendix A
Los Angeles River Overview
Sheet 2 of 9

Delineated Aquatic Resources in the Resource Study Area

FILE: I:\STI1501\GIS\MXDs\BIO\ARDR\AppA\Lockheed_Channel_Review.mxd (11/19/2019)

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SOURCE: Bing (2018); CHSRA (11/2019); NWI (2017)

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Feet

0 55 110
Meters

Resource Study Area

Existing Structures
- Existing Open Air Channel
- Existing Below Ground Channel

HSR Build Alternative
- Surface
- Below-Grade
- Realigned, Non-electrified Tracks

Non-Wetland Waters of the U.S.
- Riverine*

* Riverine acreages shown on sheet 1

Appendix A
Feature 1- Lockheed Channel
Feature 2 - Burbank Western Channel
Sheet 3 of 9
Delineated Aquatic Resources in the Resource Study Area

FILE: i:\STI1501\GIS\MXDs\BIO\ARDR\AppA\Lockheed_Channel_Review.mxd (11/19/2019)

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Bing (2018); CHSRA (11/2019); NWI (2017)

N

0 175 350
Feet

0 55 110
Meters

Resource Study Area

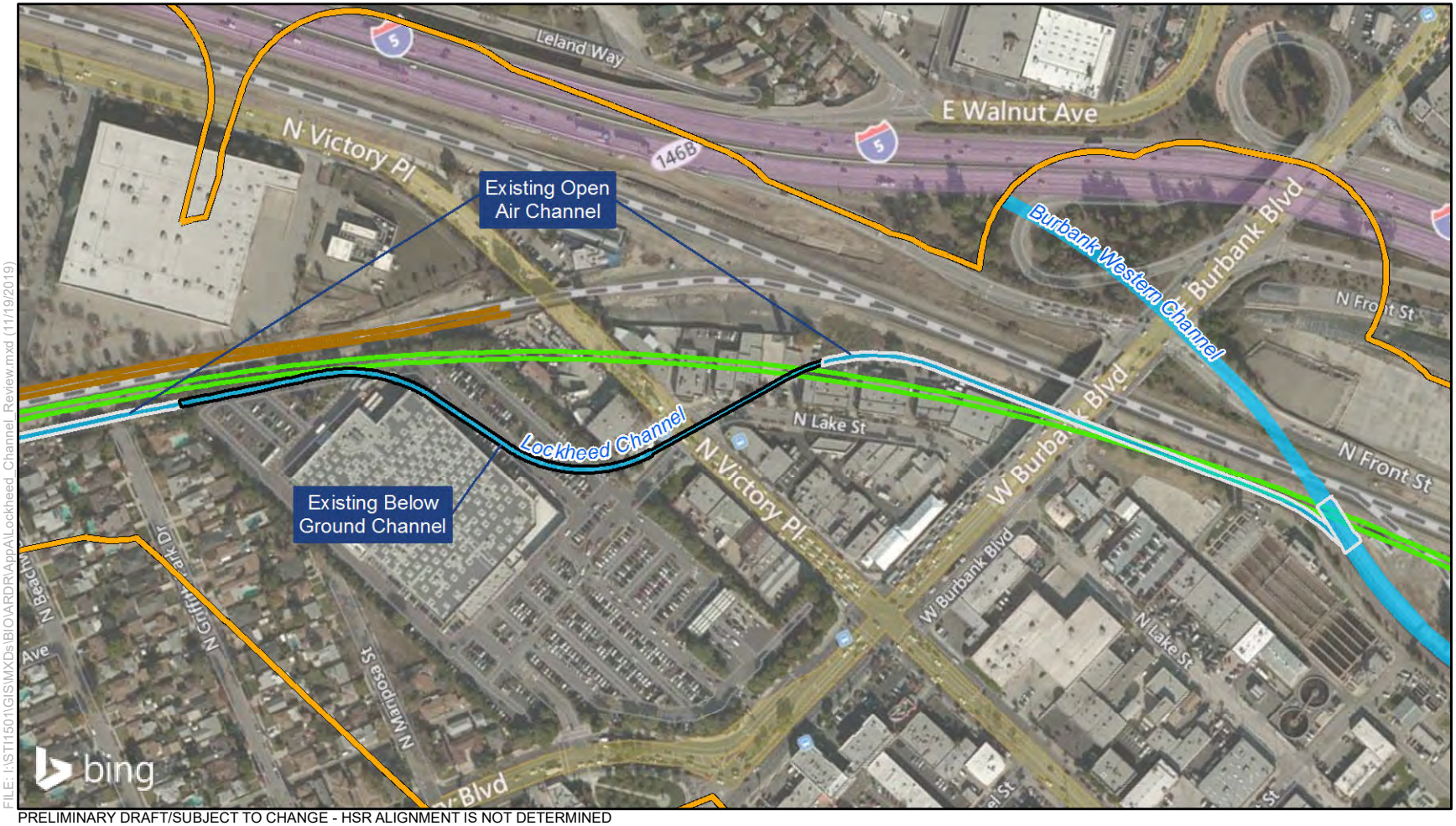
Existing Structures
- Existing Open Air Channel
- Existing Below Ground Channel

HSR Build Alternative
- Surface
- Below-Grade
- Realigned, Non-electrified Tracks

Non-Wetland Waters of the U.S.
- Riverine*

* Riverine acreages shown on sheet 1

Appendix A
Feature 1- Lockheed Channel
Feature 2 - Burbank Western Channel
Sheet 4 of 9
Delineated Aquatic Resources in the Resource Study Area



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SOURCE: Bing (2018); CHSRA (11/2019); NWI (2017)

