4.8 Hydrology and Water Quality

4.8.1 Introduction

This section presents an analysis of the hydrology and water quality impacts of the proposed Project. The potential impacts of construction and operation of the proposed Project on hydrology and water quality are evaluated based on the adequacy of existing and planned infrastructure and the additional hydrology and water quality demands created by the proposed Project.

4.8.2 Environmental Setting

4.8.2.1 Regulatory Framework

4.8.2.1.1 Hydrology

Federal

Clean Water Act Section 402 – National Pollutant Discharge Elimination System (33 U.S.C. 1342 and 40 CFR 122)

The National Pollutant Discharge Elimination System (NPDES) establishes a permitting system for the discharge of any pollutant (except dredge or fill material) into waters of the United States. An NPDES permit is required for discharges subject to Section 402 of the Clean Water Act (CWA; U.S. Code of Regulations [U.S.C.] Title 33, Section 1342 and Code of Federal Regulations [CFR] Title 40, Section 122). CWA Section 402(p) requires that stormwater management programs be developed and implemented to meet the requirements for stormwater discharges from municipal separate storm sewer systems (MS4s). Stormwater management programs limit to the maximum extent practicable (MEP) the discharge of pollutants from storm sewer systems. A single state agency or a coalition, often consisting of more than one municipality (such as cities and counties), may implement these programs. Each program includes best management practices (BMPs) intended to reduce the quantity and improve the quality of stormwater discharged to the stormwater system. Discharges to storm sewer systems must comply with the stormwater management program requirements. The United States Environmental Protection Agency (USEPA), Region IX, has also issued detailed guidelines for implementation of federal anti-degradation regulations for surface waters (40 CFR 131.12). Regionally and/or locally, agencies have developed the criteria for a Standard Urban Storm Water Mitigation Plan (SUSMP) to meet the requirements of 40 CFR 131.12. The SUSMP serves as a model guidance document in selecting post-construction BMPs and in obtaining municipal approval for urban storm water runoff mitigation plans for subject projects.[1]

[1] City of Los Angeles, LAX Master Plan EIS/EIR 6. Hydrology and Water Quality Technical Report, 2001.

State

State Water Resources Control Board Order No. 2009-0009-DWQ/ NPDES Permit No. CAS000002 - NPDES General Permit for Stormwater Discharges Associated with Construction Activities (GCP)

The State Water Resources Control Board (SWRCB) allocates water rights; adjudicates water rights disputes; develops statewide water protection plans; establishes water quality standards, and guides the nine Regional Water Quality Control Boards (RWQCBs) in the major watersheds of the state. Agencies are required to notify the California Department of Fish and Wildlife (CDFW) prior to implementing any project that would divert, obstruct, or change the natural flow or bed, channel, or bank of any river, stream, or lake.

The SWRCB adopted a General Construction Permit (GCP) on September 2, 2009 for projects that disturb one or more acres of soil or that disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres. Projects are required to obtain coverage under the GCP for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 2009-0009-DWQ). The permit became effective on July 1, 2010. All dischargers are required to obtain coverage under this GCP, including discharges associated with clearing, grading and disturbances to the ground such as stockpiling, or excavation. The GCP requires the analysis of risk based on the soil characteristics that covers the project area, the receiving water risk (beneficial uses), and any impaired water bodies for sediment. The selection of BMPs is based on the project's overall risk assessment. Projects that exceed 30 acres will be required to conduct biological assessment monitoring before and after construction of the project.

The GCP also requires the development and implementation of a site specific Storm Water Pollution Prevention Plan (SWPPP). The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list BMPs that the discharger will use to protect stormwater runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the CWA 303(d) list of impaired waterways for sediment.

The SWPPP is required to include a Rain Event Action Plan (REAP) to cover the project site throughout the rainy season(s). Project applicants are required to submit a copy of the project documents (i.e. SWPPP, Notice of Intent [NOI], Risk Assessments, etc.) to the Stormwater Multi-Application, Reporting, and Tracking System (SMARTS).

Currently, all projects located outside of a Phase I MS4 permitted jurisdiction that do not require a permanent water quality management plan are required to provide permanent water quality BMPs in the SWPPP. The required measures include Low Impact Development design and water conservation practices.

California Water Plan

Last updated in 2009, the California Water Plan provides strategic water planning, involving stakeholders from all levels of government, as well as tribes and local organizations. The California Water Plan develops objectives, actions, and goals for water resource management, conservation, sustainability, and development. The California Water Plan is a resource to

prepare for emergency situations as well as for identifying opportunities and challenges regarding water resources.[2]

Local

Los Angeles RWQCB Order No. R4-2012-0175/NPDES No. CAS004001

The Los Angeles RWQCB (LARWQCB) Order No. R4-2012-0175 provides waste discharge requirements for municipal storm water and urban runoff discharges within the County of Los Angeles and the incorporated cities therein, except the City of Long Beach.[3] The NPDES MS4 Permit covers an area of approximately 3,000 square miles and serves a population of about 9.8 million (2010 Census). The County of Los Angeles and 84 incorporated cities are the listed permittees. The Los Angeles County municipal stormwater NPDES Permit contains a requirement for permittees to develop and implement programs for stormwater management. One specific requirement from the LARWQCB Development Planning Model Program is to develop a SUSMP. The SUSMP serves as a model guidance document for use by builders, land developers, engineers, planners, and others in selecting post-construction BMPs and in obtaining municipal approval for the urban storm water runoff mitigation plan for a designated project prior to the issuing of building and grading permits.

Order R4-2012-0175 includes prohibitions on non-stormwater discharges, effluent limitations, and receiving water limitations. Effluent limitations include Technology Based Effluent Limitations to reduce pollutants in storm water discharges from the MS4s to the MEP and Water Quality-Based Effluent Limitations (WQBELs) consistent with the assumptions and requirements of all available Total Maximum Daily Load (TMDL) waste load allocations assigned to discharges from the Los Angeles County MS4.

LARWQCB Order No. R4-2008-0032/NPDES No. CAG994004

The LARWQCB Board Order No. R4-2008-0032 regulates discharges of groundwater from construction dewatering to surface waters. The discharge of ground water from ground water dewatering to surface waters is a discharge of waste that could affect the quality of receiving waters in the Los Angeles Region. Discharges covered under this permit include treated or untreated groundwater generated from permanent or temporary dewatering operations or other appropriate wastewater discharge not specifically covered in other general NPDES permits. This permit also covers discharges from dewatering operations in the vicinity of creeks where surface waters and groundwaters are hydrologically connected and have similar water chemistry. This permit includes TMDLs for metals, nutrients, and other toxic pollutants that have been developed for various watersheds in Los Angeles and Ventura County Watersheds. Title 40 CFR 122.28 provides for the issuance of general permits to regulate discharges of waste which are generated from similar sources.

Stormwater Low Impact Development (LID) Ordinance

In 2011, the City of Los Angeles Board of Public Works approved the Stormwater LID Ordinance amending Section 64.70.01 and Section 64.72 of Article 4.4 of Chapter VI of the City of Los Angeles Municipal Code to impose rainwater LID strategies on projects requiring building

[2] California Natural Resources Agency, Department of Water Resources (DWR), California Water Plan Highlights, 2009, p. 12B, online at: http://www.waterplan.water.ca.gov/docs/cwpu2009/0310final/highlights_cwp2009_spread.pdf, accessed march 2013.

[3] Los Angeles Regional Water Quality Control Board, Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the City Of Long Beach MS4, December 5, 2012.

permits. The Stormwater LID Ordinance calls for development and redevelopment projects to mitigate runoff through rainwater capture methods and BMPs, such as rain barrels, permeable pavements, rainwater storage tanks, or infiltration swales. The Stormwater LID Ordinance requires 100 percent of rainwater from a three-quarter inch rainstorm to be completely captured, infiltrated, and/or used on site. If site constraints do not allow for LID strategies to be implemented, off-site mitigation or fee payment for off-site mitigation is allowed.[4]

LAX Industrial NDPES Permit and SWPPP

The existing Los Angeles International Airport (LAX) industrial NPDES permit includes an industrial SWPPP that is required of Los Angeles World Airports (LAWA) and LAX tenants because of the nature of industrial transportation facility activities at LAX, and encompasses the Project site.[5] The LAX Industrial SWPPP provides general stormwater plans, such as drainage system layout maps, descriptions of past and present potential sources of pollutants in its stormwater runoff and discharges, and identifies programs that will be implemented to address these runoff pollutants.[6]

4.8.2.1.2 Water Quality

Federal

Clean Water Act (33 U.S.C. 1251 *et seq.*)

The basis for the water quality permitting and regulations that are required by both federal and state agencies is found in the Federal Water Pollution Control Act Amendments of 1972, which in 1977 became the CWA. The CWA is the cornerstone of surface water quality protection in the United States. The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. Originally, the CWA provided the USEPA the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA is the primary federal law that sets water quality standards and protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The CWA made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions. The primary principle is that any discharge of pollutants into the nation's waters is prohibited unless specifically authorized by a permit. Permit review is the CWA's primary regulatory tool. The applicable sections of the CWA are further discussed below.

CWA Section 402 – NPDES (33 U.S.C. 1342 and 40 CFR 122)

This regulation is discussed above as part of the Regulatory Setting for Hydrology.

[4] City of Los Angeles, City of Los Angeles Municipal Code, Chapter VI Article 4.4 Section 64.70.01 and Section 64.72 as amended by Ordinance No.181899, 2011, online at: http://www.lastormwater.org/wp-content/files_mf/finallidordinance181899.pdf, accessed September 12, 2013.

[5] City of Los Angeles, Los Angeles World Airports, Storm Water Pollution Prevention Plan (SWPPP) and Storm Water Monitoring Program Plan (SWMPP) Associated with Industrial Activities 2011-2012, online at http://www.lawa.org/uploadedFiles/LAWA/pdf/LAX%20SWPPP%202011.pdf , accessed September 27, 2013,

[6] Additional information regarding the LAX SWPPP can be found in the LAX Master Plan EIR/EIS, Technical Report 6, Hydrology and Water Quality Technical Report

CWA Section 305(b) – Water Quality Impairments

Every two years, the SWRCB submits a report on the State's water quality to the USEPA pursuant to Section 305(b) of the CWA. The report provides water quality information to the general public and serves as the basis for USEPA's National Water Quality Inventory Report to Congress. The water quality impairments report includes the CWA Section 303(d) list, discussed below.

CWA Section 303(d) – Water Quality Limited Segments

The CWA Section 303(d) list is a list of water quality limited segments and impaired waters that do not meet or are expected not to meet state water quality standards as defined by Section 303(d). This list identifies impaired water bodies for which a TMDL for all pollution sources will be developed. A TMDL is a regulatory term in the CWA, describing a value of the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards.

State

Porter-Cologne Water Quality Act (California Water Code §13000 *et seq*.)

The Porter-Cologne Water Quality Act functions as a state version of the CWA. The Porter-Cologne Water Quality Act requires projects that are discharging or proposing to discharge wastes that could affect the quality of the state's water to file a Report of Waste Discharge (ROWD) with the SWRCB or the appropriate RWQCB. SWRCB and/or RWQCBs regulate the discharge of waste to waters of the state through issuance of NPDES permits or WDRs. The Porter-Cologne Water Quality Act is implemented by the SWRCB and the nine RWQCBs. The SWRCB and the RWQCBs implement the permit provisions (Section 402), as well as certain planning provisions (sections 205, 208, and 303) of the CWA. The Porter-Cologne Water Quality Act also provides for the development and periodic reviews of basin plans that designate beneficial uses of California's major rivers and groundwater basins and establish water quality objectives for those waters. Basin plans are primarily implemented by using NPDES permits or WDRs to regulate waste discharges to ensure that water quality objectives are protected. This means that the state issues one discharge permit for purposes of both state and federal law. Under state law, the permit is officially called waste discharge requirement. Under federal law, the permit is officially called a NPDES permit.

SWRCB Anti-Degradation Policy (Resolution No. 68-16)

The SWRCB Anti-Degradation Policy states that whenever the existing quality of water is better than the quality established in policies (as of the date on which such policies become effective), such existing high quality will be maintained. Water quality is required to be maintained until it has been demonstrated to the state that any change will be consistent with maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial use of such water, and will not result in water quality less than that prescribed in the policies.

Any activity which produces or may produce waste or an increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet WDRs. WDRs are intended to result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the state will be maintained.

SWRCB Order No. 2009-0009-DWQ/ NPDES Permit No. CAS000002 - NPDES General Permit for Stormwater Discharges Associated with Construction Activities (GCP)

This regulation is discussed above as part of the Regulatory Setting for Hydrology.

California Ocean Plan

The California Ocean Plan was created to establish beneficial uses and associated water quality objectives for California's ocean waters and to provide a basis for regulation of waste discharged into coastal waters by point and non-point source discharges.

Local

LARWQCB Order No. R4-2012-0175/NPDES No. CAS004001

This regulation is discussed above as part of the Regulatory Setting for Hydrology.

LARWQCB Basin Plan

The LARWQCB Basin Plan and Policy applies to all waters of the Los Angeles Region (including surface waters, wetlands, and ground waters). This region includes Los Angeles County, Ventura County, and small portions of Kern County and Santa Barbara County.

LARWQCB Beneficial Uses

The LARWQCB Basin Plan identifies the following existing beneficial uses for Santa Monica Bay:

- Municipal and Domestic Supply;
- Industrial Service Supply;
- Industrial Process Supply;
- Agricultural Supply;
- Navigation;
- Commercial and Sport Fishing;
- Marine Habitat;
- Spawning, Reproduction, and/or Early Development (most frequently used grunion spawning beaches);
- Wildlife Habitat;
- Shellfish Harvesting; and
- Migration of Aquatic Organisms.

The Santa Monica Bay also has Water Contact Recreation as a potential beneficial use and Non-contact Water Recreation as an intermittent beneficial use.[7]

Water Quality Objectives

[7] Los Angeles Regional Water Quality Control Board, Water Quality Control Plan for the Los Angeles Region, June 1994, updated 2011, online at http://www.waterboards.ca.gov/rwqcb4/water_issues/programs/basin_plan/Beneficial_Uses/ch2/Revised%20Beneficial%20Use%20Tables.pdf.

The LARWQCB Basin Plan contains both numeric and narrative surface water quality objectives. The discharge of waste into receiving surface waters must not violate either of these objectives.[8]

Santa Monica Bay TMDL Program

A TMDL is a calculation of the maximum amount of a pollutant that a body of water can receive and still meet water quality standards. A total maximum daily load is determined by summing the individual pollutant point sources, nonpoint sources,[9] and natural background conditions while taking into account an appropriate margin of safety. Under Section 303(d) of the CWA,[10] States are required to identify a list of impaired waters, ranked by priority, each with calculated TMDLs for all sources of the pollutants that caused the water to be listed. Water bodies on the CWA Section 303(d) list require additional controls to maintain their established water quality standards. **Table 4.8-1** presents receiving waters on the 2010 CWA Section 303(d) List of Water Quality Limited Segments. Regulatory framework currently governing the TMDL program is contained in 40 CFR 130.7, issued in 1992. TMDL standards are regularly updated. While the NPDES program focuses on reducing the discharge of pollutants through BMPs, the TMDLs provide a quantitative analytical basis for controlling water quality.

The 303(d) listed waters that the Project site discharges to are Santa Monica Beach and Santa Monica Offshore/Nearshore. Santa Monica Bay is roughly defined as the embayment stretching eastward from Malibu in the north and Rancho Palos Verdes in the south.[11] The watershed that drains into the Santa Monica Bay is 414 square miles in size, and reaches from the Ventura-Los Angeles County line to the west as far as downtown Los Angeles to the east. The watershed begins as far north as the crest of the Santa Monica Mountains, and reaches south and east across the Los Angeles plain, ending in the south in a narrow area between Palos Verdes and Playa del Rey.[12] Santa Monica Beach is a 2010 Section 303(d) CWA Water Quality Limited Segment. According to the Santa Monica Bay's 2010 303(d) list, both non-point and point sources of pollution are degrading the Santa Monica Bay's water quality.[13] The TMDLs that have been completed and those in progress of being developed by the LARWQCB for Santa Monica Bay are also shown in **Table 4.8-1**. Santa Monica Beach has a TMDL for indicator bacteria approved in 2003. Santa Monica Offshore/Nearshore has multiple TMDLs that are under development: the now-banned pesticide DDT (tissue and Sediment), Debris, Fish Consumption Advisory, Polychlorinated biphenyls (PCBs), and Sediment Toxicity.

[8] Los Angeles Regional Water Quality Control Board, Water Quality Control Plan for the Los Angeles Region, June 1994, updated 2011.

[9] Discharges originating from single sources, like power and wastewater treatment plants, are referred to as point source discharges, while stormwater and/or urban runoff are non-point sources of water pollution since their origins cannot be attributed to a single identifiable source.

[10] 33 U.S.C. §1251 et seq. section 303(d), 1972

[11] California State Water Resources Control Board, Impaired Water Bodies 2010 Integrated Report, August 5, 2013, online at http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml, accessed October 2013.

[12] Los Angeles Regional Water Quality Control Board, State of the Watershed – Report on Water Quality, November 2011, p.p. 8,169, online at http://www.waterboards.ca.gov/rwqcb4/water_issues/programs/regional_program/wmi/ws_santamonica.shtml, accessed October 2013.

[13] California State Water Resources Control Board (SWRCB), 2010 Integrated Report (Clean Water Act Section 303(d) List/305(b) Report) Statewide, 2010 California 303(d) List of Water Quality Limited Segments, 2010, online at http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml, accessed February 5, 2012.

Table 4.8-1

2010 303(d) List of Water Quality Limited Segments

Receiving Water Body	Listing Details	Source	Status
Santa Monica Beach	Indicator Bacteria	Unspecified Nonpoint Source	USEPA TMDL approved in 2003
Santa Monica Offshore/ Nearshore	DDT (tissue and Sediment)	Unspecified Point and Nonpoint Source	Expected TMDL Completion in 2019
	Debris	Unspecified Point and Nonpoint Source	Expected TMDL Completion in 2019
	Fish Consumption Advisory. The Fish Consumption Advisory is due to DDT and PCBs.	Unspecified Point and Nonpoint Source	Expected TMDL Completion in 2019
	PCBs (Polychlorinated biphenyls) (tissue & sediment)	Unspecified Point and Nonpoint Source	Expected TMDL Completion in 2019
	Sediment Toxicity	Unspecified Point and Nonpoint Source	Expected TMDL Completion in 2019

Source: California 303(d) List Of Water Quality Limited Segments, 2010.