N

0 175 350
Feet

0 55 110
Meters

Resource Study Area

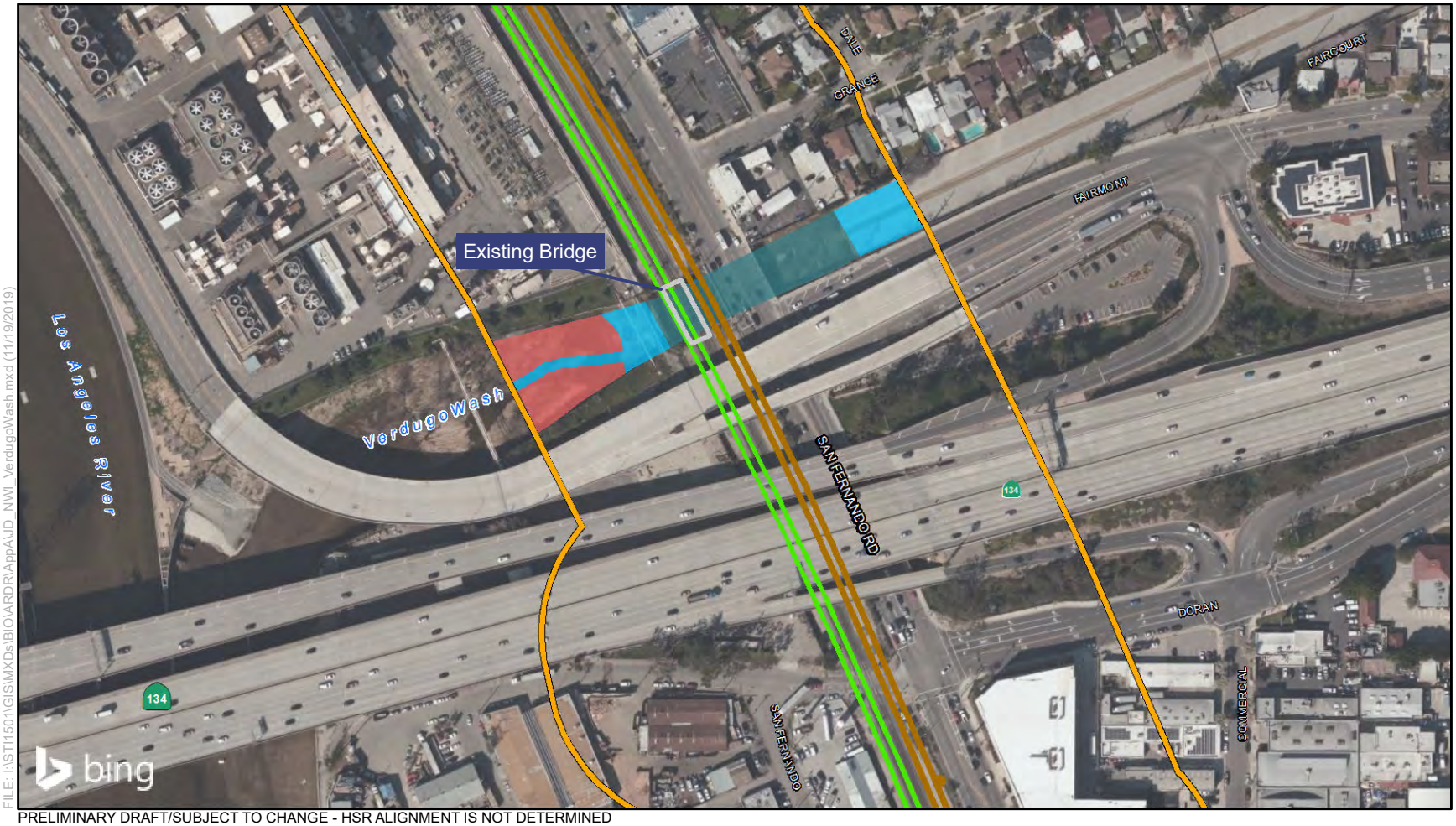
Existing Structures
- Existing Open Air Channel
- Existing Below Ground Channel

HSR Build Alternative
- Surface
- Below-Grade
- Realigned, Non-electrified Tracks

Non-Wetland Waters of the U.S.
- Riverine*

* Riverine acreages shown on sheet 1

Appendix A
Feature 1- Lockheed Channel
Feature 2 - Burbank Western Channel
Sheet 5 of 9
Delineated Aquatic Resources in the Resource Study Area