4.8.2.2 Existing Conditions

4.8.2.2.1 Hydrology

Surface Water

Overall Project Site

The analysis of Hydrology deals with different hydrological contexts like watershed, basin, sub-basin and sub-watershed. A watershed is a geographic area in which all water running off the land drains to a specific creek, river, or stream. Each region draining into a river system, creek or body of water has a watershed defined by topographic and hydrologic features that separate it from the adjoining watershed. A basin is a large-scale watershed, and sub-basins are smaller scale basins. Sub-watersheds are smaller watersheds, on the scale of a community. The Project site is located approximately 0.5-mile east of the Pacific Ocean and within the Santa Monica Bay Watershed Management Area. More specifically, the Project site is located in the El Segundo/LAX Area sub-watershed, an area of approximately 6,680 acres.[14] Within the vicinity of the Project site there are five surface water sub-basins: the Argo, Culver, Dominguez, Imperial, and Vista del Mar sub-basins (**Figure 4.8-1**). Average annual precipitation at LAX, including the

[14] Los Angeles Regional Water Quality Control Board, State of the Watershed – Report on Water Quality, November 2011, p.p. 8,169, online at http://www.waterboards.ca.gov/rwqcb4/water_issues/programs/regional_program/wmi/ws_santamonica.shtml, accessed October 2013.

Project site, is approximately 7.61 inches, which is lower than the long-term mean precipitation for the West Coast Basin of 12.64 inches.[15]

Surface water discharge from the Project site goes to both City of Los Angeles and County of Los Angeles flood control and drainage structures. Some individual drains that flow into the Santa Monica Bay are controlled by the County of Los Angeles. The remaining flood control structures and drainage facilities are controlled by the City of Los Angeles. The LARWQCB regulates the drains that flow into Santa Monica Bay.

The Project site is not located in a Federal Emergency Management Agency (FEMA)-designated floodplain.[16] The Project site is within the FEMA-designated Zone X, an "area of minimal flood hazard"[17] outside the agency's 0.2 percent annual chance floodplain. Therefore, no regulations or restrictions apply from the Flood Insurance Rate Maps (FIRM) issued by FEMA.[18] The nearest floodplain to the Project site is Dockweiler State Beach, approximately 0.5-mile to the west.[19]

LAX Northside Center District

Permeability. Portions of the LAX Northside Center District contain existing impermeable facilities and remnants of roads that were part of the former residential development in this District. The majority of the LAX Northside Center District is permeable and contains sparse vegetation. **Table 4.8-2** shows the existing acreage of permeable and impermeable land within each Area of the LAX Northside Center District.

Topography and Drainage. The topography of the LAX Northside Center District is primarily flat, with a predominant sloping to the southeast, similar to the surrounding areas. There are a few portions of the LAX Northside Center District that have been graded either for existing facilities (such as the Westchester Golf Course) or for construction staging areas (**Figure 4.8-2**).

The LAX Northside Center District Areas are connected to their adjacent streets' storm drain lines, reaching the storm drain lines via inlets and catch basins. These storm drain lines then connect southward to the LAX drainage system, through mainlines ranging in size from 27 inches to 96 inches (Refer to Appendix K).

[15] California Natural Resources Agency, Department of Water Resources, Southern Region, Watermaster Service in the West Coast Basin – Los Angeles County, 2012, p. 4, online at http://www.water.ca.gov/watermaster/sd_documents/west_basin_2012/westcoastbasinwatermasterreport2012.pdf

[16] Federal Emergency Management Agency (FEMA), Flood Insurance Rate Maps Numbers 06037C1754F, 06037C1760F, 06037C1770F, effective September 2008, online at http://www.fema.gov/hazard/map/firm.shtm

[17] Federal Emergency Management Agency (FEMA), Definitions of FEMA Flood Zone Designations, September 2008, online at https://msc.fema.gov/webapp/wcs/stores/servlet/info?storeId=10001&catalogId=10001&langId=-1&content=floodZones&title=FEMA%2520Flood%2520Zone%2520Designations

[18] Federal Emergency Management Agency, Flood Insurance Rate Maps Numbers 06037C1754F, 06037C1760F, 06037C1770F, effective September 26, 2008, online at: https://msc.fema.gov/webapp/wcs/stores/servlet/CategoryDisplay?catalogId=10001&storeId=10001&categoryId=12001&langId=-1&userType=G&type=1&dfirmCatId=12009&future=false

[19] Federal Emergency Management Agency, FEMA Flood Data, 2012, Online at: http://www.fema.gov/

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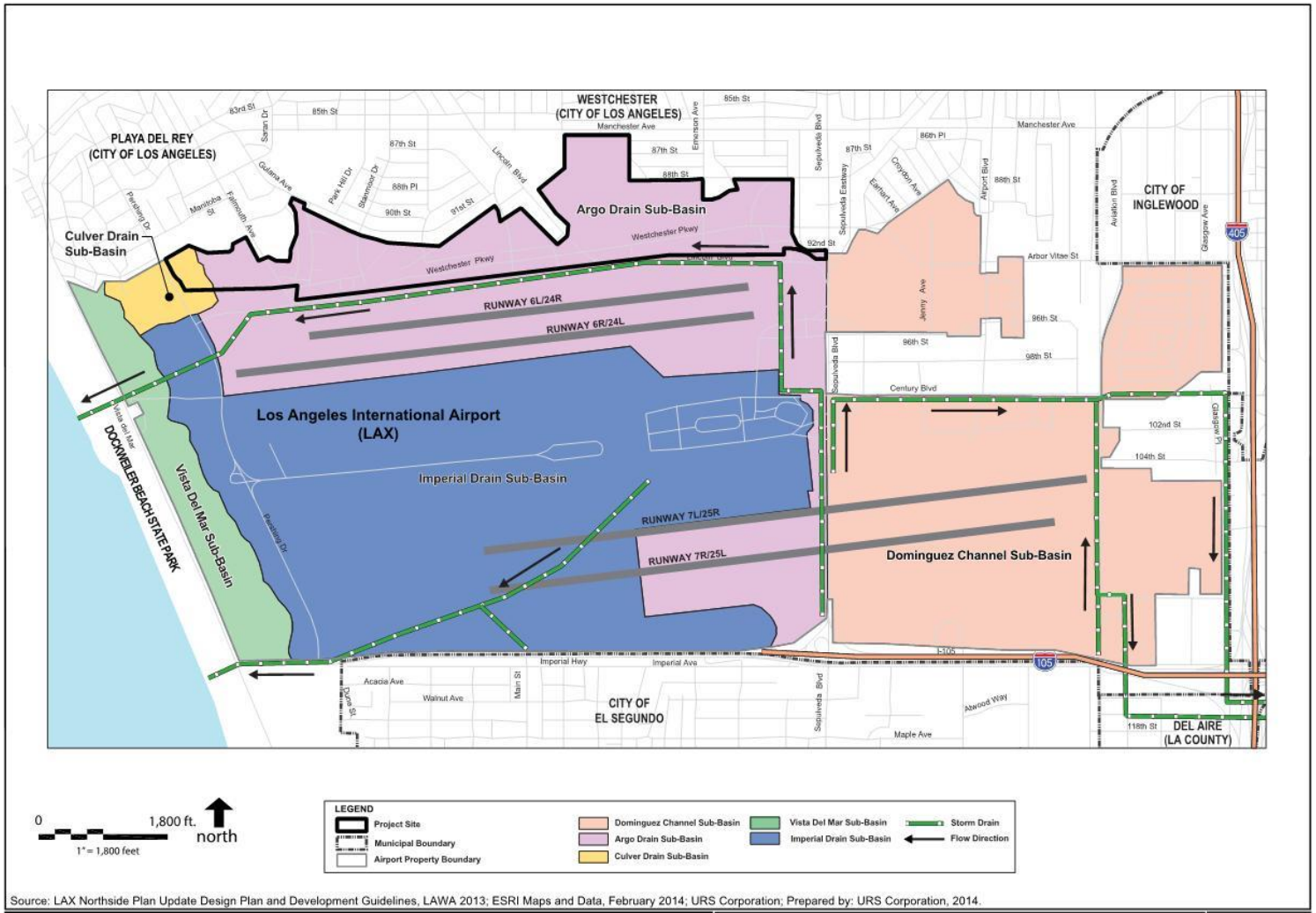

Source: LAX Northside Plan Update Design Plan and Development Guidelines, LAWA 2013; ESRI Maps and Data, February 2014; URS Corporation; Prepared by: URS Corporation, 2014.

Stormwater Detention Sub-Basins Within the Project Area	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.8-1

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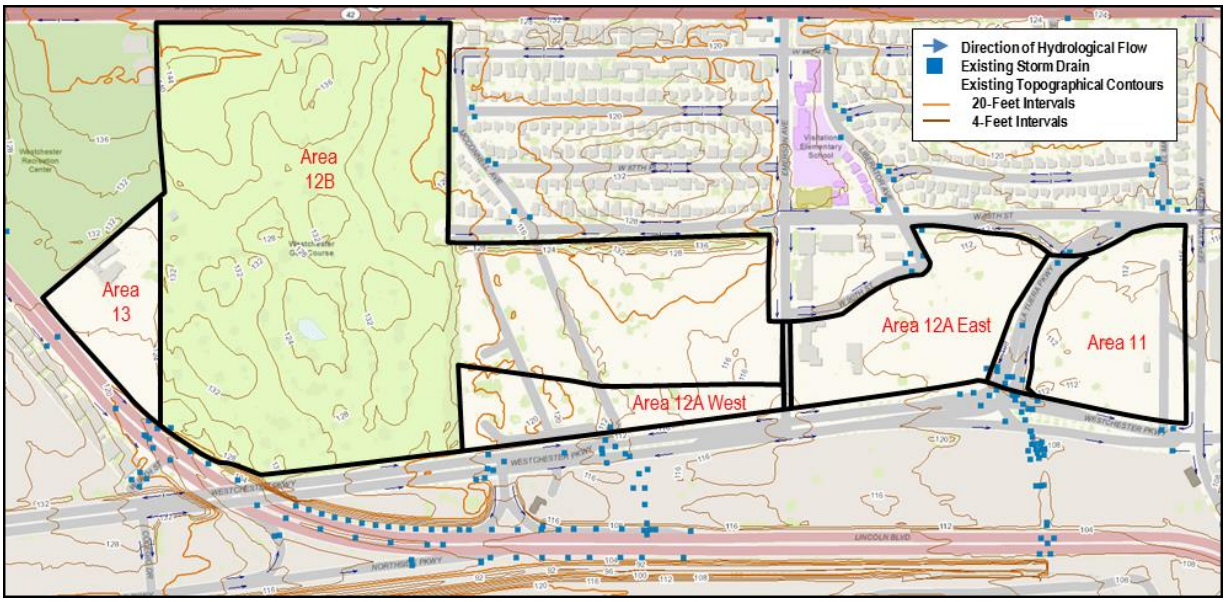
Table 4.8-2

LAX Northside Center District Existing Permeability

Area	Existing Permeable Areas (acres)	Existing Impermeable Areas (acres)	Total Area (acres)
11	7.3	4.7	12
12A East	10	3.5	13.5
12A West	9.3	0.3	9.6
12B	78.7	1.9	80.6
13	4.5	2.5	7.0

Source: URS Corporation, 2014.

Figure 4.8-2 - LAX Northside Center District Existing Topography



Source: City of Los Angeles, Navigate LA, 2014

Area 11

Permeability. Most of Area 11 is unpaved except for remaining pavement from abandoned roads from a previous residential development and areas that are currently used for construction staging for current LAX projects under construction (**Figure 4.8-3**). The roads are leftover from the former residential development at this site. No other remnants of the former residential development exist. Approximately 7.3 acres of Area 11 are permeable and 4.7 acres are impermeable.

Figure 4.8-3 - Area 11 Existing Permeability

Source: Google Earth 2014

Topography and Drainage. Area 11 is generally flat, with a topography that slopes towards the southeast (**Figure 4.8-2**). The change in topography from northwest to southeast across Area 11 is negligible. There are various modular units used for construction offices, and there are areas on the western end where soil and some debris is stockpiled. However, the soil and debris mounds are being modified as construction activities are undertaken, so they do not represent a permanent topography of Area 11. Existing drainage patterns in Area 11 generally flow southeast towards Sepulveda Westway and eventually down to Lincoln Boulevard (**Figure 4.8-4**). The existing drainage flow rate within Area 11 is approximately 12.8 cubic-feet per second (cfs) (Appendix K).[20]

Area 12A East

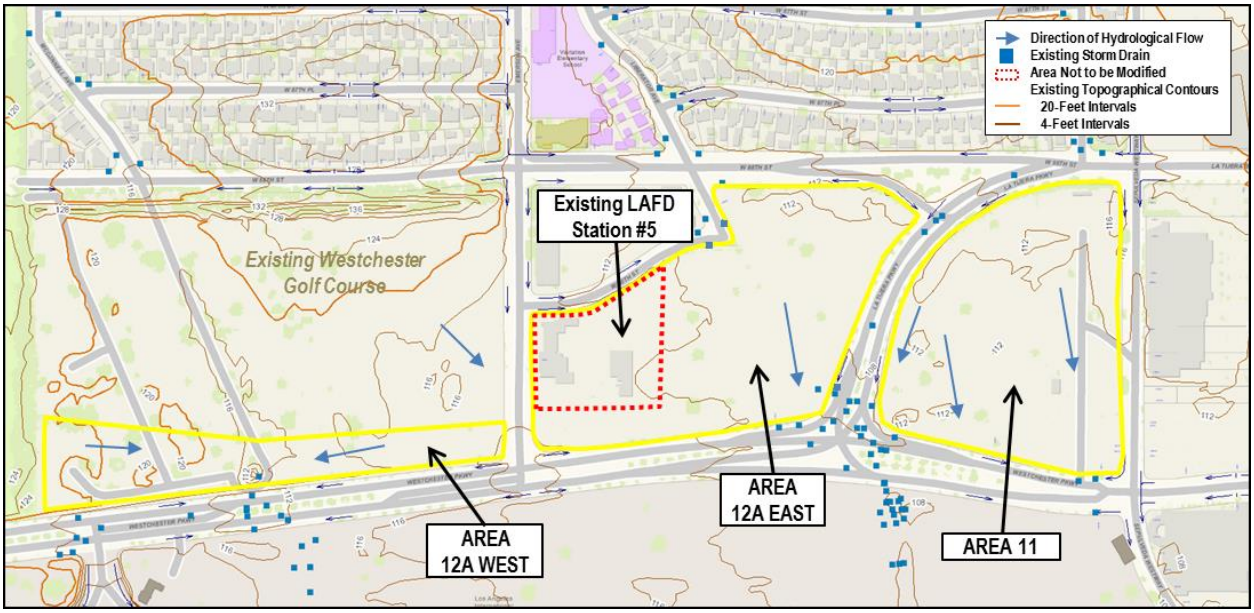
Permeability. Most of Area 12A East is permeable except for the portion developed with the City of Los Angeles Fire Department (LAFD) Fire Station Number 5 and the remnants of abandoned roads from the former residential development at the Project site (**Figure 4.8-5**). Approximately 10 acres of Area 12A East are permeable and 3.5 acres are impermeable.

Topography and Drainage. Area 12A East is generally flat, with a topography that slopes towards the southeast (**Figure 4.8-4**). The change in topography from northwest to southeast across Area 12A East is approximately four feet. The vacant portions of Area 12A East are flat with slight sloping towards Westchester Parkway. The developed portion of Area 12A East is generally flat, although there is a slope trending away from Westchester Parkway towards West 90th Street. Emerson Street in the vicinity of Area 12A East serves as a dividing line for drainage flowing east towards Sepulveda Westway and west towards McConnell Avenue (**Figure 4.8-4**). On the northernmost part of Area 12A East, water flows towards storm drains located on La Tijera Boulevard or West 90th Street. On the eastern and southern sides of Area 12A East,

[20] As described in Section 4.8.3.1.1 Methodology, all flow rates provided in this document are for 50-year storm conditions.

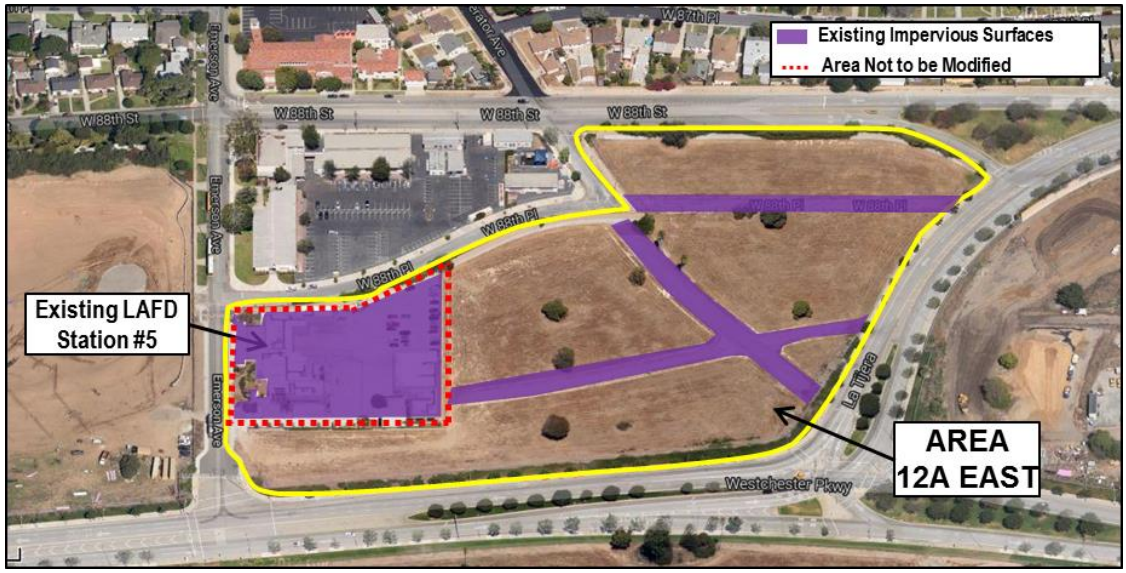
stormwater flows towards the intersection of Westchester Parkway and La Tijera Boulevard. The existing drainage flow rate within Area 12A East is approximately 25.1 cfs (Appendix K).[21]

Figure 4.8-4 - Existing Topography and Drainage Flow - Areas 11, 12A East, and 12A West



Source: City of Los Angeles, Navigate LA, 2014

Figure 4.8-5 - Area 12A East Existing Permeability



Source: Google Earth 2014

[21]Flow rates presented for Areas 2, 4, 9, and 12 represent the sum of the sub-areas within each area (Refer to Section 4.8.3.1.1.)

Area 12A West

Permeability. Most of Area 12A West is permeable except for pavement from remnants of abandoned roads from the former residential development at the Project site (**Figure 4.8-6**). Approximately 9.3 acres of Area 12A West are permeable and 0.3 acres are impermeable.