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N

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Feet

0 40 80
Meters

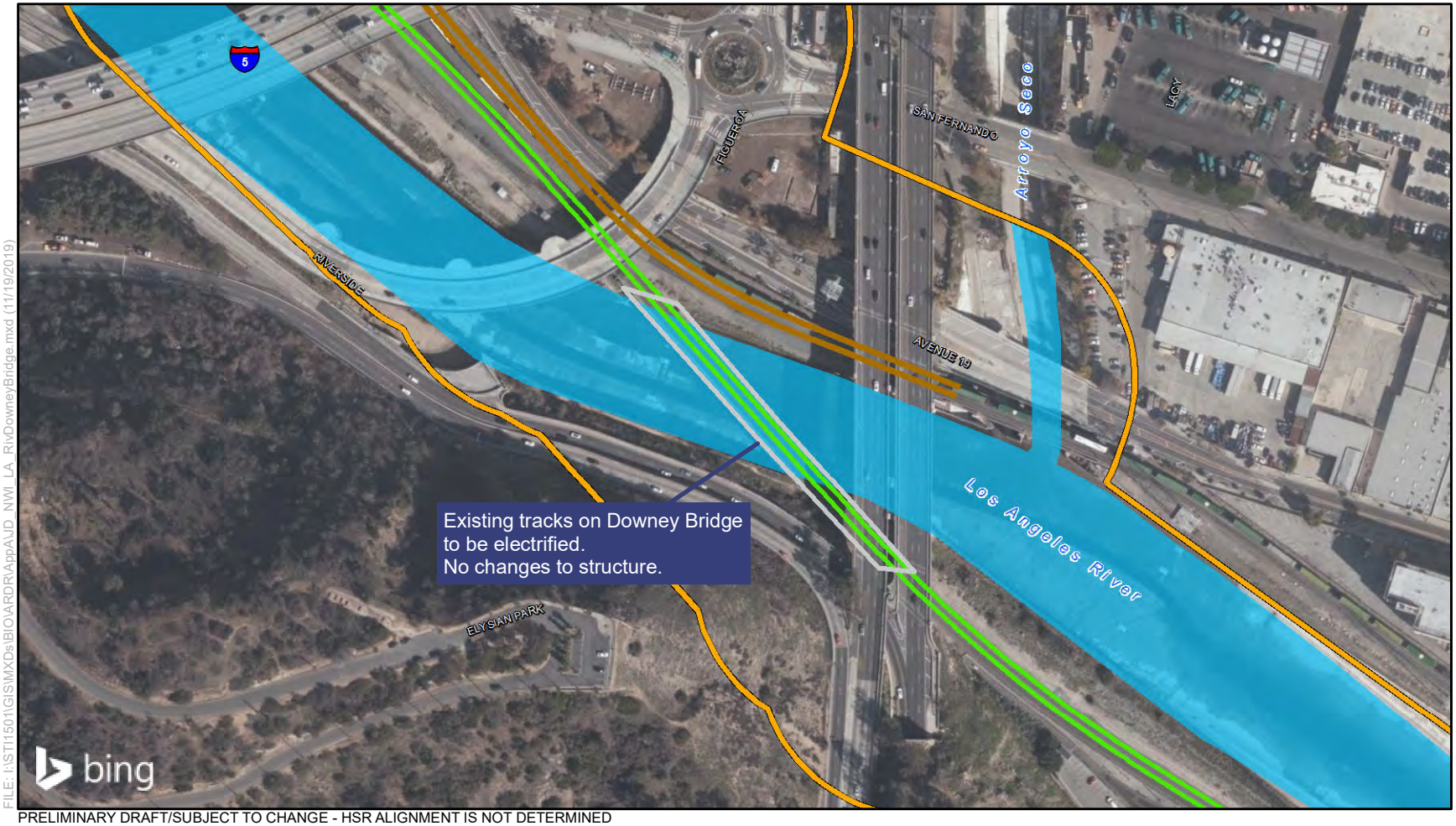
Resource Study Area
Existing Structure

Verdugo Wash
Potential Wetland Waters of the U.S.
Freshwater Forested/Shrub Wetland (0.45 ac)
Freshwater Emergent Wetland (0.58 ac)
Non-Wetland Waters of the U.S.
Riverine (0.42 ac)

Appendix A

Feature 3 - Verdugo Wash
Sheet 6 of 9

Delineated Aquatic Resources in the Resource Study Area



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SOURCE: Bing (2018); CHSRA (11/2019); NWI (2017)

N

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Feet

0 40 80
Meters

Resource Study Area
Existing Structure

HSR Build Alternative
Surface
Realigned, Non-electrified Tracks

Non-Wetland Waters of the U.S.
Riverine

Appendix A
Feature 4 - Downey Bridge
Feature 5 - Arroyo Seco
Sheet 7 of 9

Delineated Aquatic Resources
in the Resource Study Area

FILE: i:\STI1501\GIS\MXDs\BIO\ARDR\AppA\JD_NWI_MainStBridge.mxd (11/19/2019)

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Bing (2018); CHSRA (11/2019); NWI (2017)

N

0 125 250
Feet

0 40 80
Meters

Resource Study Area
Existing Structure
HSR Build Alternative
Surface

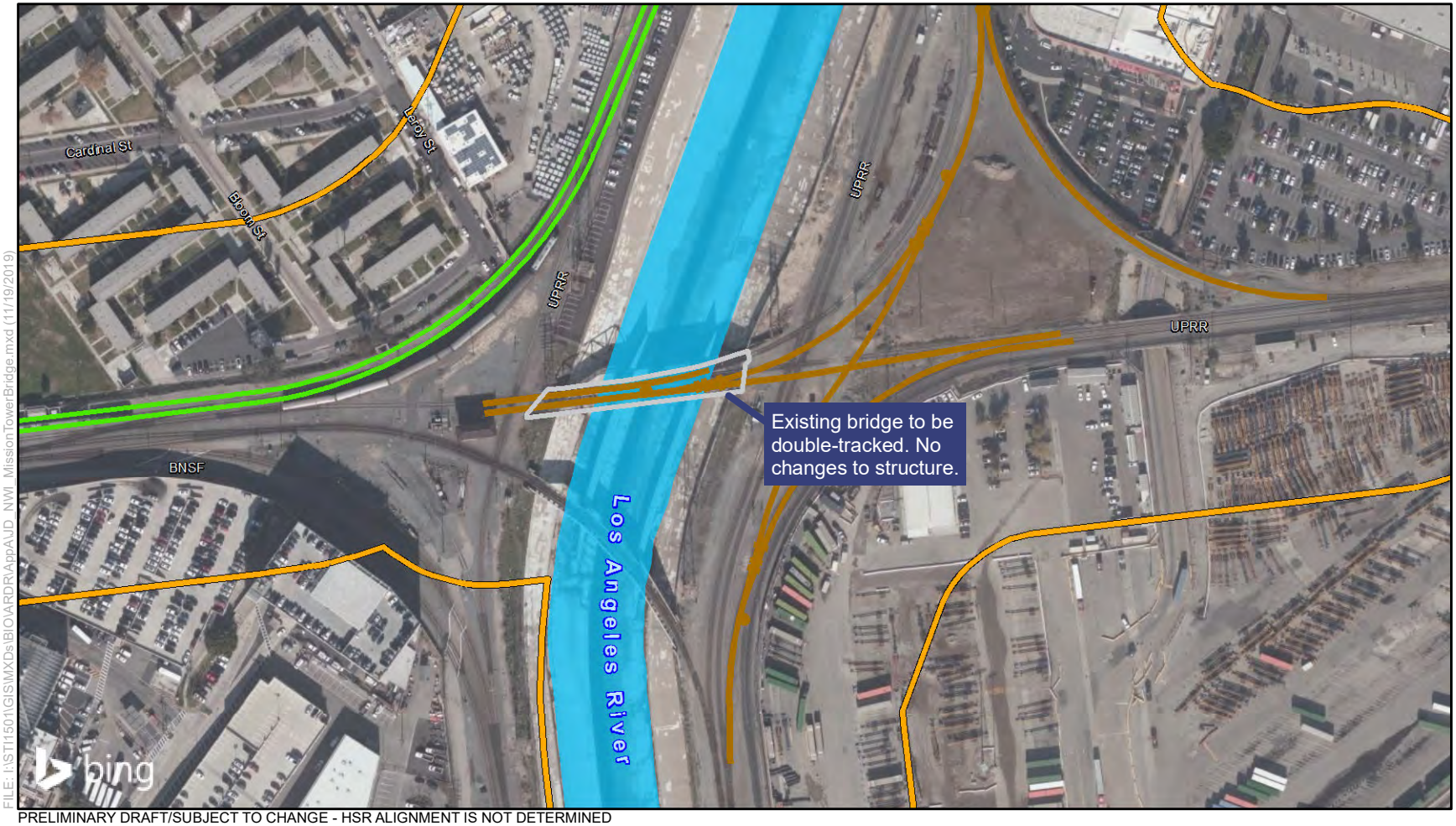
Non-Wetland Waters of the U.S.
Riverine*

* Riverine Acreage is Shown on Sheet 1

Appendix A

Feature 6 - Main St Bridge
Sheet 8 of 9

Delineated Aquatic Resources in the Resource Study Area



FILE: I:\STI1501\GIS\MXDs\BIO\ARDR\App\AJD_NWI_MissionTowerBridge.mxd (11/19/2019)

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Bing (2018); CHSRA (11/2019); NWI (2017)

N

0 125 250
Feet

0 40 80
Meters

Resource Study Area
Existing Structure

HSR Build Alternative
Surface
Realigned, Non-electrified Tracks

Non-Wetland Waters of the U.S.
Riverine*

* Riverine Acreage is Shown on Sheet 1

Appendix A
Feature 7 - Mission Tower Bridge
Sheet 9 of 9

Delineated Aquatic Resources in the Resource Study Area

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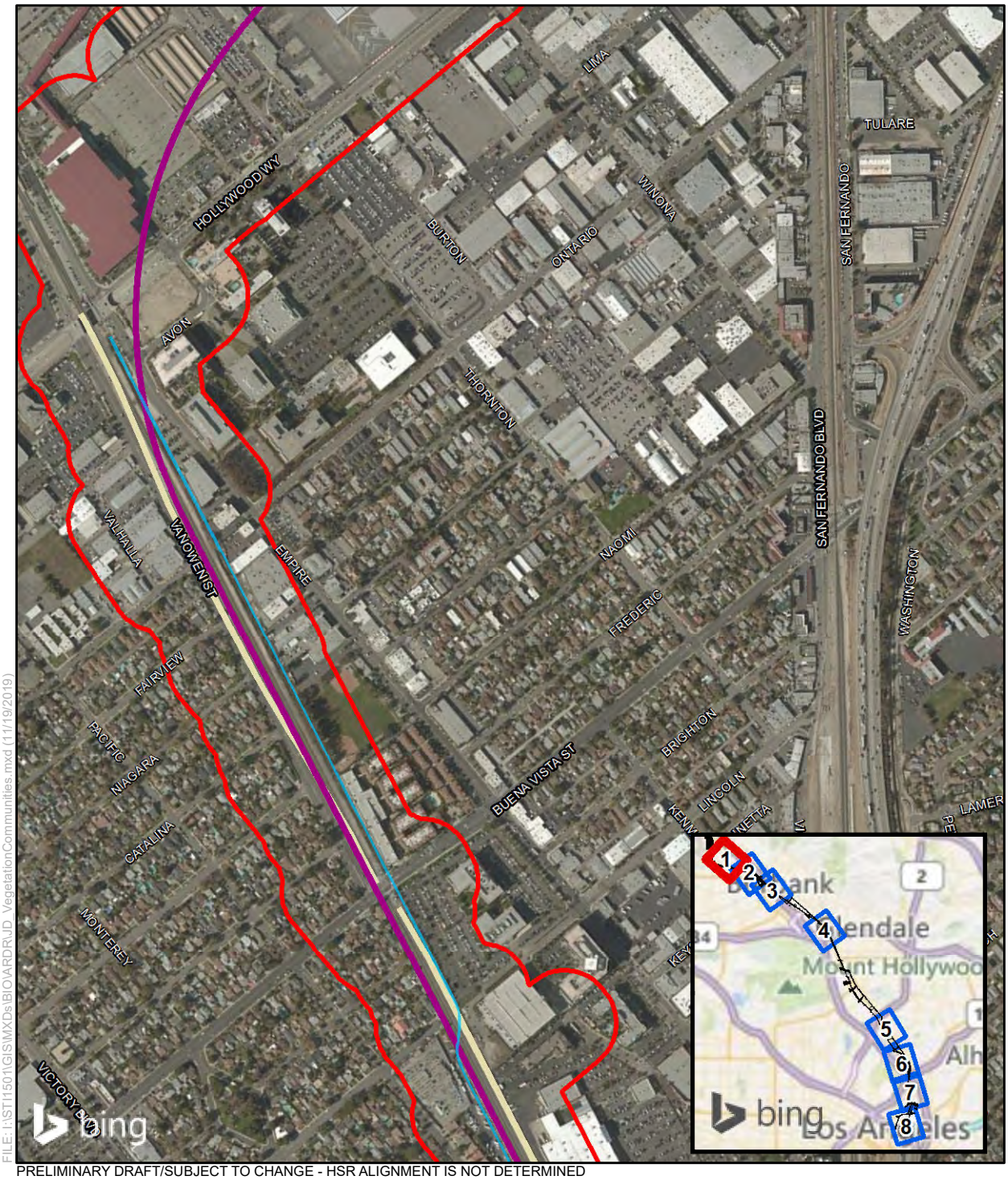
APPENDIX B: VEGETATION COMMUNITIES ASSOCIATED WITH AQUATIC RESOURCES WITHIN RESOURCE STUDY AREA



FILE: I:\ST11501\GIS\MXDs\BIO\ARDR\JD_VegetationCommunities.mxd (11/19/2019)

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Bing Maps (2018); CHSRA (11/2019); NWI (2017)