Figure 4.8-6 - Area 12A West Existing Permeability

Source: Google Earth 2014

Topography and Drainage. Area 12A West is generally flat, with a topography that slopes towards the southeast (**Figure 4.8-4**). The change in topography from west to east across Area 12A West is approximately eight feet. Emerson Street in the vicinity of Area 12A West serves as a dividing line for drainage flowing east towards Sepulveda Westway and west towards McConnell Avenue (**Figure 4.8-4**). On the eastern part of Area 12A West, stormwater flows west towards storm drains located around the intersection of Westchester Parkway and McConnell Avenue. On the western side of Area 12A West, stormwater flows east towards drains located around the intersection of Westchester Parkway and McConnell Avenue. The existing drainage flow rate within Area 12A West is approximately 19.5 cfs (Appendix K).

Area 12B

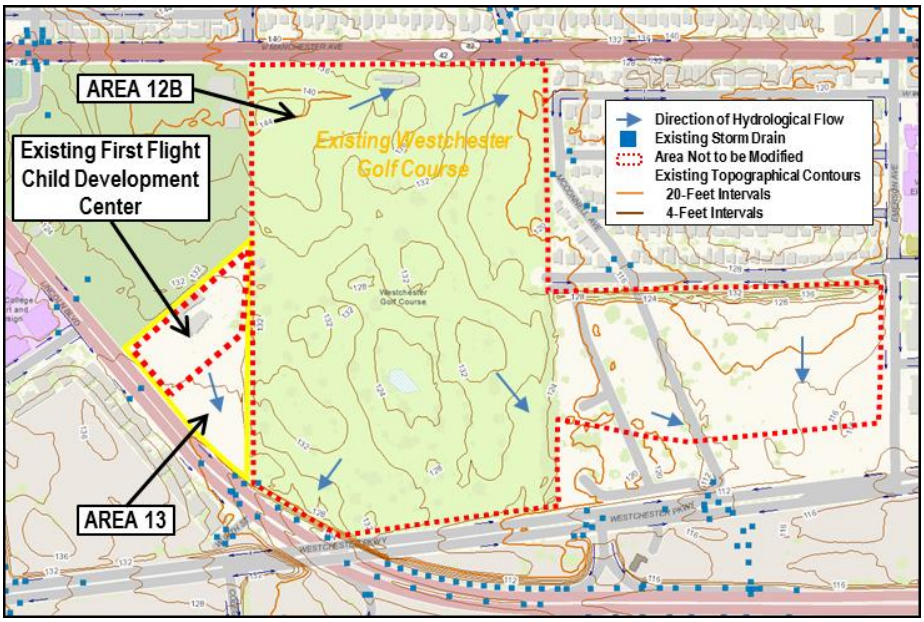
Permeability. Area 12B contains the Westchester Golf Course, an existing landscaped golf course with trees. Area 12B is primarily pervious except for a clubhouse structure, a communications tower and shelter, and paved walkways (**Figure 4.8-7**). Approximately 88 acres of Area 12A West are permeable and 2.2 acres are impermeable.

Topography and Drainage. Area 12B is fully developed with the Westchester Golf Course. Area 12B is generally flat, with a topography that slopes towards the southeast (**Figure 4.8-8**). The overall change in topography from northwest (Manchester Avenue) to southeast (Westchester Parkway) across Area 12B is approximately 16 feet. There is a further change of approximately 16 feet across the eastern portion of the golf course. The Westchester Golf Course includes mounds and depressions that are part of typical golf courses and does not affect overall topography. Drainage generally flows to the southeast (**Figure 4.8-8**). The existing drainage flow rate within Area B is approximately 31.0 cfs (Appendix K).

Figure 4.8-7 - Area 12B Existing Permeability

Source: Google Earth 2014

Figure 4.8-8 - Existing Topography and Drainage Flow – Areas 12B and 13

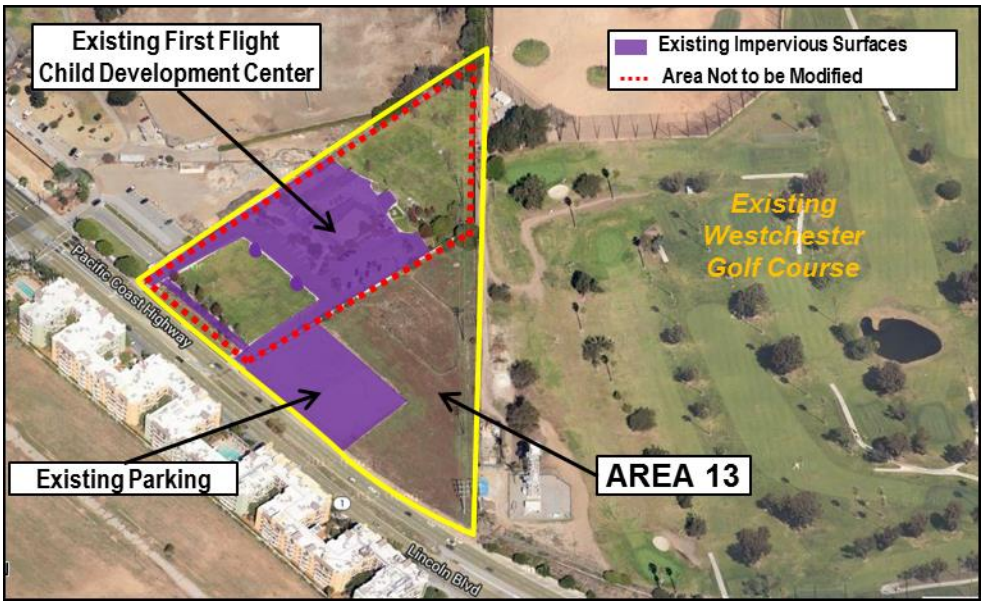


Source: City of Los Angeles, Navigate LA, 2014

Area 13

Permeability. Most of Area 13 is permeable except for the portion developed with the First Flight Child Development Center and an existing surface parking lot (**Figure 4.8-9**). Approximately 4.5 acres of Area 13 are permeable and 2.5 acres are impermeable.

Figure 4.8-9 - Area 13 Existing Permeability



Source: Google Earth 2014

Topography and Drainage. Area 13 is generally flat, with a topography that slopes towards the southeast (**Figure 4.8-8**). The change in topography from northwest to southeast across Area 13 is approximately eight feet. Drainage in Area 13 generally flows to the southeast (**Figure 4.8-8**). The existing drainage flow rate within Area 13 is approximately 16.2 cfs (Appendix K).

LAX Northside Campus District

Permeability. Portions of the LAX Northside Campus District contain existing facilities and remnants of roads that were part of the former residential development in this District. The majority of the LAX Northside Campus District is vacant and contains sparse vegetation. **Table 4.8-3** shows the existing acreage of permeable and impermeable land within each Area of the LAX Northside Campus District.

Table 4.8-3

LAX Northside Campus District Existing Permeability

Area	Existing Permeable Areas (acres)	Existing Impermeable Areas (acres)	Total Area (acres)
1	19	3	22
2	62	9.2	71.2
3	11.1	0.9	12

Source: URS Corporation, 2014.

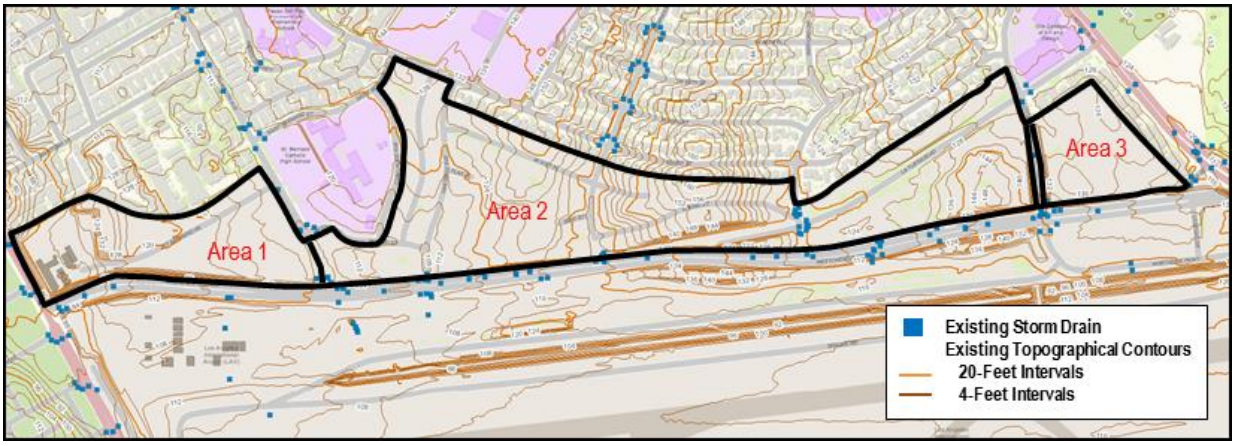
Topography and Drainage. The Areas within the LAX Northside Campus District are divided by the topographical high point between Rayford Drive and Stanmoor Drive, located in the center of Area 2 (**Figure 4.8-10**). Water is discharged to the west of this elevated high point to a reinforced concrete box (11 feet, 3 inches wide and 13 feet, six inches high). This district contains Area 1, Area 2 and Area 3, which are connected to their adjacent streets' storm drain

lines, reaching the storm drain lines via inlets and catch basins. These storm drain lines then connect southward to the LAX drainage system, through mainlines ranging in size from 27 inches to 96 inches (Refer to Appendix K).

Area 1

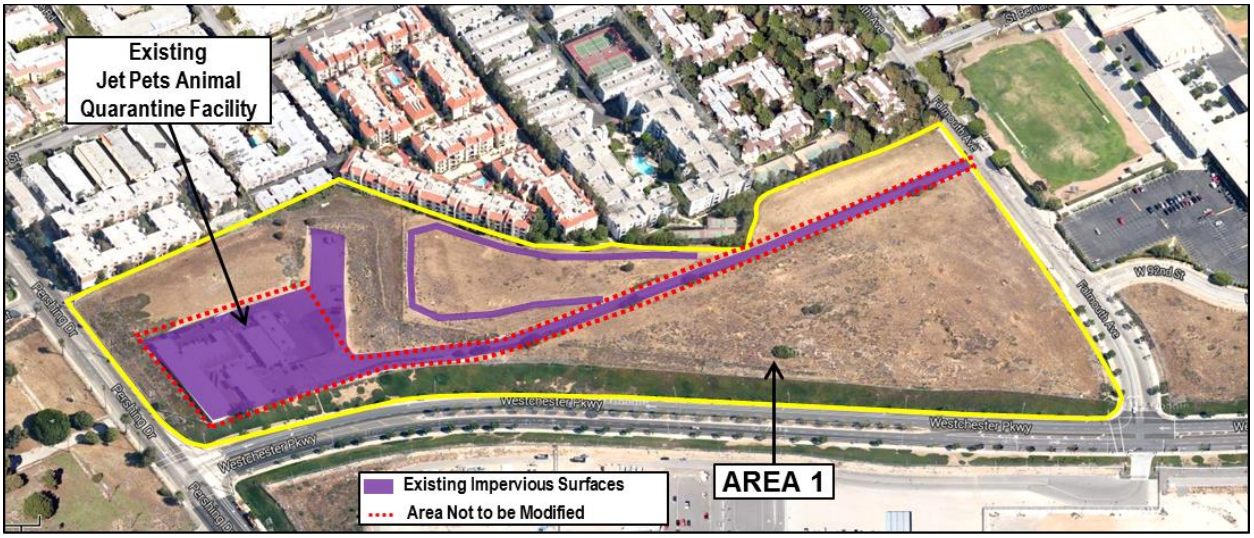
Permeability. Most of Area 1 is permeable except for the portion developed with the Jet Pets Animal Quarantine Facility, its associated roadway, and remnants of abandoned roads from the former residential development at the Project site (**Figure 4.8-11**). Approximately 19 acres of Area 1 are permeable and 3 acres are impermeable.

Figure 4.8-10 - LAX Northside Campus District Existing Topography



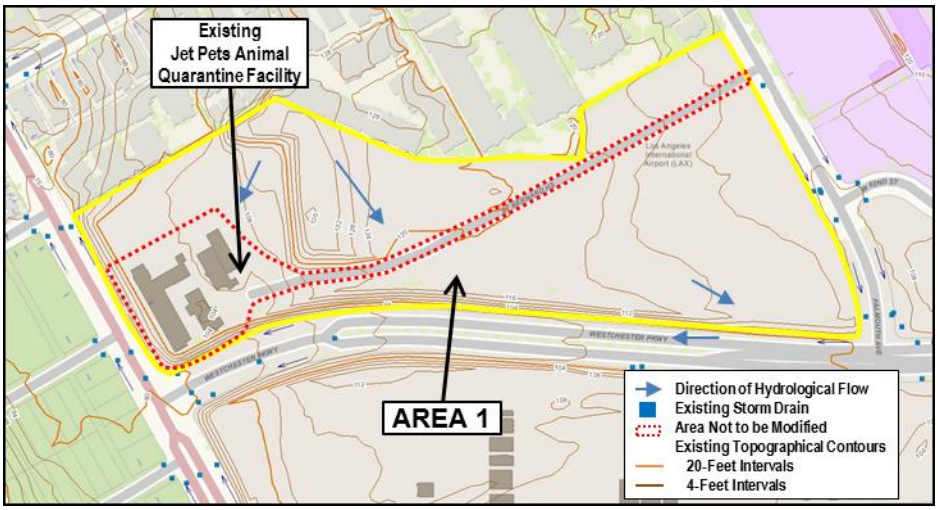
Source: City of Los Angeles, Navigate LA, 2014

Figure 4.8-11 - Area 1 Existing Permeability



Source: Google Earth 2014

Figure 4.8-12 - Area 1 Existing Topography and Drainage Flow



Source: City of Los Angeles, Navigate LA, 2014

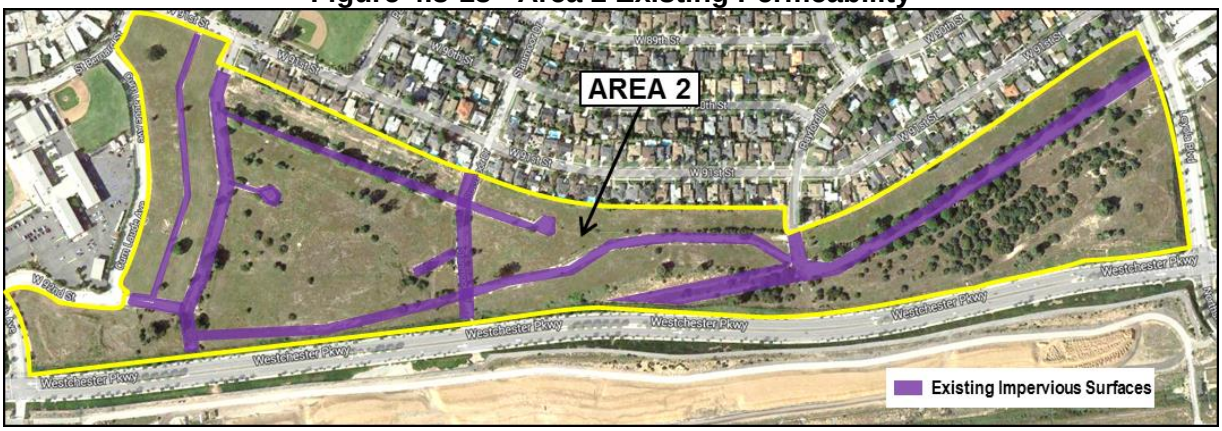
Topography and Drainage. Area 1 is characterized by rolling hills (**Figure 4.8-12**). The overall change in topography from west to east across Area 1 is approximately sixteen feet. However, it ranges from a low point of 80 feet above sea level on the western edge to 136 feet above sea level in the center of the area. The hill east of Jet Pets serves as a dividing line for drainage flowing southwest towards Pershing Drive and southeast towards Falmouth Avenue. In the western portion of Area 1, stormwater flows southwest towards storm drains located at and near the intersection of Westchester Parkway and Pershing Drive. For the eastern portion of Area 1, the majority of the area, stormwater flows southeast towards storm drains located on Westchester Parkway and Falmouth Avenue (**Figure 4.8-12**). The existing drainage flow rate within Area 1 is approximately 9.1 cfs (Appendix K).

Area 2

Permeability. Most of Area 2 is permeable except for the portions containing remnants of abandoned roads from the former residential development at the Project site (**Figure 4.8-13**). Approximately 62 acres of Area 2 are permeable and 9.2 acres are impermeable.

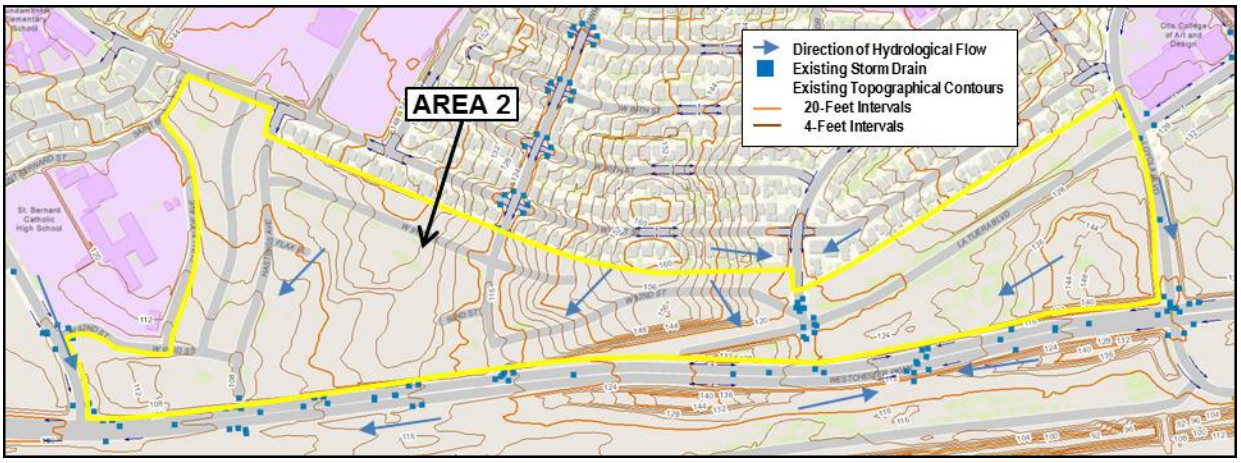
Topography and Drainage. Area 2 is characterized by rolling hill topography (**Figure 4.8-14**). The change in topography from west to east across Area 2 is approximately 28 feet. However, the hilly character of the site means that elevations range from 104 feet above sea level to 160 feet above sea level. On the eastern part of Area 2, stormwater flows west towards storm drains located around the intersection of Westchester Parkway and McConnell Avenue. In the center of Area 2, stormwater flows east towards drains located around the intersection of Westchester Parkway and McConnell Avenue. On the western portion of Area 2, stormwater flows southwest towards storm drains located along Westchester Parkway and Falmouth Avenue **(Figure 4.8-14**). The existing drainage flow rate within Area 2 is approximately 109.9 cfs (Appendix K).