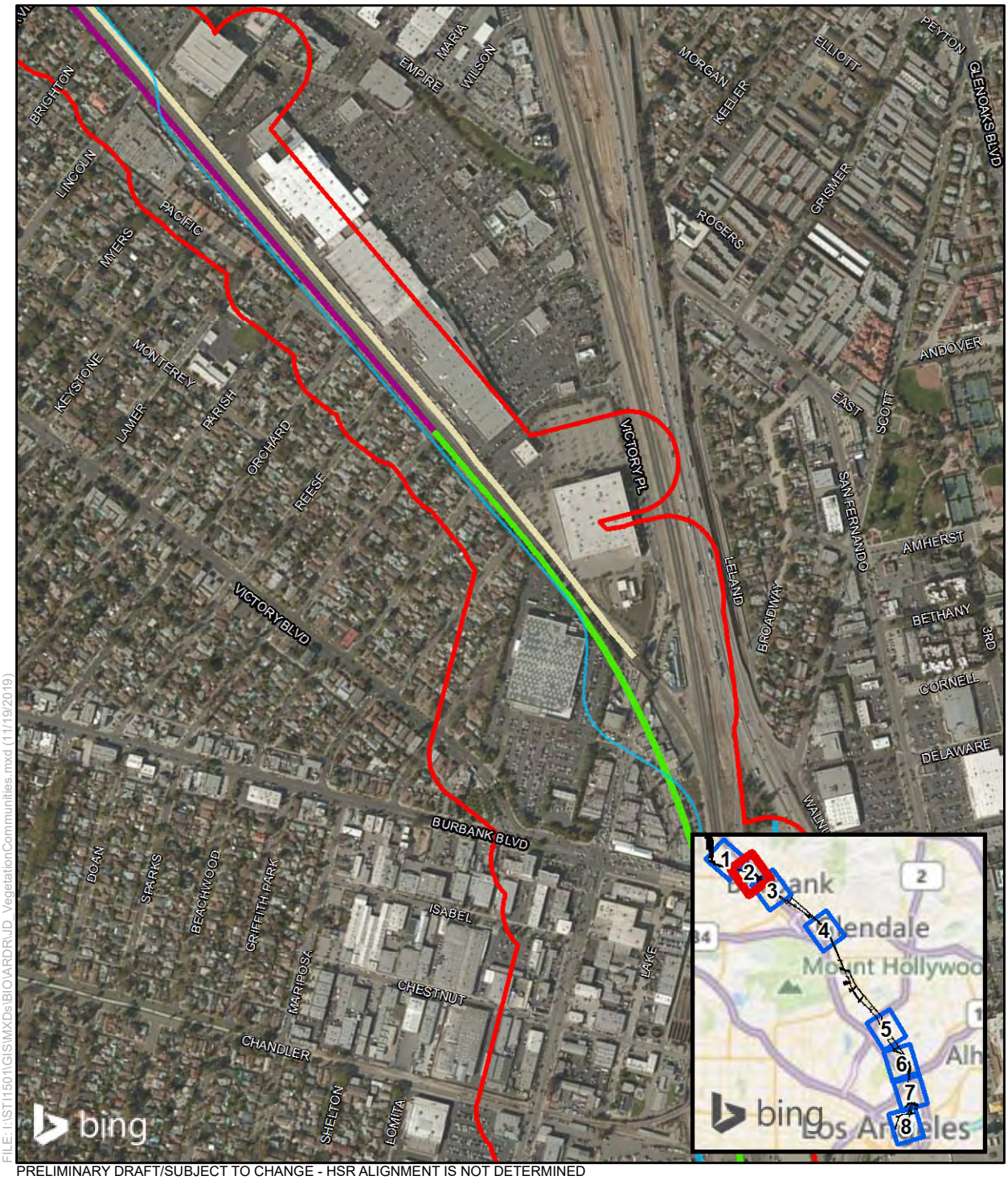
Resource Study Area
HSR Build Alternative
Below-grade
Realigned, Non-Electrified Tracks
Wetland Communities and Other Waters
Riverine

N

0 400 800
Feet

0 120 240
Meters

APPENDIX B
Sheet 1 of 8
Vegetation Communities Associated with Aquatic Resources within Resource Study Area



FILE: I:\ST11501\GIS\MXDs\BIO\ARDR\JD_VegetationCommunities.mxd (11/19/2019)

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Bing Maps (2018); CHSRA (11/2019); NWI (2017)

Resource Study Area
HSR Build Alternative
Surface
Below-grade
Realigned, Non-Electrified Tracks
Wetland Communities and Other Waters
Riverine

N

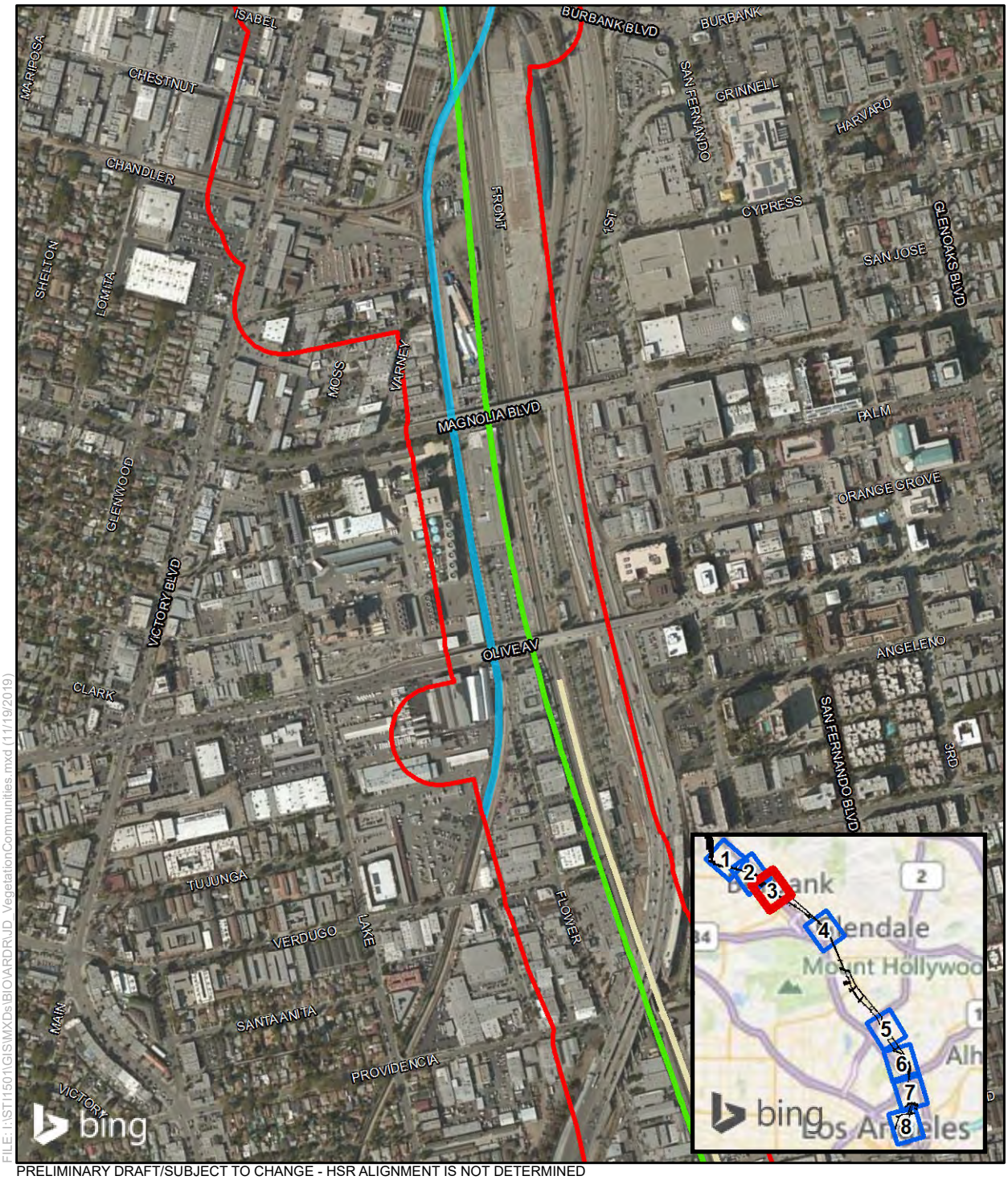
0 400 800
Feet

0 120 240
Meters

APPENDIX B

Sheet 2 of 8

Vegetation Communities Associated with Aquatic Resources within Resource Study Area



FILE: I:\ST11501\GIS\MXDs\BIO\ARDR\JD_VegetationCommunities.mxd (11/19/2019)

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Bing Maps (2018); CHSRA (11/2019); NWI (2017)

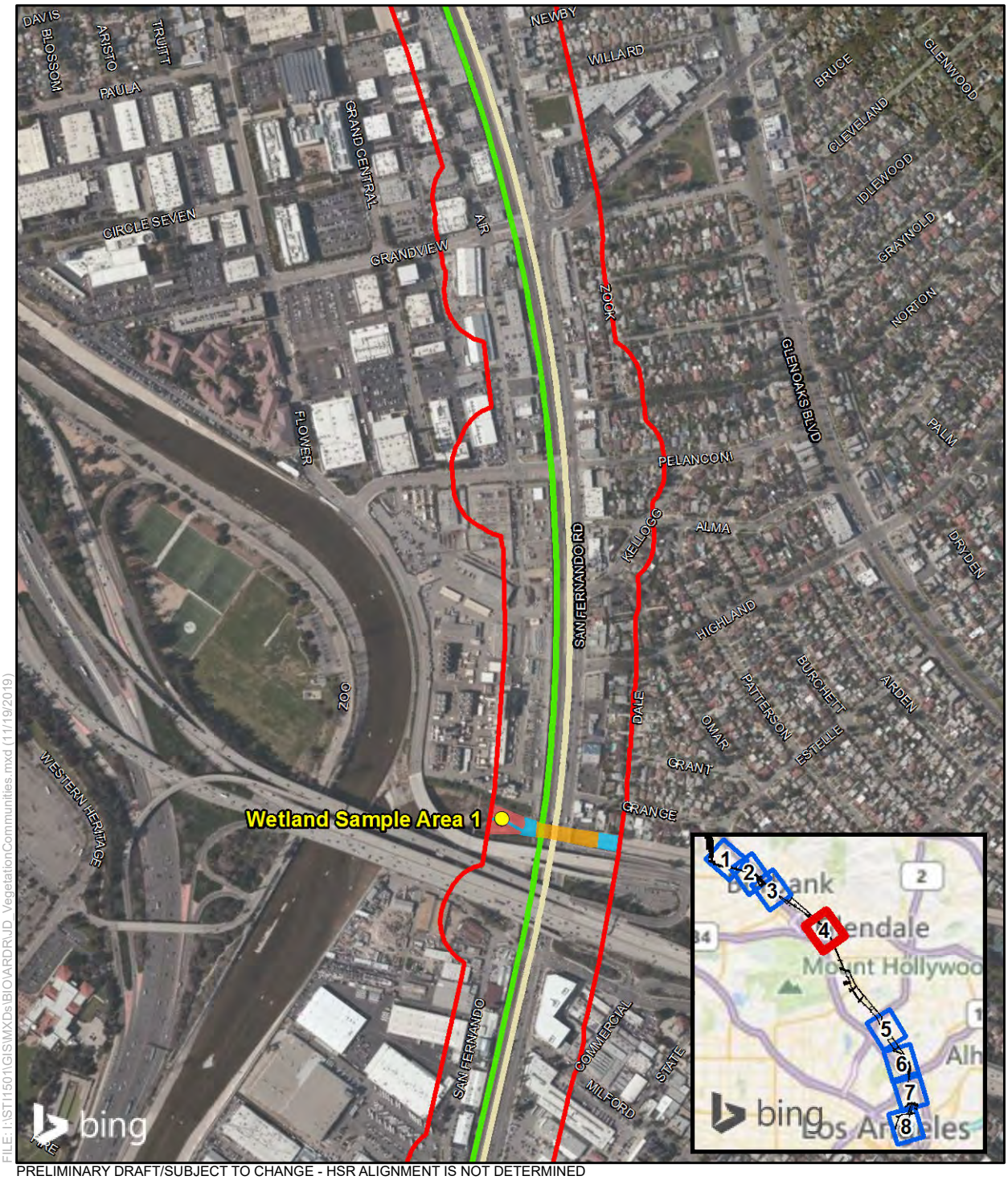
Resource Study Area
HSR Build Alternative
Surface
Realigned, Non-Electrified Tracks
Wetland Communities and Other Waters
Riverine