Figure 4.8-13 - Area 2 Existing Permeability



Source: Google Earth 2014

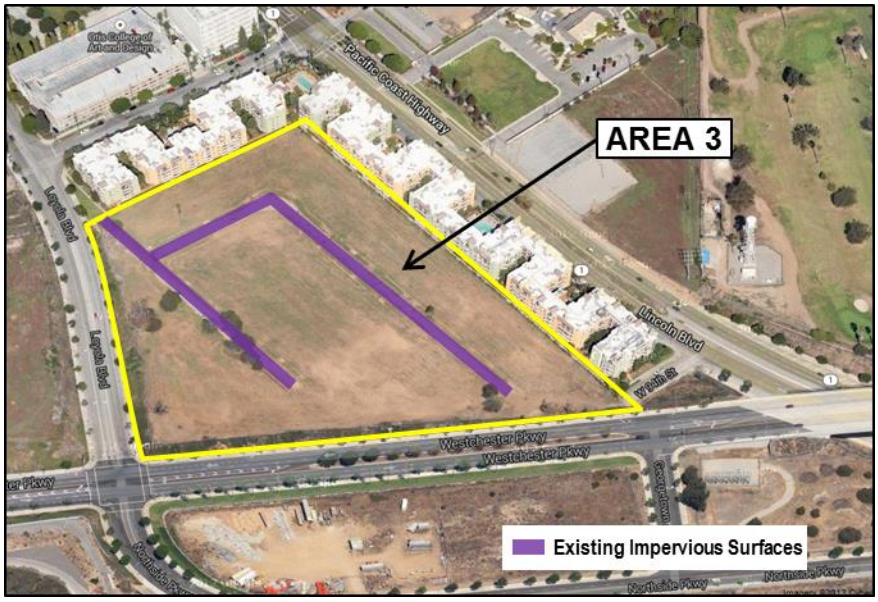
Figure 4.8-14 - Area 2 Existing Topography and Drainage Flow



Source: City of Los Angeles, Navigate LA, 2014

Area *3*

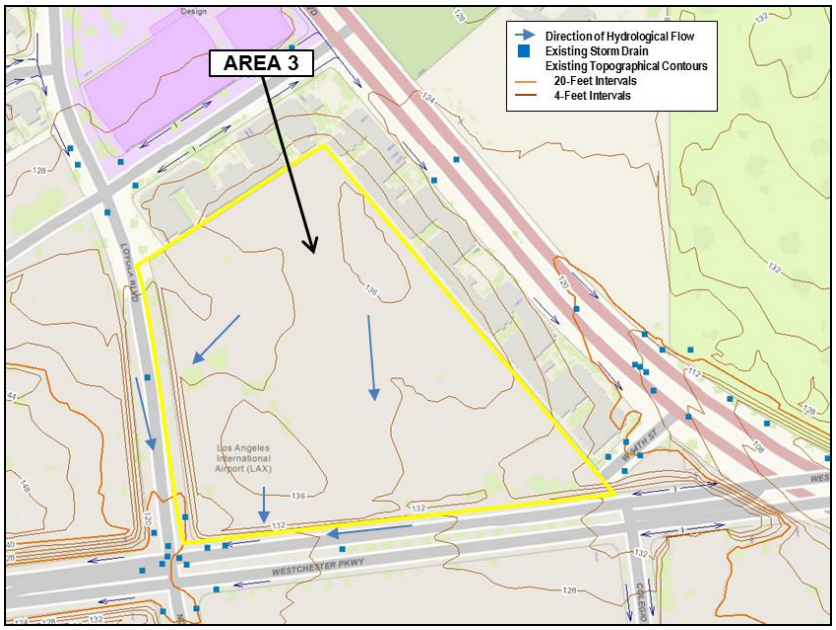
Figure 4.8-15 - Area 3 Existing Permeability



Source: Google Earth 2014

Permeability. *Most of Area 3 is permeable except for the portions containing remnants of abandoned roads from the former residential development at the Project site (Figure 4.8-15). Approximately 11.1 acres of Area 3 are permeable and 0.9 acres are impermeable.*
Topography and Drainage. *Area 3 is generally flat, with a topography that slopes towards the southeast and with a gentle rise in the central portions of the area (Figure 4.8-16). The change in topography from northeast to southeast across Area 3 is approximately twelve feet. Throughout Area 3, stormwater flows west and south towards storm drains around the intersection of Loyola Boulevard and Westchester Parkway (Figure 4.8-16). The existing drainage flow rate within Area 3 is approximately 19 cfs (Appendix K).*

Figure 4.8-16 - Area 3 Existing Topography and Drainage Flow



Source: City of Los Angeles, Navigate LA, 2014

LAX Northside Airport Support District

Permeability. Portions of the LAX Northside Airport Support District contain existing facilities and remnants of roads that were part of the former residential development in this District. The majority of the LAX Northside Airport Support District is vacant and contains sparse vegetation. **Table 4.8-4** shows the existing acreage of permeable and impermeable land within each Area of the LAX Northside Airport Support District.

Table 4.8-4

LAX Northside Airport Support District Existing Permeability

Area	Existing Permeable Areas (acres)	Existing Impermeable Areas (acres)	Total Area (acres)
4	53.5	17.1	70.6
5	5.9	None	6
6	3	0.3	3.3
7	1.2	None	1.2
8	2.7	0.1	2.8
9	21.1	4.7	25.8
10	0.9	None	0.9

Source: URS Corporation, 2014.

The LAX Northside Airport Support District is located south of Westchester Parkway. Stormwater within this district flows from Areas 4, 5, 6, 7, 8, 9, and 10 directly to the Argo Ditch (Refer to Appendix K). Project site runoff discharged into the Argo Ditch drain system along the LAX perimeter flows several miles off-shore and is released into the Pacific Ocean via a 10-foot diameter pipe.[22]

Area 4

Permeability. Most of Area 4 is permeable except for the portions containing construction staging areas, abandoned roads, and airport support structures (**Figure 4.8-17**). Approximately 53.5 acres of Area 4 are permeable and 17.1 acres are impermeable.

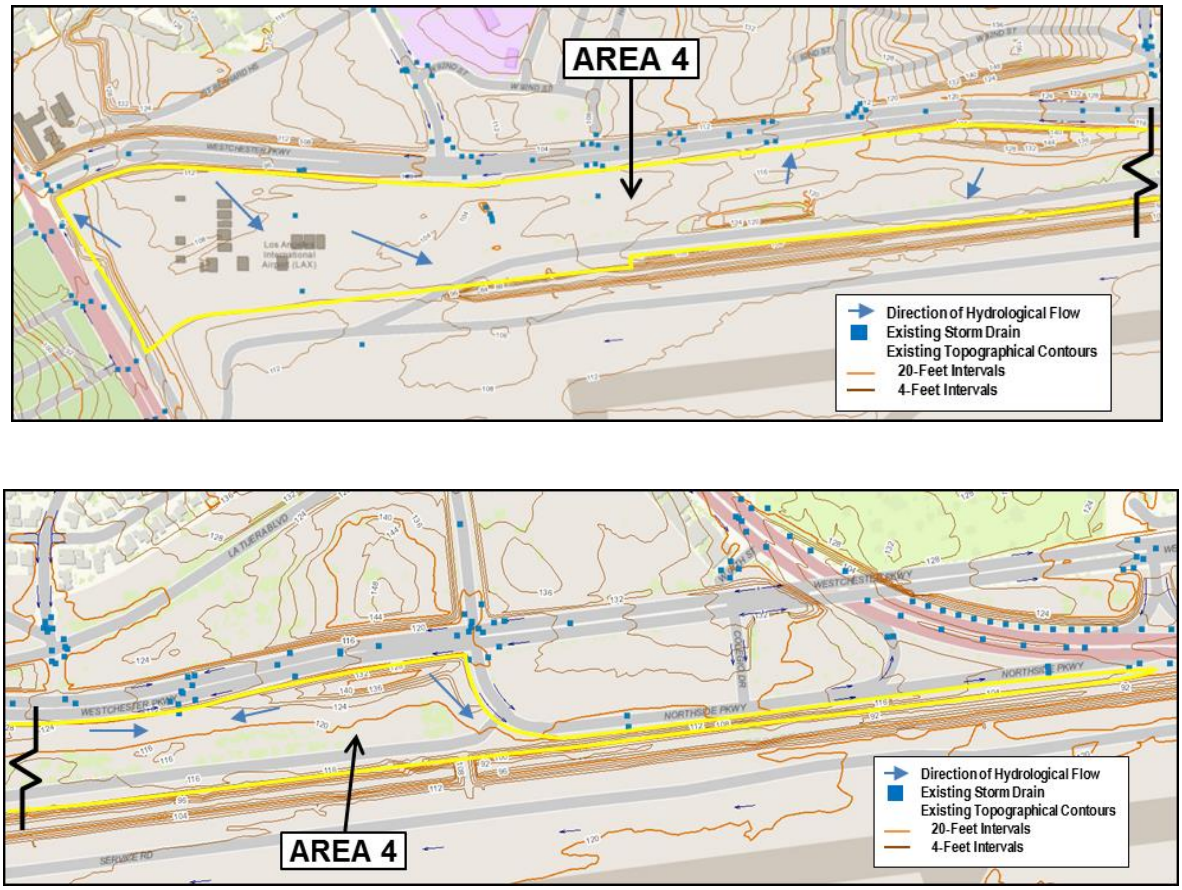
Figure 4.8-17 - Area 4 Existing Permeability

Source: Google Earth 2014

Topography and Drainage. Area 4 is characterized by rolling hills, with a topography that slopes towards the southeast (**Figure 4.8-18**). The change in topography from the western end to the eastern end of Area 4 is approximately twelve feet. However, the topography ranges from 92 feet above sea level to 144 feet above sea level. Given the large size of Area 4, stormwater drains in several different locations. On the western edge of Area 4, stormwater flows towards storm drains around the intersection of Pershing Drive and Westchester Parkway. Between this western edge and the area south of Hastings Avenue, stormwater flows southeast towards the Argo Ditch. East of this area, stormwater flows north towards storm drains along Westchester Parkway then returns to flow south to the Argo Ditch. In the eastern half of Area 4, stormwater flows east and west towards storm drains along Westchester Parkway. On the eastern edge, stormwater flows southeast towards storm drains along Northside Parkway and towards the Argo Ditch (**Figure 4.8-18**). The existing drainage flow rate within Area 4 is approximately 73.3 cfs (Appendix K).

[22] City of Los Angeles, Los Angeles World Airports, Los Angeles International Airport Storm Water Pollution Prevention Plan, 2011, online at http://www.lawa.org/uploadedFiles/LAWA/pdf/LAX%20SWPPP%202011.pdf

Figure 4.8-18 - Existing Topography and Drainage Flow – Area 4



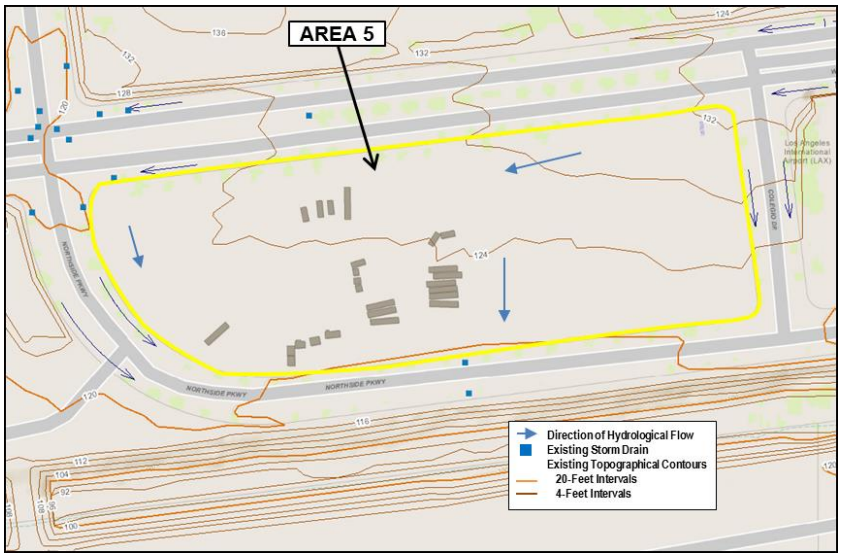
Source: City of Los Angeles, Navigate LA, 2014

Area 5

Permeability. Area 5 is currently used for construction staging and also contains landscaped areas. There are no existing impervious surfaces in Area 5. Therefore, all of the approximately 6 acres of Area 5 are currently permeable.

Topography and Drainage. Area 5 is generally flat, with a topography that slopes towards the southwest (**Figure 4.8-19**). The change in topography from east to west across Area 5 is approximately 12 feet. Drainage across Area 5 flows southwest towards storm drains located around the intersection of Westchester Parkway and Northside Parkway. (**Figure 4.8-19**). The existing drainage flow rate within Area 5 is approximately 5.6 cfs (Appendix K).

Figure 4.8-19 - Area 5 Existing Topography and Drainage Flow

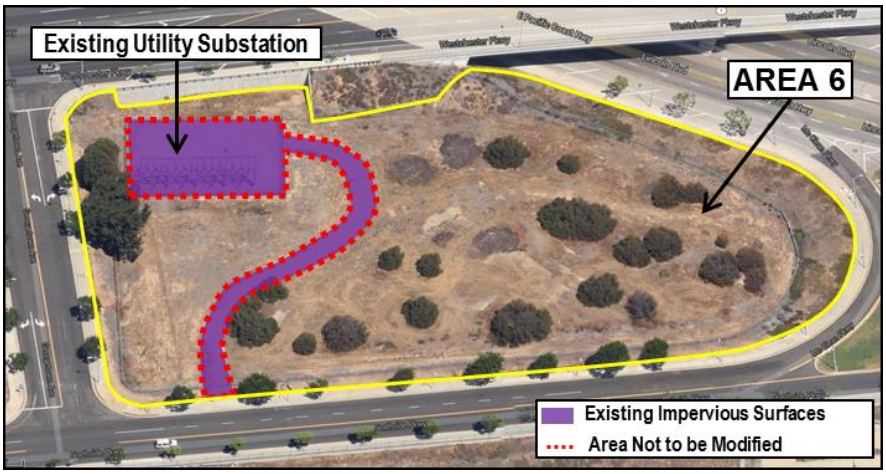


Source: City of Los Angeles, Navigate LA, 2014

Area 6

Permeability. Most of Area 6 is permeable except for the portion developed with an electrical substation on a concrete pad and its associated driveway (**Figure 4.8-20**). Approximately 3 acres of Area 6 are permeable and 0.3 acres are impermeable.

Figure 4.8-20 - Area 6 Existing Permeability



Source: Google Earth 2014

Topography and Drainage. Area 6 is generally flat, with a topography that slopes towards the southeast (**Figure 4.8-21**). The change in topography from east to west across Area 6 is approximately 20 feet. Stormwater in Area 6 generally flows east towards storm drains on McClean Parkway (**Figure 4.8-21**). The existing drainage flow rate within Area 6 is approximately 4.3 cfs (Appendix K).

Area 7

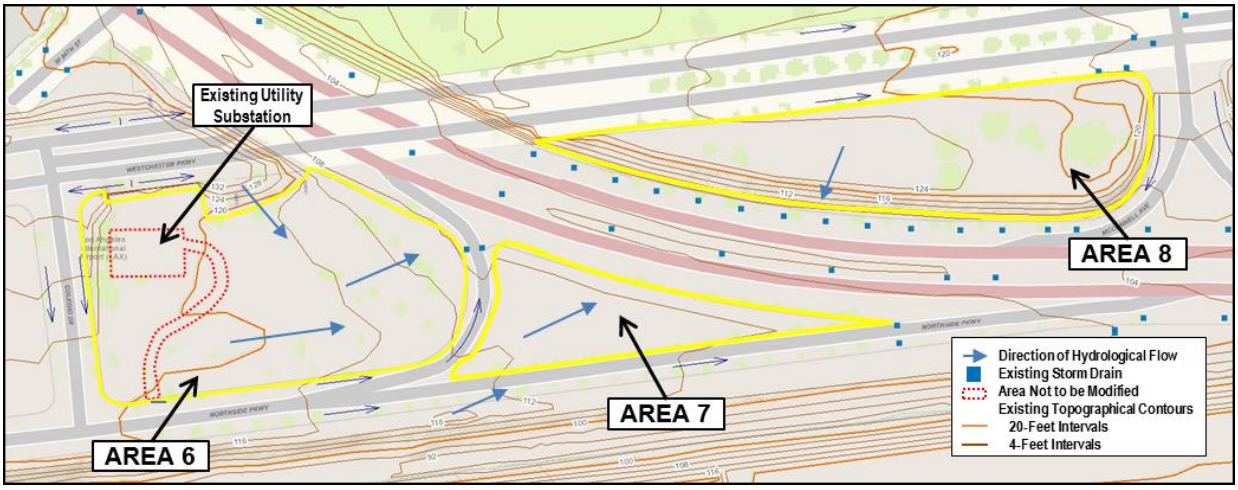
Permeability. Area 7 is currently landscaped. There are no existing impervious surfaces in Area 7. Therefore, all of the approximately 1.2 acres of Area 7 are currently permeable.

Topography and Drainage. Area 7 is generally flat, with a topography that slopes towards the southeast (**Figure 4.8-21**). The change in topography from east to west across Area 7 is approximately four feet. Stormwater in Area 7 generally flows east towards storm drains along Lincoln Parkway (**Figure 4.8-20**). The existing drainage flow rate within Area 7 is approximately 4.3 cfs (Appendix K).

Area 8

Permeability. Area 8 is currently landscaped. There is a concrete culvert structure located on Area 8 and this is the only impervious surface in this area. Approximately 2.7 acres of Area 8 are permeable and 0.1 acres are impermeable.