N

0 400 800
Feet

0 120 240
Meters

APPENDIX B
Sheet 3 of 8
Vegetation Communities Associated with Aquatic Resources within Resource Study Area



FILE: I:\ST11501\GIS\MXDs\BIO\ARDR\JD_VegetationCommunities.mxd (11/19/2019)

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Bing Maps (2018); CHSRA (11/2019); NWI (2017)

Resource Study Area
HSR Build Alternative
Surface
Realigned, Non-Electrified Tracks
Wetland Communities and Other Waters
Riverine
Freshwater Forested/Shrub Wetland
Freshwater Emergent Wetland
Wetland Sample Area

N

0 400 800
Feet

0 120 240
Meters

APPENDIX B

Sheet 4 of 8

Vegetation Communities Associated with Aquatic Resources within Resource Study Area

FILE: I:\ST11501\GIS\MXDs\BIO\ARDR\JD_VegetationCommunities.mxd (11/19/2019)

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Bing Maps (2018); CHSRA (11/2019); NWI (2017)

Resource Study Area
HSR Build Alternative
Surface
Realigned, Non-Electrified Tracks
Wetland Communities and Other Waters
Riverine

N

0 400 800
Feet

0 120 240
Meters

APPENDIX B
Sheet 5 of 8
Vegetation Communities Associated with Aquatic Resources within Resource Study Area

FILE: I:\ST11501\GIS\MXDs\BIO\ARDR\JD_VegetationCommunities.mxd (11/19/2019)

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Bing Maps (2018); CHSRA (11/2019); NWI (2017)

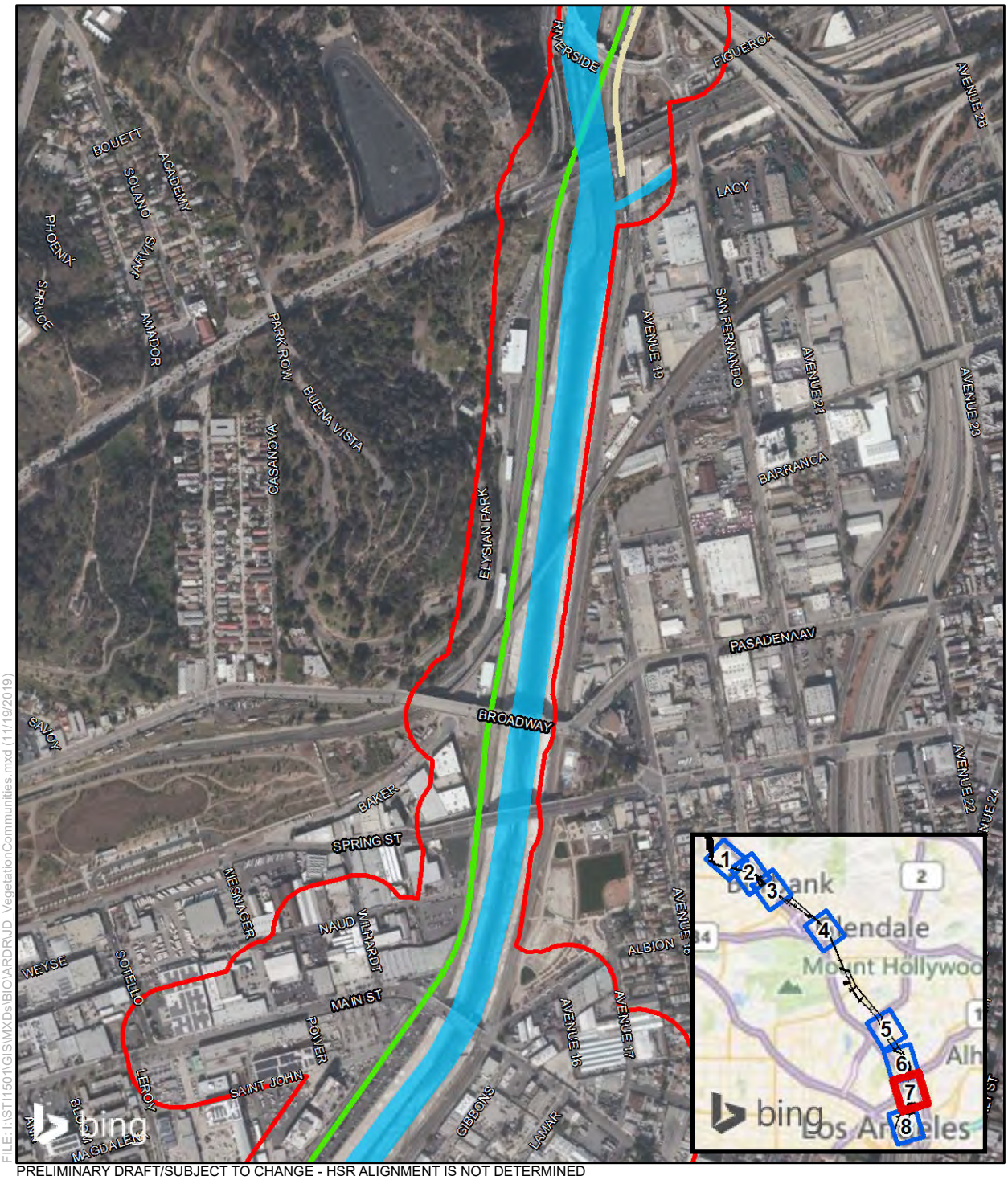
N

0 400 800
Feet

0 120 240
Meters

Resource Study Area
HSR Build Alternative
Surface
Realigned, Non-Electrified Tracks
Wetland Communities and Other Waters
Riverine
Freshwater Forested/Shrub Wetland
Freshwater Emergent Wetland
Wetland Sample Area

APPENDIX B
Sheet 6 of 8
Vegetation Communities Associated with Aquatic Resources within Resource Study Area