Figure 4.8-21 - Existing Topography and Drainage Flow – Areas 6, 7, and 8



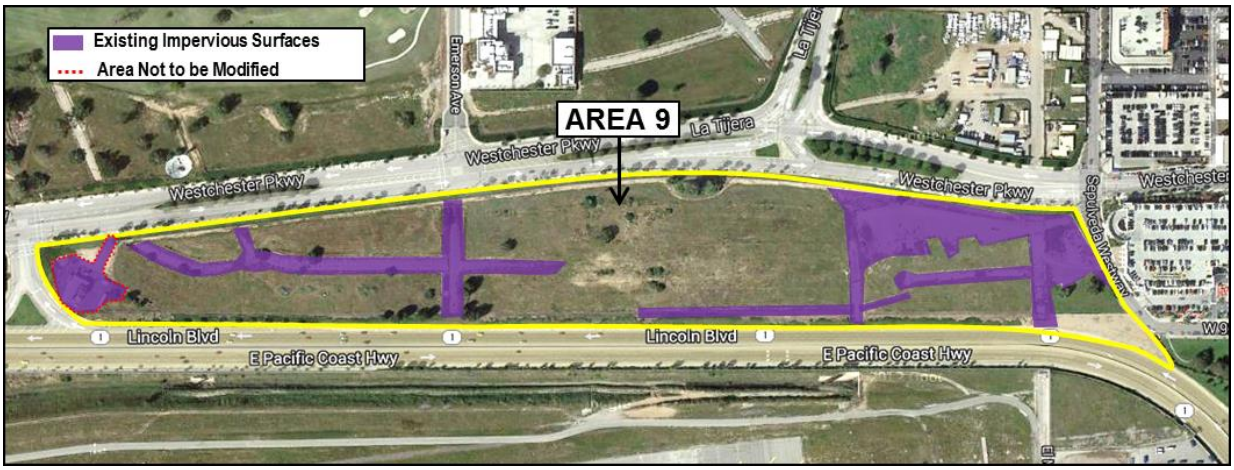
Source: City of Los Angeles, Navigate LA, 2014

Topography and Drainage. Area 8 is generally flat, with a topography that slopes towards the southeast and with steeper slopes on the southern and eastern edges (**Figure 4.8-21**). The change in topography from east to west across Area 8 is approximately eight feet. Stormwater in Area 8 generally flows south towards storm drains along Lincoln Parkway (**Figure 4.8-21**). The existing drainage flow rate within Area 8 is approximately 4.3 cfs (Appendix K).

Area 9

Permeability. Most of Area 9 is permeable except for the portion developed with a radar facility and its associated driveway, as well as the remnants of abandoned roads from the former residential development at Project site (**Figure 4.8-22**). Approximately 21.1 acres of Area 9 are permeable and 4.7 acres are impermeable.

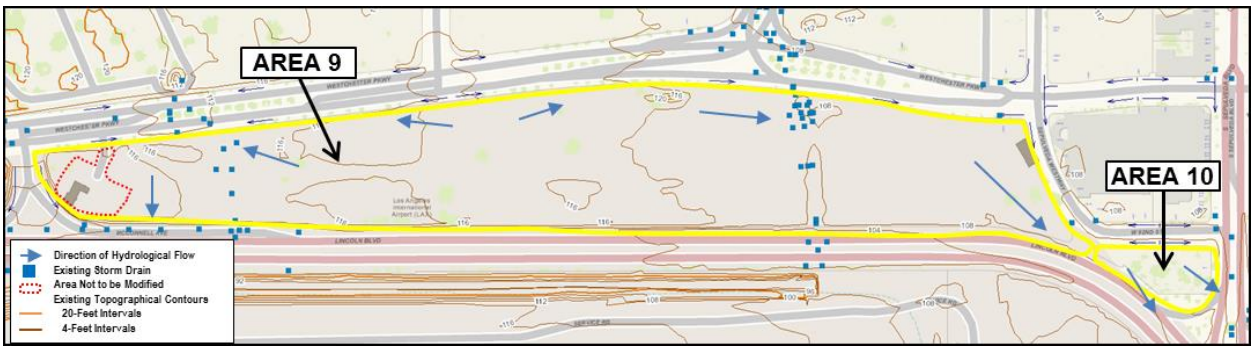
Figure 4.8-22 - Area 9 Existing Permeability



Source: Google Earth 2014

Topography and Drainage. Area 9 is generally flat, with a topography that slopes towards the southeast (**Figure 4.8-23**). The change in topography from east to west across Area 9 is approximately eight feet. There is a dividing line for drainage just east of where Emerson Avenue intersects the northern edge of Area 9. Stormwater west of this dividing line flows west and north towards storm drains along Westchester Parkway and south towards storm drains along McConnell Avenue. East of this dividing line, stormwater flows east towards storm drains within Area 9 located due south of La Tijera. On the eastern edge of Area 9, stormwater flows southeast towards Area 10 and a storm drain on Sepulveda Westway (**Figure 4.8-23**). The existing drainage flow rate within Area 9 is approximately 24.8 cfs (Appendix K).

Figure 4.8-23 - Existing Topography and Drainage Flow – Areas 9 and 10



Source: City of Los Angeles, Navigate LA, 2014

Area 10

Permeability. Area 10 is currently landscaped. There are no existing impervious surfaces in Area 10. Therefore, all of the approximately 0.9 acres of Area 10 are currently permeable.

Topography and Drainage. Area 10 is generally flat, with a topography that slopes towards the southeast (**Figure 4.8-23**). The change in topography from east to west across Area 10 is negligible. Stormwater in Area 10 generally flows southeast towards storm drains along South Sepulveda Boulevard (**Figure 4.8-23**). The existing drainage flow rate within Area 10 is approximately 3.8 cfs (Appendix K).

Groundwater

The Project site is located in the West Coast Basin, which is bounded by four distinct geographic features - the Ballona Escarpment to the north, the Pacific Ocean to the southwest, Palos Verdes Hills to the south, and the Newport-Inglewood Uplift to the east. Aquifers are essential to groundwater health and maintaining an ample water supply above ground because of their layers of water-bearing, permeable rocks or unconsolidated material that allows groundwater to be easily extracted using water wells. The Silverado Aquifer underlies most of the West Coast Basin and is the most productive aquifer of the West Coast Basin, ranging from 100 feet to 500 feet thick. Between 80 percent and 90 percent of annual groundwater extraction in the West Coast Basin comes from this aquifer, which correlates with the water supply obtained from the Orange County Main Aquifer. The Gage, Lynwood, and Sunnyside aquifers also provide a minor groundwater yield.[23]

Although geologic conditions may be possible for water resourcing under the Project site, groundwater beneath the Project site is not used for drinking water. Groundwater under the Project site is also not used for municipal or agricultural purposes. [24] Hydrogeology is discussed in detail in Section 4.5 Geology/Soils.

The Venice Quadrangle covers about 34 square miles of land adjacent to Santa Monica Bay. Coastal cities, from north to south, are Venice (part of Los Angeles), Marina del Rey (Los Angeles County land), Playa del Rey, LAX, the City of El Segundo, and the City of Manhattan Beach. Inland are parts of Culver City and Westchester (part of Los Angeles). Small slivers of the cities of Inglewood, Hawthorne, and Redondo Beach lie along the eastern boundary of the quadrangle. The quadrangle includes the shoreline of Santa Monica Bay from Santa Monica south to Hermosa Beach. Review of the seismic hazards report for the Venice 7.5-minute quadrangle indicates historic high groundwater levels greater than approximately 40 feet below the surface. Current groundwater levels are indicated to be more than 100 feet below the ground surface in the Venice 7.5-minute quadrangle, based on contour maps compiled by the Water Replenishment District of Southern California. Previous hydrology and water quality technical reports have identified local groundwater levels generally about 100 feet below the surface, as well as some perched discontinuous groundwater at depths between 20 feet and 60 feet in the vicinity of LAX.[25] However, site-specific geotechnical studies, including borings and subsurface exploration, conducted at the Project site did not encounter groundwater. The maximum depth explored at the Project site was 55.5 feet. Groundwater levels below the Project site will fluctuate over time due to variations in rainfall, irrigation, and groundwater pumping; however, levels shallower than the historic high are not expected in the foreseeable future and site-specific investigations encountered no groundwater at depths up to 55.5 feet.

The natural safe yield, the maximum amount of groundwater that can be safely withdrawn without negative effects[26], for the West Coast Basin is 26,300 acre-feet per year (AFY).

[23] Metropolitan Water District (MWD), Chapter IV – Groundwater Basins Report: Los Angeles County Coastal Plain Basins – West Coast Basin, 2007, online at http://www.mwdh2o.com/mwdh2o/pages/yourwater/supply/groundwater/PDFs/LACountyCoastalPlainBasins/WestCoastBasin.pdf

[24] City of Los Angeles, LAX Master Plan Final EIS/EIR, 2004, p. 4-759.

[25] City of Los Angeles, LAX Master Plan EIS/EIR 6. Hydrology and Water Quality Technical Report, 2001, p.7, online at: http://www.ourlax.org/docs/draft_eir_NE/T06_LR.pdf, accessed August 8, 2012.

[26] California Natural Resources Agency, Department of Water Resources, Groundwater Glossary, 2012, online at http://www.water.ca.gov/groundwater/groundwater_glossary.cfm

In the context of an adjudicated groundwater basin, landowners or other parties have turned to the courts to settle disputes over how much groundwater can be extracted by each party to the decision. The Water Replenishment District of Southern California allows for an adjudicated safe yield substantially higher than the natural safe yield. As a result of adjudication between parties of interest in the West Coast Basin, 64,468.25 AFY is allowed to be extracted. The West Coast Basin's total storage is 6.5 million acre-feet (AF), with 1.1 million AF of storage unused. 120,000 AF of this storage space is considered available for storage (where available storage is defined as up to 75 feet below ground level). Natural recharge (Natural replenishment of an aquifer generally from snowmelt and runoff; through seepage from the surface) occurs when either precipitation or surface flows of water are infiltrated through the ground back into the groundwater. Natural recharge occurs below the surface through inflow from the Central Basin and on the surface through rainfall inflow to the uppermost aquifers. Based on the LAX Master Plan EIS/EIR, the annual average recharge rate for the West Coast Groundwater Basin is 6,700 AFY. The West Coast Groundwater Basin is 28,271 acres. Using these figures, the estimated recharge rate through the pervious surfaces of the West Coast Groundwater Basin was approximately 0.24 feet/year (2.88 inches/year). Based on this annual recharge rate, the Project site, which is 338.5 acres, is estimated to provide 69.7 AFY of surface recharge. When combined with the adjacent Central Basin, the discharge and recharge are nearly balanced within the groundwater system.[27]

The West Coast Basin has 73 active groundwater extraction wells and 49 inactive extraction wells.[28] There are also 557 observation wells, and 24 injection wells. No wells are within or adjacent to the Project site. The well closest to the Project site, which drew between 0.01 and 500 AF of water during Fiscal Year (FY) 2011-2012 is 1.72 miles away.[29] The West Coast Basin as a whole had 45,272 acre-feet of water extracted during this same time period, of an allowable 77,033 acre-feet. There are no spreading grounds (sites deliberately used to recharge groundwater[30]) within the West Coast Basin. The West Coast Basin Barrier Project, a barrier to seawater intrusion, runs southward from LAX to Palos Verdes Hills. The Los Angeles Department of Water and Power (LADWP) owns and operates the barrier project, which injects a mixture of imported Metropolitan Water District (MWD) water and Hyperion Treatment System (HTS) recycled water into the Lower San Pedro, Silverado, and "200-foot sand" Gage aquifers. The Dominguez Gap Barrier Project is also located in West Coast Basin, but is more than two miles away and is not within the vicinity of the Project site.[31]

[27] Metropolitan Water District (MWD), Chapter IV – Groundwater Basins Report: Los Angeles County Coastal Plain Basins – West Coast Basin, 2007, online at http://www.mwdh2o.com/mwdh2o/pages/yourwater/supply/groundwater/PDFs/LACountyCoastalPlainBasins/WestCoastBasin.pdf

[28] California Natural Resources Agency, Department of Water Resources, Southern Region, Watermaster Service in the West Coast Basin – Los Angeles County, Page 4, 2012, online at http://www.water.ca.gov/watermaster/sd_documents/west_basin_2012/westcoastbasinwatermasterreport2012.pdf

[29] California Natural Resources Agency, Department of Water Resources, Southern Region, Watermaster Service in the West Coast Basin – Los Angeles County, Page iii, Figure 4, 2012, online at http://www.water.ca.gov/watermaster/sd_documents/west_basin_2012/westcoastbasinwatermasterreport2012.pdf

[30] Webster's Online Dictionary, Spreading Grounds, online at http://www.websters-onlinedictionary.org/definitions/spreading+grounds

[31] Metropolitan Water District (MWD), Chapter IV – Groundwater Basins Report: Los Angeles County Coastal Plain Basins – West Coast Basin, 2007, online at http://www.mwdh2o.com/mwdh2o/pages/yourwater/supply/groundwater/PDFs/LACountyCoastalPlainBasins/WestCoastBasin.pdf

LAX Northside Center District

Geotechnical borings were conducted up to 50.5 feet below ground surface (bgs) in Area 12A West and were conducted up to 55.5 feet bgs in Area 11. Soil types are relatively level in distribution throughout the Project site. As shown in **Figure 4.8-24**, Older Alluvial Deposits are located below most of the Project site. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the Project site, and therefore would not be encountered at depths shallower than 50.5 feet bgs.

As shown in **Table 4.8-5**, the LAX Northside Center District has 12.9 acres of impervious surface area and 109.9 acres of pervious surface area. Based on this pervious area and the annual recharge rate of 0.24 feet/year for the West Coast Basin, the LAX Northside Center District is anticipated to infiltrate 26.4 AFY into groundwater under existing conditions. The well closest to the LAX Northside Center District, which drew between 0.01 and 500 AF of water during Fiscal Year (FY) 2011-2012 is 1.72 miles away.[32]

Table 4.8-5

Groundwater Infiltration Under Existing Conditions

District	Impervious (ac)	Pervious (ac)	Infiltration (AFY)
Center	12.9	109.9	26.4
Campus	13.1	92.2	22.1
Airport	22.2	88.3	21.2
Total	**48.2**	**290.3**	**69.7**

Notes:
ac = acres
AFY = acre-feet per year
Source: URS Corporation, 2014.

[32] State of California, California Natural Resources Agency, Department of Water Resources, Southern Region, Watermaster Service in the West Coast Basin – Los Angeles County, Page iii, Figure 4, 2012, online at http://www.water.ca.gov/watermaster/sd_documents/west_basin_2012/westcoastbasinwatermasterreport2012.pdf

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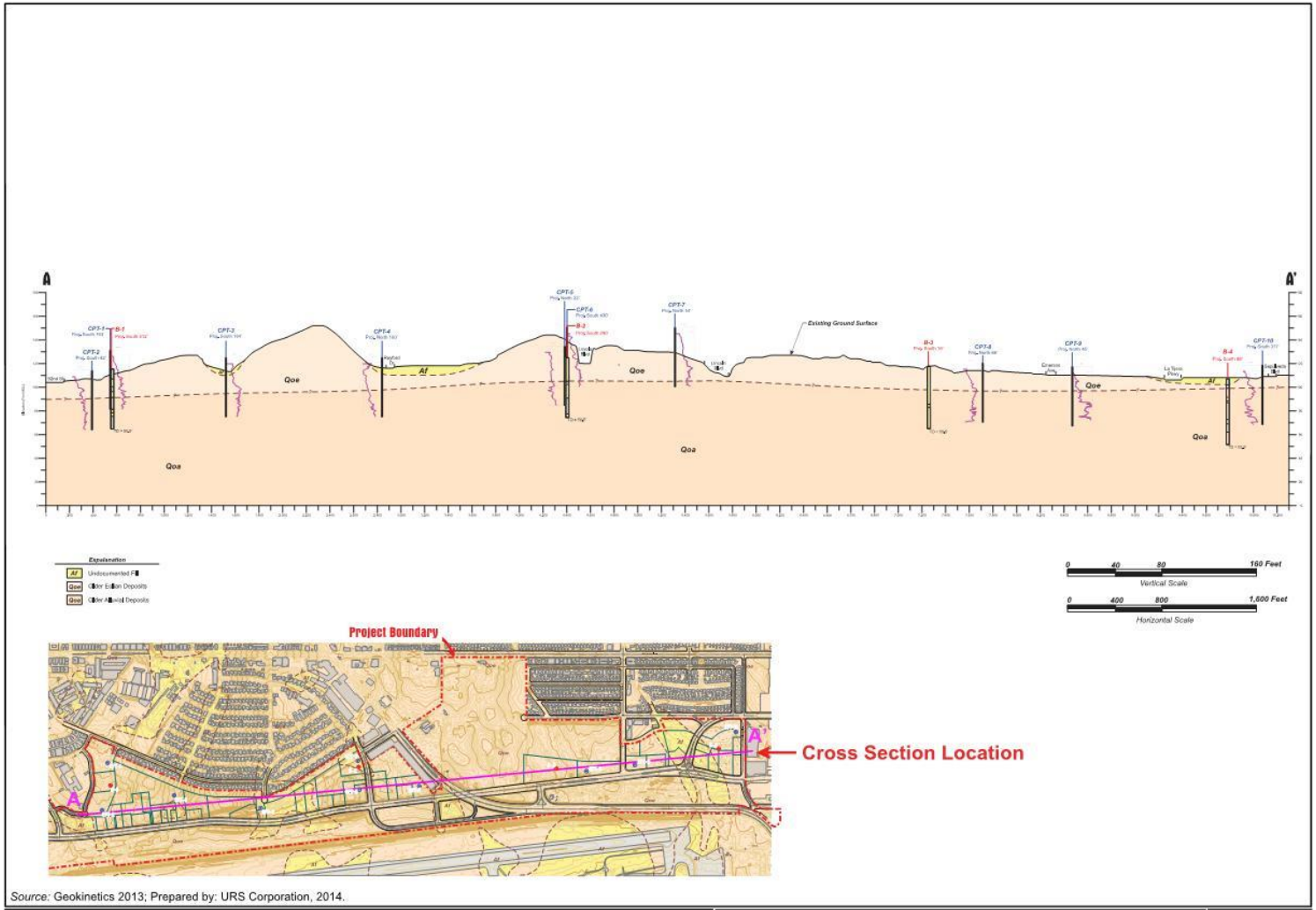

Source: Geokinetics 2013; Prepared by: URS Corporation, 2014.

Project Site Soil Cross Section	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.8-24

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LAX Northside Campus District

Geotechnical borings were conducted up to 50.5 feet bgs in Area 2A and Area 3. Soil types are relatively level in distribution throughout the Project site. As shown in **Figure 4.8-24**, Older Alluvial Deposits are located below most of the Project site. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the Project site, and therefore would not be encountered at depths shallower than 50.5 feet bgs.

The LAX Northside Campus District has 13.1 acres of impervious surface area and 92.2 acres of pervious surface area. Based on this pervious area and the annual recharge rate of 0.24 feet/year for the West Coast Basin, the LAX Northside Campus District is anticipated to infiltrate 22.1 AFY into groundwater under existing conditions (**Table 4.8-5**). The well closest to the LAX Northside Campus District, which drew between 0.01 AF and 500 AF of water during Fiscal Year (FY) 2011-2012 is 2.43 miles away.[33]

LAX Northside Airport Support District

Site-specific geotechnical borings conducted in Area 2A, Area 3, and Area 12A West did not encounter groundwater at a depth of 50.5 feet bgs. The boring conducted in Area 11 reached a depth of 55.5 feet bgs and did not encounter groundwater. Soil types are relatively level in distribution throughout the Project site, as shown in **Figure 4.8-24**, with Older Alluvial Deposits found under most of the Project site. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the Project site. Due to this even distribution of soils, the geotechnical borings conducted in Area 2A, Area 3, Area 12A West, and Area 11 are representative of groundwater conditions underneath the LAX Northside Airport Support District and therefore groundwater would not be encountered any shallower than 50.5 feet bgs.