FILE: I:\ST11501\GIS\MXDs\BIO\ARDR\JD_VegetationCommunities.mxd (11/19/2019)

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Bing Maps (2018); CHSRA (11/2019); NWI (2017)

Resource Study Area
HSR Build Alternative
Surface
Realigned, Non-Electrified Tracks
Wetland Communities and Other Waters
Riverine

N

0 400 800
Feet

0 120 240
Meters

APPENDIX B
Sheet 7 of 8
Vegetation Communities Associated with Aquatic Resources within Resource Study Area

FILE: I:\ST11501\GIS\MXDs\BIO\ARDR\JD_VegetationCommunities.mxd (11/19/2019)

PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
SOURCE: Bing Maps (2018); CHSRA (11/19/2019); NWI (2017)

Resource Study Area
HSR Build Alternative
Surface
Realigned, Non-Electrified Tracks
Wetland Communities and Other Waters
Riverine

N

0 400 800
Feet

0 120 240
Meters

APPENDIX B
Sheet 8 of 8
Vegetation Communities Associated with Aquatic Resources within Resource Study Area

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APPENDIX C: AQUATIC RESOURCE DELINEATION PHOTOGRAPHS

View looking west from within an open portion of the Lockheed Channel near N Griffith Park Drive.

View looking north at the Lockheed Channel's confluence with the Burbank Western Channel. Photo taken south of the confluence from within an open portion of the Burbank Western Channel.

February 14, 2017

Appendix C
Aquatic Resource Delineation Photographs

View upstream of the Verdugo Wash from San Fernando Road, showing unvegetated concrete channel.

View upstream of the Verdugo Wash from Flower Street, showing areas of Freshwater Emergent Wetland and Freshwater-Forested and Shrub Wetland.

February 14, 2017

Appendix C
Aquatic Resource Delineation Photographs

View of Freshwater-Forested/Shrub Wetland in Verdugo Wash.

View downstream of the Los Angeles River in the Elysian Valley area, showing Freshwater-Forested and Shrub Wetland vegetation.

February 14, 2017

Appendix C
Aquatic Resource Delineation Photographs

View south from Riverside Drive showing the existing Downey Bridge.

View east of Arroyo Seco Wash.

February 14, 2017

Appendix C
Aquatic Resource Delineation Photographs

View north from Main Street Bridge showing the area of the proposed Main Street Bridge.

View north from Cesar Chavez Avenue of Mission Tower Bridge and the proposed Metrolink Bridge location.

February 14, 2017

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APPENDIX D: WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Verdugo Wash at LA River City/County: Los Angeles/Los Angeles Sampling Date: 8/22/2016
Applicant/Owner: High Speed Rail Authority State: CA Sampling Point: 1
Investigator(s): Blake Selna and Erin Martinelli Section, Township, Range: Land Grant: San Rafael
Landform (hillslope, terrace, etc.): River bottom Local relief (concave, convex, none): Concave Slope (%): 2
Subregion (LRR): California Lat: 34° 09' 16.2690"N Long: 118°16' 37.5360"W Datum: NAD83
Soil Map Unit Name: CA696 NWI classification: Freshwater Forested-Shrub Wetland
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Apparent wetland occurs in an area of accumulated sediment on concrete-lined drainage at the confluence of Verdugo Wash with the Los Angeles River.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix gooddingii	40	Yes	FACW
2.			
3.			
4.			
	40 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Ricinus communus	5	No	FACU
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Arundo donax	20	Yes	FACW
2. Typha sp.	25	Yes	OBL
3. Sorghum halepense	5	No	FACU
4. Cynodon dactylon	5	No	FACU
5.			
6.			
7.			
8.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

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

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 25	x 1 = 25
FACW species 60	x 2 = 120
FAC species 0	x 3 = 0
FACU species 15	x 4 = 60
UPL species 0	x 5 = 0
Column Totals: 100 (A)	205 (B)

Prevalence Index = B/A = 2.05

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

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

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: 1

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

Depth (inches)	Matrix Color (moist)	%	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 Presumed No _____

Remarks:

Could not access site to dig soil sample pit, However, wetland soils are presumed to be present based on evident vegetation and hydrology 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:

Inundation is visible from vantage point a few hundred feet away. Observation during dry weather.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LA River sand bar near Elmgrove St. City/County: Los Angeles / Los Angeles Sampling Date: 8/22/2016
Applicant/Owner: High Speed Rail Authority State: CA Sampling Point: 2
Investigator(s): Blake Selna and Erin Martinelli Section, Township, Range: Land Grant; City Lands of Los Angeles
Landform (hillslope, terrace, etc.): River bottom Local relief (concave, convex, none): Concave Slope (%): 2
Subregion (LRR): California Lat: 34° 05' 18.8630" N Long: 118° 13' 42.6230" W Datum:
Soil Map Unit Name: CA 696 NWI classification: Freshwater Forested-Shrub Wetland
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Sand bar area in Los Angeles River

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix goodingii	15	Yes	FACW
2.			
3.			
4.			
	15 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10 ft. radius)			
1. Ricinus communis	5	No	FACU
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 10 ft. radius)			
1. Arundo donax	5	Yes	FACW
2. Xanthium strumarium	25	Yes	FAC
3. Melilotus albus	10	No	UPL
4. Schoenoplectus americanus	14	Yes	OBL
5. Erigeron canadensis	1	No	FACU
6. Sorghum halepense	15	Yes	FACU
7. Verbena hastata	5	No	FAC
8.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	14	x 1 =	14
FACW species	20	x 2 =	40
FAC species	30	x 3 =	90
FACU species	21	x 4 =	84
UPL species	10	x 5 =	50
Column Totals:	95 (A)		278 (B)

Prevalence Index = B/A = 2.93

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:
The sample point was taken in an area of the Los Angeles River that has an earthen bottom and is mapped by the NWI as Freshwater Forested-Shrub Wetland. The River is completely concrete-lined approximately 5 miles upstream and approximately 1,500 feet downstream of the sample point.

SOIL

Sampling Point: 2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/3	50					Sand	
0-12	10YR 3/2	50					Sandy clay loam	
≥ 12	2.5Y 2.5/1	100					Clay 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: _____

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:

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