The LAX Northside Airport Support District has 22.2 acres of impervious surface area and 88.3 acres of pervious surface area. Based on this pervious area and the annual recharge rate of 0.24 feet/year for the West Coast Basin, the LAX Northside Center District is anticipated to infiltrate 21.2 AFY into groundwater under existing conditions (**Table 4.8-5**). The well closest to the LAX Northside Airport Support District, which drew between 0.01 and 500 AF of water during Fiscal Year (FY) 2011-2012 is 1.88 miles away.[34]

4.8.2.2.2 Water Quality

Surface Water

The Santa Monica Bay is the primary water body receiving runoff from the Argo sub-basin, in which the Project site is located. Santa Monica Bay is an open embayment in the Pacific Ocean, measuring 266 square miles on the surface. 414 square miles of land drain to the bay, resulting in significant changes to the natural character of the aquatic environment. The beneficial uses of the bay include recreation, fishing, industry, and navigation. The USEPA has established an Indicator Bacteria TMDL for Santa Monica Beach. The Santa Monica Bay Restoration Project (SMBRP) was formed to study the environment and impact of pollutants on the Santa Monica Bay. The *Characterization Study of the Santa Monica Bay Restoration – State of the Bay 1993* found several different pollutants of concern.[35] Specifically, the pollutants of concern include: DDT, PCBs, Zinc, PAHs, Silver, Pathogenic Bacteria and Viruses, Chlordane, Total Suspended

[33] *Ibid.*
[34] *Ibid.*
[35] City of Los Angeles, LAX Master Plan Final EIS/EIR, 2004, p.p. 4-543 to 4-544

Solids (TSS), Tri-butyl Tin (TBT), Nutrients, Cadmium, Trash and Debris, Chromium, Chlorine, Copper , Biochemical and Chemical Oxygen Demand (BOD and COD), Lead, Oil and Grease, and Nickel.

LAX Northside Center District

The LAX Northside Center District is primarily vacant, as discussed in Section 4.8.2.2.1, Existing Conditions for Surface Water Hydrology. The vacant portions of the LAX Northside Center District are primarily undeveloped and sparsely vegetated. Existing runoff from these vacant portions of the Project site is primarily composed of sediment, organic material, pesticides, and herbicides used on the sparse vegetation. The developed portions of the LAX Northside Center District are the LAFD Fire Station Number 5, First Flight Child Development Center, and Westchester Golf Course clubhouse. Runoff from these uses may contain pollutants typical of commercial and parking uses. Runoff from the existing temporary construction staging areas may contain discharge pollutants typical of construction uses, such as vehicle fuels and oils. In addition, runoff from existing landscaped areas, including the Westchester Golf Course, may contain pollutants typical of landscaping, such as pesticides and fertilizers.

LAX Northside Campus District

The LAX Northside Campus District is primarily vacant, as discussed in Section 4.8.2.2.1, Existing Conditions for Surface Water Hydrology. The vacant portions of the LAX Northside Center District are primarily undeveloped and sparsely vegetated. Existing runoff from these vacant portions of the Project site is primarily composed of sediment, organic material, pesticides, and herbicides used on the sparse vegetation. The developed portion of the LAX Northside Campus District is the Jet Pets animal quarantine facility. Runoff from this use may contain pollutants typical of commercial and parking uses. In addition, runoff from existing landscaped areas may contain pollutants typical of landscaping, such as pesticides and fertilizers.

LAX Northside Airport Support District

The LAX Northside Airport Support District is primarily vacant, as discussed in Section 4.8.2.2.1, Existing Conditions for Surface Water Hydrology. The vacant portions of the LAX Northside Center District are primarily undeveloped and sparsely vegetated. Existing runoff from these vacant portions of the Project site is primarily composed of sediment, organic material, pesticides, and herbicides used on the sparse vegetation. The developed portions of the LAX Northside Campus District are the existing FAA radar facility and utilities substation. Runoff from these uses may contain pollutants typical of industrial use, such as oils. Runoff from the existing temporary construction staging areas may contain pollutants typical of construction uses, such as vehicle fuels and oils. In addition, runoff from existing landscaped areas may contain pollutants typical of landscaping, such as pesticides and fertilizers.

Groundwater

The main groundwater producing aquifers of the West Coast Basin are of generally good quality with average total dissolved solids (TDS) at 500 mg/L. However, there are localized areas of poor water quality, primarily in shallower and deeper aquifers that may be affected by seawater intrusion. The main groundwater constituents of concern are Total Dissolved Solids (TDS), Trichloroethylene (TCE), perchloroethylene (PCE), perchlorate, nitrate, iron, manganese, and chloride. Regionally, most production wells have TDS concentrations less than 750 mg/L, ranging from 150 mg/L to 13,600 mg/L. Organic constituents of concern (TCE, PCE, perchlorate) were not detected in high concentrations within the West Coast Basin. Nitrate

concentrations range from non-detect to 12 mg/L in monitoring and production wells, most likely due to leaching and local infiltration of seawater.[36]

Based on a survey of the California Environmental Protection Agency (Cal/EPA), SWRCB GeoTracker database; Cal/EPA, Department of Toxic Substance Control EnviroStor database; and USEPA Envirofacts database, there are no known contaminated sites, including groundwater contamination, under the Project site.[37]

4.8.3 Impact Analysis

4.8.3.1 Methodology

This analysis evaluates hydrology and water quality impacts to both surface water and groundwater that would result from implementation of the proposed Project. The analysis compares estimated baseline conditions for the Project site with the proposed Project conditions. The Hydrology and Water Quality Study Area (HWQSA) is defined as the boundaries of the Project site. The Project site is generally bounded by Sepulveda Westway and Sepulveda Boulevard to the east, LAX to the south, South Pershing Drive to the west, and generally 91st Street, Manchester Avenue, and 88th Street to the north and is shown in **Figure 4.8-1**.

Stormwater runoff, groundwater extraction and recharge, surface water pollution, and groundwater quality were evaluated for the Project site for baseline conditions and for full buildout of the proposed Project. It is assumed that all existing uses on the Project site are preserved and that all proposed land uses have been implemented as depicted in Figure 2-6 of the Project Description, the Illustrative Site Plan. This site plan depicts the reasonably foreseeable development scenario for the Project site, based on the limits and requirements of the proposed LAX Northside Design Guidelines and Standards. The nature and level of impacts evaluated in this analysis are considered to be fully representative of the proposed Project.

4.8.3.1.1 Hydrology

Surface Water

The surface water hydrology analysis considers potential changes to storm water runoff and drainage as a result of the proposed Project, and includes the potential for a decrease in pervious surface area, resulting in increased runoff, or a change in topography, resulting in redirection of runoff. The objective of the surface water hydrology analysis is to assess the potential for localized or off-site flooding and drainage impacts to occur during the existing baseline conditions and under the proposed Project. In order to evaluate drainage, a Technical Memorandum (Appendix K) was prepared by URS Corporation in 2012, which evaluated peak flow rate for the existing Project site and for the proposed Project. Appendix K also evaluates the peak rate of runoff according to the Conceptual Drainage Plan (CDP) prepared in accordance with LAX Master Plan Commitment HWQ-1, showing the amount of runoff that the completed CDP was designed to manage.

[36] MWD, Chapter IV – Groundwater Basins Report: Los Angeles County Coastal Plain Basins – West Coast Basin, p. 2007, online at http://www.mwdh2o.com/mwdh2o/pages/yourwater/supply/groundwater/PDFs/LACountyCoastalPlainBasins/WeWestCoastBas.pdf, accessed August 8, 2012.

[37] Section 4.7 and Appendix J of this EIR provide a technical review of Hazardous Materials within the Project site.

The Rational Method was used to calculate peak flow rates. The peak flow rates discussed throughout this document are based on the flows that would result from a 50-year storm. Calculations took into account the peak discharge, measured in cfs, the Rational Method runoff coefficient, rainfall intensity (in inches per hour), and the drainage area (in acres). The Rational Method runoff coefficient (c) is a function of the soil type, land use, and drainage basin slope. The Rational Method runoff coefficient was calculated for all four conditions (existing, proposed Project, LAX CDP, and pre-LAWA[38]) based on the proposed Project land uses and their associated changes in impervious surfaces. The Rational Method analysis is based on the proposed Project land uses. This method is a conservative approach that assumes that the proposed Project land uses occur throughout the Project site, however reasonably foreseeable development would not occur in Areas with existing uses (which would be maintained as under existing conditions) and the majority of the LAX Northside Airport Support District (due to FAA and Limited Development Area limitations).

Assessment of changes to Project site permeability is based on the Illustrative Site Plan. New impermeable areas are defined as new structures and parking areas. Project Design Features require that parking stalls be paved with permeable pavers or porous paving materials and that parking areas would be designed to mitigate stormwater through the use of curb cuts, required landscape areas, and bioswales. Based on these Project Design Features, it is conservatively assumed that 50 percent of parking areas would be impermeable.

Existing watersheds were assumed to be maintained as the proposed Project does not alter topography in a material manner. The proposed Project areas were utilized as primary sub-areas for the hydrology analysis, as shown in Figure 2-5, the Proposed Land Use Plan. Where multiple watersheds were present in one Area, sub-areas were created. Specifically, sub-areas were defined for Areas 2, 4, 9, and 12. Analysis at this level is necessary in order to accurately evaluate runoff. **Figure 4.8-25** below shows these areas.

Rainfall intensity was determined using the 50-year, 24-hour Rainfall Isohyet (a line on a map along which all points, including the Project site, receive the same amount of rainfall in a 24-hour period once every 50 years)[39] particular to the geographical region of the Project site. Reduction factors were applied to this value to obtain values for 10-year storms and 25-year storms. Duration, usually equivalent to the time of concentration (Tc), was held constant for existing conditions and the proposed Project, in order to ensure an accurate comparison of existing and proposed conditions. Calculations were based on the land uses in Figure 2-5 of the Project Description.

Groundwater

The groundwater hydrology analysis considered potential changes in groundwater recharge due to increases in impervious surfaces. Recharge of groundwater resources occurs when water, through precipitation or through surface water runoff, infiltrates into the ground. The water travels through the subsurface and replenishes groundwater in aquifers. The baseline conditions of groundwater recharge were calculated based on the annual average recharge rate for pervious surfaces. This rate is determined through division of the known West Coast Groundwater Basin recharge volume by the West Coast Basin's pervious area. This rate allows

[38] "Pre-LAWA", as defined in Appendix K, the Hydrology Technical Memorandum, assumes the existing storm drainage lines installed and constructed as part of the original Northside Development. This drainage was constructed in support of the single-family residential housing that existed on the Project site prior to LAWA's acquisition of the property. These residential homes were demolished after LAWA acquired the Project site.

[39] U.S. Environmental Protection Agency, Terms and Acronyms, 2013 Online at http://iaspub.epa.gov/sor_internet/registry/termreg/searchandretrieve/termsandacronyms/search.do

for determination of the volume of groundwater recharge that occurs for a given unit of area in the West Coast Basin, where the Project site is located. Usage of this rate is conservative as additional sources of recharge in the West Coast Basin, such as streams and rivers, are included in the rate but are not present in the Project site. This rate also assumes infiltration throughout the Project site, and does not account for reduced infiltration from existing impervious surfaces.[40]

Assuming that the average annual recharge rate occurs throughout the Project site, the volume of surface water recharge was determined by subtracting newly impervious surface area from the total Project site area, then applying the annual recharge rate. The difference between the predicted recharge of the proposed Project and the existing conditions of the Project site, relative to infiltration and recharge of the West Coast Basin as a whole forms the basis for assessing groundwater level-related impacts.

[40] City of Los Angeles, LAX Master Plan Final EIS/EIR, 2004, p.4-752

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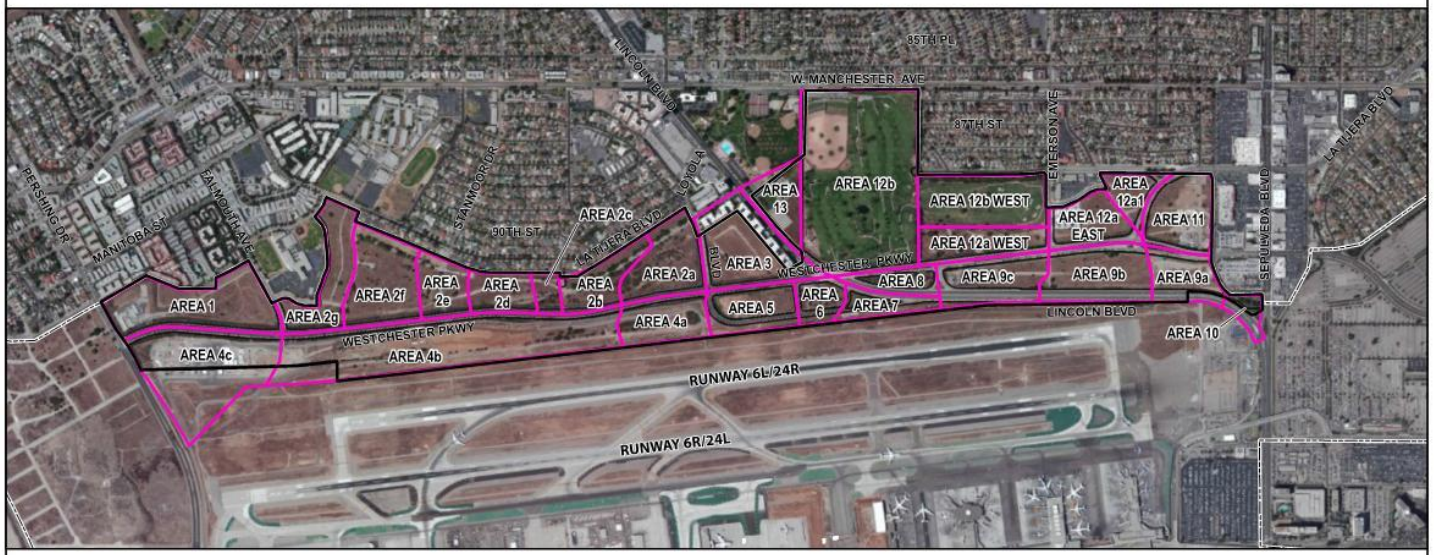

Sources: LAWA, 2005; Prepared by: URS Corporation, 2014.

Proposed Hydrology Map	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.8-25

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4.8.3.1.2 Water Quality

Surface Water

Surface water quality was analyzed through the comparison of existing baseline conditions with estimated contaminants that would be discharged under the proposed Project. These pollutant loads for existing conditions were estimated qualitatively for wet weather flows and dry weather flows and are predicted based on typical contaminants discharged by certain land uses. Wet weather flows are defined as pollutants from non-point sources that are carried by stormwater runoff while dry weather flows originate from point sources. These flows generally enter either into the drainage system or into groundwater.

Dry weather flows occur from sources other than precipitation. Generally, they are low velocity and low volume. In addition, the water quality associated with dry weather flows is not dependent on land uses, but rather on the actual source of the flow. For example, outdoor maintenance of buildings, vehicle leaks, and landscaping irrigation can be a source of dry weather flows. These flows have a high degree of variability because their occurrence is source-dependent, not weather-dependent.

Non-point sources are responsible for pollutants transferred out of the Project site during wet weather flows. Analysis of land uses in the Project site was used to assess the surface water quality impacts of the proposed Project. Existing land uses – primarily vacant land and construction staging, with limited commercial and recreation use – provided a baseline with which to compare the proposed Project uses. Changes in surface water quality were evaluated by proposed Project Areas depending on the uses proposed for each Area within the Project site, taking into account the standard dry and wet weather flows caused by each different land use. The Section 303(d) listed Santa Monica Bay is the primary water body receiving runoff from the Argo sub-basin, in which the Project site is located, and the Section 303(d) list for this body of water, discussed in 4.8.2.1 Federal Regulatory Framework for Water Quality, is used to evaluate the proposed Project.

Groundwater

Groundwater quality was analyzed to evaluate potential impacts of the proposed Project on groundwater contamination. Contamination of groundwater is dependent on the amount of groundwater infiltration and the existing condition of groundwater. Using the same methodology as in Subsection 4.8.3.1.1 Methodology for Groundwater Hydrology, the percentage of total surface water that infiltrates into groundwater (as opposed to becoming surface runoff or evaporating) was calculated based on the amount of pervious surface area and average volume of groundwater recharge per unit area. Infiltrated water is assumed to carry the same pollutant load as surface water runoff because it originates from the same wet and dry weather sources. Therefore, potential groundwater pollutants were determined to be equivalent to the surface water pollutants used in surface water quality. The level of increase or decrease in groundwater contamination was compared to the existing baseline conditions in order to evaluate potential changes in contamination rate or direction of flow, expansion of the contaminated area, increased level of contamination, or violation of drinking water regulations.

4.8.3.2 Significance Thresholds

The City of Los Angeles CEQA Threshold Guide requires project related impacts to existing surface water hydrology, surface water quality, groundwater level, and groundwater quality to be

assessed. The subsections below describe the specific thresholds that were applied to each of these elements when determining impact significance.

4.8.3.2.1 Hydrology

Surface Water

A significant surface water hydrology impact would occur if the direct and indirect changes in the environment that may be caused by the project would potentially result in one or more of the following future conditions:

- Cause flooding during the projected 50-year developed storm event, which would have the potential to harm people or damage property or sensitive biological resources;
- Substantially reduce or increase the amount of surface water in a water body; and
- Result in a permanent, adverse change to the movement of surface water sufficient to produce a substantial change in the current or direction of water flow.

Groundwater

A project would normally have a significant impact on groundwater level if it would:

- Change potable water levels sufficiently to:
    - Reduce the ability of a water utility to use the groundwater basin for public water supplies, conjunctive use purposes, storage of imported water, summer/winter peaking, or to respond to emergencies and drought;
    - Reduce yields of adjacent wells or well fields (public or private);
    - Adversely change the rate or direction of flow of groundwater; or
- Result in demonstrable and sustained reduction of groundwater recharge capacity.

4.8.3.2.2 Water Quality

Surface Water

A significant surface water quality impact would occur if discharges associated with the project would create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code (CWC) or that cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control plan for the receiving water body. The City of Los Angeles CEQA guidelines,[41] define these impacts as follows:

- "**Pollution**" means an alteration of the quality of the waters of the state to a degree which unreasonably affects either of the following: 1) the waters for beneficial uses or 2) facilities which serve these beneficial uses. "Pollution" may include "Contamination."
- "**Contamination**" means an impairment of the quality of the waters of the state by waste to a degree, which creates a hazard to the public health through poisoning or through the spread of disease. "Contamination" includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

- "**Nuisance**" means anything which meets all of the following requirements: 1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; 2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; and 3) occurs during, or as a result of, the treatment or disposal of wastes.

Groundwater

A project would normally result in a significant impact on groundwater quality if it would:

- Affect the rate or change the direction of movement of existing contaminants;
- Expand the area affected by contaminants;
- Result in an increased level of groundwater contamination (including that from direct percolation, injection or salt water intrusion); or
- Cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations (CCR), Title 22, Division 4, and Chapter 15 and in the Safe Drinking Water Act.

4.8.3.3 LAX Master Plan Commitments and Project Design Features

4.8.3.3.1 LAX Master Plan EIS/EIR Commitments

As part of the LAX Master Plan, one commitment and one mitigation measure pertaining to hydrology and water quality (denoted with "HWQ") were adopted in the Alternative D Mitigation Monitoring and Reporting Program (MMRP). The commitment and mitigation measure applicable to the LAX Northside Plan Update were incorporated in the hydrology and water quality analysis herein.

- **Hydrology and Water Quality (HWQ) - 1. Conceptual Drainage Plan.** Once a Master Plan alternative is selected, and in conjunction with its design, LAWA will develop a conceptual drainage plan of the area within the boundaries of the Master Plan alternative (in accordance with FAA guidelines and to the satisfaction of the City of Los Angeles Department of Public Works, Bureau of Engineering). The purpose of the drainage plan will be to assess area-wide drainage flows as related to the Master Plan project area, and at a level of detail sufficient to identify the overall improvements necessary to provide adequate drainage capacity to prevent flooding. The conceptual drainage plan will provide the basis and specifications from which detailed drainage improvement plans will be designed in conjunction with site engineering specific to each Master Plan project. Best Management Practices (BMPs) will be incorporated to minimize the effect of airport operations on surface water quality and to prevent a net increase in pollutant loads to surface water resulting from the selected Master Plan alternative.

  To evaluate drainage capacity, LAWA will use either the Peak Rate Method specified in Part G - Storm Drain Design of the City of Los Angeles' Bureau of Engineering Manual or the Los Angeles County Modified Rational Method, both of which are acceptable to the LADPW. In areas within the boundary of the selected alternative where the surface water runoff rates are found to exceed the capacity of the storm water conveyance infrastructure with the potential to cause flooding, LAWA will take measures to either reduce peak flow rates or increase the structure's capacity. These drainage facilities will be designed to ensure that

they adequately convey storm water runoff and prevent flooding by adhering to the procedures set forth by the Peak Rate Method/Los Angeles County Modified Rational Method.

Methods to reduce the peak flow of surface water runoff could include:

- Decreasing impervious area by removing unnecessary pavement or utilizing porous concrete or modular pavement
- Building storm water detention structures
- Diverting runoff to pervious areas (reducing directly-connected impervious areas)
- Diverting runoff to outfalls with additional capacity (reducing the total drainage area for an individual outfall)
- Redirecting storm water flows to increase the time of concentration

Measures to increase drainage capacity could include:

- Increasing the size and slope (capacity) of storm water conveyance structures (pipes, culverts, channels, etc.).
- Increasing the number of storm water conveyance structures and/or outfalls.

To evaluate the effect of the selected Master Plan alternative on surface water quality, LAWA will prepare a specific Standard Urban Stormwater Mitigation Plan (SUSMP) for the selected alternative, as required by the LARWQCB. The SUSMP addresses water quality and drainage issues by specifying source control, structural, and treatment control BMPs with the objective of reducing the discharge of pollutants from the stormwater conveyance system to the maximum extent practicable. Once BMPs are identified, an updated pollutant load estimate will be calculated that takes into account reductions from treatment control BMPs.

These BMPs will be applied to both existing and future sources with the goal of achieving no net increase in loadings of pollutants of concern to receiving water bodies. LAWA will therefore address water quality issues, including erosion and sedimentation, and comply with the SUSMP requirements by designing the storm water system through incorporation of the structural and treatment control BMPs specified in the SUSMP.

The following list includes some of the BMPs that could be employed to infiltrate or treat storm water runoff and dry weather flows, and control peak flow rates:

- Vegetated swales and strips;
- Oil/Water separators;
- Clarifiers;
- Media filtration;
- Catch basin inserts and screens;
- Continuous flow deflective systems;
- Bioretention and infiltration;
- Detention basins;
- Manufactured treatment units; and

- Hydrodynamic devices.

Performance of structural BWMPs varies considerably based on their design.[42] USEPA has published estimated ranges of pollutant removal efficiencies for structural BMPs based on substantial document review. These ranges of removal efficiencies are presented in **Table 4.8-**, Structural BMP Expected Pollutant Removal Efficiency.

Table 4.8-6

Structural BMP Expected Pollutant Removal Efficiency

BMP Type	Typical Pollutant Removal (percent)			
	Suspended Solids	Nitrogen	Phosphorus	Metals
Dry Detention Basins	30-35	15-45	15-45	15-45
Retention Basins	50-80	30-65	30-65	50-80
Infiltration Basins	50-80	50-80	50-80	50-80
Infiltration Trenches/Dry Wells	50-80	50-80	15-45	50-80
Porous Pavement	65-100	65-100	30-65	65-100
Grassed Swales	30-65	15-45	15-45	15-45
Vegetated Filter Strips	50-80	50-80	50-80	30-65
Surface Sand Filters	50-80	<30	50-80	50-80
Other Media Filters	65-100	15-45	0	50-80

Source: U.S. Environmental Protection Agency, Preliminary Data Summary of Urban Storm Water Best Management Practices Methodology, August, 1999.

In addition to the structural BMP types that will be used, non-structural/source control BMPs will continue to be a part of the LAX program to reduce pollutant loadings. Existing practices and potentially new ones will be extended to acquisition areas and to the areas where airport operations will increase in frequency or duration.

These source control BMPs will be incorporated into the LAX Storm Water Pollution Prevention Plan (SWPPP) and will consequently be required of LAWA and all airport tenants at all locations where industrial activities occur that have the potential to impact water quality.

The overall result of Master Plan Commitment HWQ-1 will be a drainage infrastructure that provides adequate drainage capacity to prevent flooding and control peak flow discharges, that incorporates BMPs to minimize the effect of airport operations on surface water quality, and that prevents a net increase of pollutant loads to either receiving water body as a result of the selected Master Plan alternative.

- **MM)-HWQ-1: Update Regional Drainage Facilities**. Regional drainage facilities should be upgraded, as necessary, in order to accommodate current and projected future flows within the watershed of each stormwater outfall resulting from cumulative development. This could

[42] USEPA, Preliminary Data Summary of Urban Storm Water Best Management Practices Methodology, August 1999

include upgrading the existing outfalls, or building new ones. The responsibility for implementing this mitigation measure lies with the Los Angeles County Department of Public Works and/or the City of Los Angeles Department of Public Works, Bureau of Engineering. A portion of the increased costs for the upgraded flood control and drainage facilities would be paid by LAX tenants and users in accordance with the possessory interest tax laws and other legal assessments, consistent with federal airport revenue diversion laws and regulations and in compliance with state, county and city laws. The new or upgraded facilities should be designed in accordance with the drainage design standards of each agency.

This mitigation measure concerns upgrades that are performed on an as-needed basis and the LAX MMRP 2011 Annual Report issued by LAWA in October 2012 states that this mitigation measure is in progress. LAWA will perform an analysis to evaluate post-construction drainage conditions for ongoing and future projects in order to determine if regional drainage facilities should be upgraded.[43] As described in Section 4.8.3.3.2 Project Design Features, this would be included as part of the compliance review for future buildout and implementation of the proposed Project.

4.8.3.3.2 Project Design Features

The following Project Design Features (PDFs) apply to all Districts in the Project site.

- **PDF Hydrology and Water Quality (HW)-1:** The proposed Project would tie into existing drainage infrastructure and would continue to drain to the Argo Basin as under existing conditions.
- **PDF HW-2:** All areas would integrate LID best practices into future developments under the proposed Project to promote and facilitate water conservation.
- **PDF HW-3:** As a part of compliance review for future buildout and implementation of the proposed Project, each phase will be required to submit a summary of the Stormwater Management strategies and design features incorporated into the proposed Project design.
- **PDF HW-4:** Site development will comply with all applicable LARWQCB, City of Los Angeles, and County of Los Angeles regulations for water quality and quantity including preparation of a SUSMP with Operation and Maintenance Guidelines.
- **PDF HW-5:** Natural vegetation and native and/or drought tolerant plants will be planted in parking lot islands and other landscaped areas where feasible.
- **PDF HW-6:** Natural drainage systems will be used to the maximum extent feasible.
- **PDF HW-7:** Impervious area will be minimized to the maximum extent feasible.
- **PDF HW-8:** Non-structural BMPs will be used unless they are infeasible, in which case the infeasibility will be documented and structural BMPs implemented.
- **PDF HW-9:** Stormwater will be pre-treated prior to infiltration or discharge from Project site.

LAX Northside Center District

The following Project Design Features apply to the LAX Northside Center District.

[43] City of Los Angeles, Los Angeles World Airports, LAX MMRP 2011 Annual Report, 2011, page 41, online at http://www.ourlax.org/pdf/MMRP_2011.pdf, accessed on September 12, 2013.

- **PDF HW-10:** The Project Design Features in the LAX Northside Center District would require that planting materials in parking lots are guaranteed to capably manage stormwater via bioswales.
- **PDF HW-11:** Surface and subterranean parking would be permitted in the LAX Northside Center District.
- **PDF HW-12:** Surface parking in the LAX Northside Center District would incorporate stormwater management and water quality measures, such as bioswales.
- **PDF HW-13:** Any portion of the parking area not used for parking, loading, drive aisles, or pedestrian connectivity in the LAX Northside Center District would be landscaped.
- **PDF HW-14:** Parking stalls in the LAX Northside Center District would be paved with permeable pavers or porous paving materials. Drive aisles and primary and secondary entrance roadways would not be required to be permeable or porous.
- **PDF HW-15:** Parking areas in the LAX Northside Center District would be designed to mitigate stormwater.
- **PDF HW-16:** Curb cuts in landscaping areas in the LAX Northside Center District would be provided to allow drainage of stormwater into landscaping islands and fingers.
- **PDF HW-17:** The Parking and Development landscape zone will apply to surface parking areas in the LAX Northside Center District. This landscape zone is one of the largest landscaped areas within the Project site. The planting palette for these areas will consist of a hybrid mix of 40 percent non-native and 60 percent native plants. It is recommended that the trees, shrubs, and groundcover options be compatible with stormwater management systems, such as bioswales or permeable paving systems. This landscape zone applies to Areas 11, 12A East, 12A West, and 13.
- **PDF HW-18:** Landscaping in the LAX Northside Center District would be designed to advance sustainability. Drought-tolerant plant materials would be allowed preserve water resources and bioswales would be used to remove silt and pollution from surface runoff water. The proposed Project would use rotating sprinkler nozzles for landscape irrigation, would use weather based irrigation control, and would implement at least 30 percent native California plants in landscaping.[44]
- **PDF HW-19:** Construction of the proposed Project in the LAX Northside Center District would require excavation and building footings reaching up to 20 feet bgs. Subterranean parking uses are not anticipated to exceed this typical depth; however, in Area 11 and Area 12A East subterranean parking would require excavation and footings reaching up to approximately 45 feet bgs.

LAX Northside Campus District

Grading in the LAX Northside Campus District would occur in order to minimize the visual presence of the proposed Project from the neighboring residences to the north.

- **PDF HW-20:** Grading would be used to decrease building frontage elevations in Areas 2 and 3.

[44] City of Los Angeles, Department of Water and Power, Water Supply Assessment (WSA) for the LAX Northside Plan Update Project (Proposed Project), September 17, 2013

- **PDF HW-21:** Existing grading conditions would be preserved to separate open spaces from Westchester Parkway in Area 1.
- **PDF HW-22:** Landscape buffers in the LAX Northside Campus District would be planted with locally-native trees, shrubs, and ground cover and, when needed, would provide appropriate ground cover to control erosion.
- **PDF HW-23:** The northern edge of Area 1 would be designated as a 20-foot landscape buffer zone.
- **PDF HW-24:** Area 2B, the northern edge of the majority of Area 2, would be designated as a 100-foot landscape buffer zone.
- **PDF HW-25:** Surface and subterranean parking would be permitted in the LAX Northside Campus District.
- **PDF HW-26:** Surface parking in the LAX Northside Campus District would incorporate stormwater management and water quality measures, such as bioswales, as discussed above.
- **PDF HW-27:** Any portion of the parking area not used for parking, loading, drive aisles, or pedestrian connectivity in the LAX Northside Campus District would be landscaped.
- **PDF HW-28:** Parking stalls would be paved with permeable pavers or porous paving materials in the LAX Northside Campus District. Drive aisles and primary and secondary entrance roadways would not be required to be permeable or porous.
- **PDF HW-29:** Parking areas in the LAX Northside Campus District would be designed to mitigate stormwater.
- **PDF HW-30:** Curb cuts in landscaping areas in the LAX Northside Campus District would be provided to allow drainage of stormwater into landscaping islands and fingers.
- **PDF HW-31:** The Parking and Development landscape zone will apply to surface parking areas in the LAX Northside Campus District. This landscape zone is one of the largest landscaped areas within the Project site. The planting palette for these areas will consist of a hybrid mix of 40 percent non-native and 60 percent native plants. It is recommended that the trees, shrubs, and groundcover options be compatible with stormwater management systems, such as bioswales or permeable paving systems. This landscape zone applies to Areas 2C, 2D, 2E, and 3.
- **PDF HW-32:** Below grade stormwater treatment facilities proposed by Los Angeles Bureau of Sanitation (LABOS) would be permitted, with conditions, in the LAX Northside Campus District. This project would be a separate and independent related project within the Project site.
- **PDF HW-33:** Landscaping would be designed to advance sustainability in the LAX Northside Campus District. Drought-tolerant plant materials would be allowed preserve water resources and bioswales would be used to remove silt and pollution from surface runoff water. The proposed Project would use rotating sprinkler nozzles for landscape irrigation, would use weather based irrigation control, and would implement at least 30 percent native California plants in landscaping.[45]

[45] City of Los Angeles, Department of Water and Power, Water Supply Assessment (WSA) for the LAX Northside Plan Update Project (Proposed Project), September 17, 2013

- **PDF HW-34:** Construction of the proposed Project in the LAX Northside Campus District would require excavation and building footings reaching up to 20 feet bgs. Subterranean parking is permitted in the LAX Northside Campus District but is not anticipated to exceed this typical depth.

LAX Northside Airport Support District

- **PDF HW-35:** Existing conditions of grading strategies and landscape berms would be preserved in the LAX Northside Airport Support District. Additional grading would occur to further limit views of the LAX Northside Airport Support District from properties on the northern side of Westchester Parkway. Changes to grading would be new landscape berms.
- **PDF HW-36:** Landscaping in the LAX Northside Airport Support District would be designed to advance sustainability. Drought-tolerant plant materials would be allowed preserve water resources and bioswales would be used to remove silt and pollution from surface runoff water. The proposed Project would use rotating sprinkler nozzles for landscape irrigation, would use weather based irrigation control, and would implement at least 30 percent native California plants in landscaping.[46]
- **PDF HW-37:** Construction of the proposed Project in the LAX Northside Airport Support District would require excavation and building footings reaching up to 20 feet bgs. Subterranean parking is permitted in the LAX Northside Airport Support District but is not anticipated to occur given the lower intensity of development of this district.

4.8.3.4 Project Impacts

4.8.3.4.1 Hydrology

Surface Water

Construction

LAX Northside Center District

The proposed Project would involve construction of new structures and new parking areas in the LAX Northside Center District, as well as new landscaping areas, in Area 11, Area 12A East (except LAFD Station #5), Area 12A West, and Area 13 (except First Flight Child Development Center). Construction of buildings and parking areas would involve typical construction practices, including: use of large construction equipment such as cranes, bulldozers, and earthmovers; temporary storage of materials and earth; and grading of the Project site as shown in **Figure 4.8-26**. These grading activities would involve excavation, stockpiling, and moving of earth, which may temporarily redirect surface water runoff during construction.

The proposed Project would be required to implement the NPDES GCP during all construction activities, starting from mobilization through final closeout. The GCP includes regulations required of projects during construction. Construction in the LAX Northside Center District would require the implementation of a SWPPP and temporary BMPs. The SWPPP would provide a plan that manages the specific needs and requirements of the LAX Northside Center District, and individual construction sites within it, and would manage the hydrology of surface water on

[46] City of Los Angeles, Department of Water and Power, Water Supply Assessment (WSA) for the LAX Northside Plan Update Project (Proposed Project), September 17, 2013

the Project site during construction. The SWPPP would be required to be in place prior to ground disturbance on the Project site.

The Project site is not in a flood hazard zone, and would implement the above measures in order to prevent flooding during construction activities. Construction would not substantially alter the topography of the Project site. Construction would increase impervious surface area through construction of permanent aspects of the proposed Project such as pavement as well as temporary uses such as tarps but these elements would be put into place in accordance with the SWPPP, which would ensure that they do not cause localized flooding. The Project site drains to the Pacific Ocean and would not substantially increase or decrease the amount of surface water in this surface water body. Furthermore, given that construction activities and impacts would be temporary and minimized through the measures described above, a permanent, adverse change to the movement of surface water would not occur and there would not be a substantial change in the current or direction of water flow. The temporary measures and BMPs put into place by the SWPPP would prevent flooding, substantial changes to surface water bodies, and permanent adverse changes to surface water movement, current, or direction. Therefore, construction impacts related to surface water hydrology in the LAX Northside Center District would be less than significant.

Area No.	Total Area (Ac)	Graded Area (Ac)	Preserved Area (Ac)
1	22	16	6
2	71	54	17
3	12	12	0
4	71	61	10
5	6	0	6
6	3	0	3
7	1	0	1
8	3	0	3
9	26	0	26
10	1	0	1
11	12	12	0
12A-East	13	3	10
12A-West	10	9	1
12B	81	0	81
13	7	3	4
Total Area (Ac)	339	170	169

Source: *VTN, 2013;* LAX Northside Plan Update Design Plan and Development Guidelines, LAWA 2013; ESRI Maps and Data, February 2014; URS Corporation; Prepared by: URS Corporation, 2014.

Proposed Graded Area Within the Project Site	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.8-26

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LAX Northside Campus District

The proposed Project would involve construction of new structures and new parking areas in the LAX Northside Campus District, as well as new landscaping areas, in Area 1 (except Jet Pets), the majority of Area 2, and Area 3. Construction of buildings and parking areas would involve typical construction practices, including: use of large construction equipment such as cranes, bulldozers, and earthmovers; temporary storage of materials and earth; and grading of the Project site as shown in **Figure 4.8-26**. These grading activities would involve excavation, stockpiling, and moving of earth, which may temporarily redirect surface water runoff during construction.

The proposed Project would be required to implement the NPDES GCP during all construction activities, starting from mobilization through final closeout. The GCP includes regulations required of projects during construction. Construction in the LAX Northside Campus District would require the implementation of a SWPPP and temporary BMPs. The SWPPP would provide a plan that manages the specific needs and requirements of the LAX Northside Campus District, and individual construction sites within it, and would manage the hydrology of surface water on the Project site during construction. The SWPPP would be required to be in place prior to ground disturbance on the Project site.

The Project site is not in a flood hazard zone, and would implement the above measures in order to prevent flooding during construction activities. Construction would not substantially alter the topography of the Project site. Construction would increase impervious surface area through construction of permanent aspects of the proposed Project such as pavement as well as temporary uses such as tarps but these elements would be put into place in accordance with the SWPPP, which would ensure that they do not cause localized flooding. The Project site drains to the Pacific Ocean and would not substantially increase or decrease the amount of surface water in this surface water body. Furthermore, given that construction activities and impacts would be temporary and minimized through the measures described above, a permanent, adverse change to the movement of surface water would not occur and there would not be a substantial change in the current or direction of water flow. The temporary measures and BMPs put into place by the SWPPP would prevent flooding, substantial changes to surface water bodies, and permanent adverse changes to surface water movement, current, or direction. Therefore, construction impacts related to surface water hydrology in the LAX Northside Campus District would be less than significant.

LAX Northside Airport Support District

The proposed Project would involve construction of new structures and new parking areas in the LAX Northside Airport Support District in Area 4. The proposed Project would also include new landscaping areas in Area 4 and additions to existing landscaping in Area 5 through Area 10. No construction would occur in the Limited Development Area. Construction of buildings and parking areas in Area 4 would involve typical construction practices, including: use of large construction equipment such as cranes, bulldozers, and earthmovers; temporary storage of materials and earth; and grading of the Project site as shown in **Figure 4.8-26**. These grading activities would involve excavation, stockpiling, and moving of earth, which may temporarily redirect surface water runoff during construction. Installation of landscaping in Area 5 through Area 10 would require only minor excavation and earthmoving.

The proposed Project would be required to implement the NPDES GCP during all construction activities, starting from mobilization through final closeout. The GCP includes regulations required of projects during construction. Construction in the LAX Northside Airport Support District would require the implementation of a SWPPP and temporary BMPs. The SWPPP would provide a plan that manages the specific needs and requirements of the LAX Northside

Airport Support District, and individual construction sites within it, and would manage the hydrology of surface water on the Project site during construction. The SWPPP would be required to be in place prior to ground disturbance on the Project site.

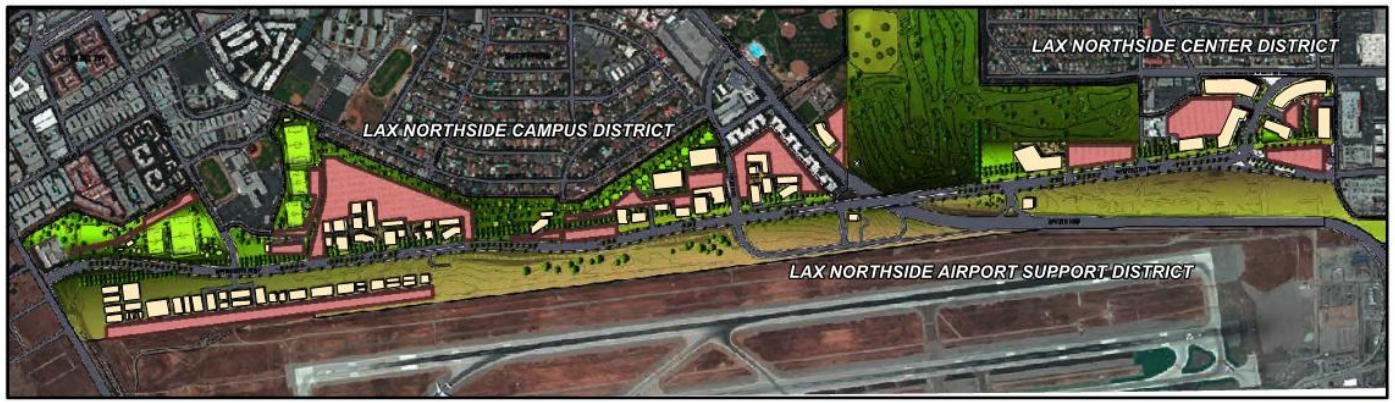
The Project site is not in a flood hazard zone, and would implement the above measures in order to prevent flooding during construction activities. Construction would not substantially alter the topography of the Project site. Construction would increase impervious surface area through construction of permanent aspects of the proposed Project such as pavement as well as temporary uses such as tarps but these elements would be put into place in accordance with the SWPPP, which would ensure that they do not cause localized flooding. The Project site drains to the Pacific Ocean and would not substantially increase or decrease the amount of surface water in this surface water body. Furthermore, given that construction activities and impacts would be temporary and minimized through the measures described above, a permanent, adverse change to the movement of surface water would not occur and there would not be a substantial change in the current or direction of water flow. The temporary measures and BMPs put into place by the SWPPP would prevent flooding, substantial changes to surface water bodies, and permanent adverse changes to surface water movement, current, or direction. Therefore, construction impacts related to surface water hydrology in the LAX Northside Airport Support District would be less than significant.

Operations

LAX Northside Center District

As discussed in Section 4.8.2.1.1, Existing Conditions for Surface Water Hydrology, the Project site, including the LAX Northside Center District, is mostly undeveloped except for: temporary construction staging area (Area 11), LAFD Fire Station #5 (Area 12A East), abandoned paved roads (Area 12A West), Westchester Golf Course (Area 12B), and First Flight Child Development Center (Area 13). The LAX Northside Center District is therefore comprised of mostly pervious surface area.

The proposed Project would increase the impervious surface area in the LAX Northside Center District by constructing new buildings and new parking areas in portions of the Project site that are currently undeveloped (refer to **Figure 4.8-27** and **Table 4.8-8**). In addition, grading would occur in portions of the Project site that are not currently developed. Existing uses, including the LAFD Station #5, First Flight Child Development Center, and Westchester Golf Course would remain and would not change in amount of pervious surface area or grading. No changes to surface water hydrology would occur in these areas. The proposed Project would comply with LAX Master Plan EIS/EIR Commitment HWQ-1 and LAX Master Plan EIS/EIR Mitigation Measure MM-HWQ-1 to minimize impacts to surface water hydrology and prevent flooding. The CDP prepared under LAX Master Plan EIS/EIR Commitment HWQ-1 provides a basis for future detailed drainage plans engineered for specific elements. Future developments of the proposed Project would implement all necessary drainage to comply with the CDP, which was prepared to the satisfaction of the City of Los Angeles Department of Public Works, and would incorporate methods to reduce peak flow of surface water runoff and to ensure drainage is sufficient to prevent flooding. LAWA has, through LAX Master Plan EIS/EIR Commitment HWQ-1, committed that the overall result will be a drainage infrastructure that provides adequate drainage capacity to prevent flooding and control peak flow discharges.



Legend
Proposed Building
Proposed Parking Lots

0 1,400 ft.
1" = 1,400 Feet
north

Source: Rios Clementi Hale Studios, 2014; Prepared by: URS Corporation, 2014.

Project Site Permeability (Proposed Condition)	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.8-27

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Table 4.8-8

Proposed Project Impacts on Permeable Surface Area (acreage)

District	New Impervious (buildings)[a]	New Impervious (paved)[a]	Total Effective New Impervious (paved)[b]	New pervious (existing impervious)[c]	Net Change of Impervious
Center	6.3	10.7	5.3	2.6	9.1
Campus	9.7	22.5	11.3	5.9	15.1
Airport Support	2.4	5.9	3.0	8.0	-2.6
Total	**18.4**	**39.1**	**19.5**	**16.5**	**21.6**

Notes:
[a] New impervious areas are areas where new buildings or paved areas are proposed on existing pervious areas
[b] Total effective new impervious paved area represents the amount of proposed paved area, constructed on existing pervious surface area, multiplied by a factor of 0.5 to account for the effect of Project Design Features.
[c] Proposed new pervious areas where existing impervious surfaces are present (i.e. abandoned roads)
Source: URS Corporation, 2014.

Drainage capacity would also be increased as needed. LAX Master Plan EIS/EIR Mitigation Measure MM-HWQ-1 would apply to the proposed Project. The County of Los Angeles Department of Public Works and/or the City of Los Angeles Department of Public Works, Bureau of Engineering would upgrade regional drainage facilities, in this case the Argo Ditch, in order to accommodate projected future flows within the watershed of this stormwater outfall. LAWA would conduct a post-construction evaluation of the proposed Project drainage conditions in order to determine if regional drainage facilities should be upgraded.

Table 4.8-9 below shows the runoff rate during a 50-year storm event for the watershed sub-areas with the LAX Northside Center District. In all Areas in the LAX Northside Center District, the proposed Project increases the impervious surface area and thus increases the amount of runoff during a 50-year storm event. However, in all Areas, the proposed Project would have runoff rates below those incorporated into the CDP. The amount of stormwater management that LAX Master Plan Commitment HWQ-1 provides, through the CDP, exceeds the requirements of the proposed Project. As stated in LAX Master Plan Commitment HWQ-1, the CDP provides detailed drainage improvement specifications “at a level of detail sufficient to identify the overall improvements necessary to provide adequate drainage capacity to prevent flooding” at LAX, including the Project site.

Table 4.8-9

50-year Storm Event Runoff – Northside Center District (cubic feet per second)

Area	Existing	Proposed	Change between Proposed & Existing	CDP	Change between Proposed & CDP
11	12.77	17.51	4.74	27.86	-10.35
12A1-E	14.13	16.56	2.42	17.67	-1.11
12A2-E	11.02	12.49	1.47	19.39	-6.90
12A-W	19.46	23.82	4.36	36.63	-12.81
12B1	11.45	18.26	6.82	36.63	-18.36
12B2	19.47	26.30	6.83	37.38	-11.09
13	16.17	19.53	3.36	33.63	-14.11

Notes:
Areas are broken down to smaller units within the primary areas described in the proposed Project because areas defined in the proposed Project cross multiple watersheds.
Calculations do not incorporate Project Design Features or other elements that would reduce proposed Project cubic feet per second.
Source: URS Corporation, Hydrology Technical Memorandum, Appendix K, 2012.

In addition to the requirements set forth by the regulatory standards discussed above and by LAX Master Plan EIS/EIR Commitment HWQ-1 and LAX Master Plan EIS/EIR Mitigation Measure MM-HWQ-1, as further described in Section 4.8.3.3.2, the proposed Project would implement several Project Design Features that would reduce impacts related to surface water hydrology. All areas within the LAX Northside Center District would integrate LID best practices into the future developments on the Project site and would incorporate stormwater management compliant with LARWQCB, City of Los Angeles, and County of Los Angeles requirements, including the preparation of a SUSMP for operations and maintenance. Parking would be designed to maximize stormwater runoff management, impervious surface area would be minimized, and landscaping would be compatible with stormwater management.

LAWA would implement LAX Master Plan EIR/EIS Commitment HWQ-1, LAX Master Plan EIR/EIS Mitigation Measure MM-HWQ-1, and the Project Design Features in the proposed Project. The proposed Project's development and grading would therefore not substantially increase stormwater runoff, both onsite and flowing into the Santa Monica Bay, and would not substantially alter the movement, current, or direction of surface water hydrology. Therefore, operational impacts related to surface water hydrology in the LAX Northside Center District would be less than significant.

LAX Northside Campus District

As discussed in Section 4.8.2.1.1, Existing Conditions for Surface Water Hydrology, the Project site, including the LAX Northside Campus District, is mostly undeveloped except for: Jet Pets (Area 1), an existing secured, paved alleyway on the northern edge between Rayford Drive and Loyola Boulevard (Area 2), and abandoned roads and light fixtures (Area 2 and Area 3). The LAX Northside Campus District is therefore comprised of mostly pervious surface area.

The proposed Project would increase the impervious surface area in the LAX Northside Campus District by constructing new buildings and new parking areas in portions of the Project

site that are currently undeveloped (refer to **Figure 4.8-27** and **Table 4.8-8**). In addition, grading would occur in portions of the Project site that are not currently developed: Area 1 (except Jet Pets), the majority of Area 2, and Area 3 (refer to **Figure 4.8-26**). Jet Pets would not change in amount of pervious surface area or grading and would thus not alter surface water hydrology. Demolition of abandoned paved areas would potentially reduce impervious surface areas. The proposed grading would occur in the same portions of the LAX Northside Campus District as the construction of new impervious surface area. However, the existing grading of the 20-foot landscape buffer on the northern edge of Area 1 would be preserved. This landscape buffer and Area 2B, a 100-foot landscape buffer, would be vegetated and would not increase in impervious surface area.

While the proposed Project would potentially affect surface water hydrology by increasing impervious surface area and changing grading, the proposed Project would comply with LAX Master Plan EIS/EIR Commitment HWQ-1 and LAX Master Plan EIS/EIR Mitigation Measure MM-HWQ-1. The CDP prepared under LAX Master Plan EIS/EIR Commitment HWQ-1 provides a basis for future detailed drainage plans engineered for specific elements. Future developments of the proposed Project would implement all necessary drainage to comply with the CDP, which was prepared to the satisfaction of the City of Los Angeles Department of Public Works, and would incorporate methods to reduce peak flow of surface water runoff and to ensure drainage is sufficient to prevent flooding. LAWA has, through LAX Master Plan EIS/EIR Commitment HWQ-1, committed that the overall result will be a drainage infrastructure that provides adequate drainage capacity to prevent flooding and control peak flow discharges.

Drainage capacity would also be increased as needed. LAX Master Plan EIS/EIR Mitigation Measure MM-HWQ-1 would apply to the proposed Project. The County of Los Angeles Department of Public Works and/or the City of Los Angeles Department of Public Works, Bureau of Engineering would upgrade regional drainage facilities, in this case the Argo Ditch, in order to accommodate projected future flows within the watershed of this stormwater outfall. LAWA would conduct a post-construction evaluation of the proposed Project drainage conditions in order to determine if regional drainage facilities should be upgraded.

Table 4.8-10 below shows the runoff rate during a 50-year storm event for the watershed sub-areas with the LAX Northside Campus District. In all areas in the Northside Campus District, the proposed Project increases the impervious surface area and thus increases the amount of runoff during a 50-year storm event. However, in all areas, the proposed Project would have runoff rates below those incorporated into the CDP. The amount of stormwater management that LAX Master Plan Commitment HWQ-1 provides, through the CDP, exceeds the requirements of the proposed Project. As stated in LAX Master Plan Commitment HWQ-1, the CDP provides detailed drainage improvement specifications “at a level of detail sufficient to identify the overall improvements necessary to provide adequate drainage capacity to prevent flooding” at LAX, including the Project site.

Table 4.8-10

50-year Storm Event Runoff – Northside Campus District (cubic feet per second)

Area	Existing	Proposed	Change between Proposed & Existing	CDP	Difference between Proposed & CDP
1	9.14	11.85	2.71	27.82	-15.97
2a	18.97	29.33	10.36	63.72	-34.40
2b	21.00	27.94	6.94	53.75	-25.81
2c	21.00	21.74	0.75	53.75	-32.01
2d	9.00	12.09	3.10	32.74	-20.65
2e	9.00	15.64	6.64	32.74	-17.11
2f	19.98	32.89	12.91	72.73	-39.84
2g	10.87	12.40	1.53	37.81	-25.41
3	18.97	29.04	10.07	63.72	-34.69

Notes:
Areas are broken down to smaller units within the primary areas described in the proposed Project because areas defined in the proposed Project cross multiple watersheds.
Calculations do not incorporate Project Design Features or other elements that would reduce proposed Project cubic feet per second.
Source: URS Corporation, Hydrology Technical Memorandum, Appendix K, 2012.

In addition to the requirements set forth by the regulatory standards discussed above and by LAX Master Plan EIS/EIR Commitment HWQ-1 and LAX Master Plan EIS/EIR Mitigation Measure MM-HWQ-1, as further described in Section 4.8.3.3.2, the proposed Project would implement several Project Design Features that would reduce impacts related to surface water hydrology. All areas within the LAX Northside Campus District would integrate LID best practices into the future developments on the Project site and would incorporate stormwater management compliant with LARWQCB, City of Los Angeles, and County of Los Angeles requirements, including the preparation of a SUSMP for operations and maintenance. Parking would be designed to maximize stormwater runoff management, impervious surface area would be minimized, and landscaping would be compatible with stormwater management. Below grade stormwater treatment facilities, including the proposed LABOS project in Area 1, would be permitted and would further improve surface water hydrology in the Project site.

LAWA would implement LAX Master Plan EIR/EIS Commitment HWQ-1, LAX Master Plan EIR/EIS Mitigation Measure MM-HWQ-1, and the Project Design Features in the proposed Project. The proposed Project's development and grading would therefore not substantially increase stormwater runoff, both onsite and flowing into the Santa Monica Bay, and would not substantially alter the movement, current, or direction of surface water hydrology. Therefore, operational impacts related to surface water hydrology in the LAX Northside Campus District would be less than significant.

LAX Northside Airport Support District

As discussed in Section 4.8.2.1.1, Existing Conditions for Surface Water Hydrology, the Project site, including the LAX Northside Airport Support District, is mostly undeveloped except for:

mobile trailers and storage units (Area 4 and Area 5), temporary construction staging (Area 5), an electric utilities substation (Area 6), and a FAA radar facility (Area 9). The LAX Northside Airport Support District is comprised of mostly pervious surface area.

The proposed Project would increase the impervious surface area in the LAX Northside Airport Support District by constructing new buildings and new parking areas in portions of the Project site that are currently undeveloped (refer to **Figure 4.8-27** and **Table 4.8-8**). New construction would primarily occur in Area 4. In addition, grading would occur in Area 4 only (refer to **Figure 4.8-26**). Implementation of the proposed Project in Area 5 through Area 10 would not change the amount of pervious surface area or grading and would thus not alter surface water hydrology. The proposed grading would occur in the same portion of Area 4 as construction of new impervious surface area.

While the proposed Project would potentially affect surface water hydrology in Area 4 by increasing impervious surface area and changing grading, the proposed Project would comply with LAX Master Plan EIS/EIR Commitment HWQ-1 and LAX Master Plan EIS/EIR Mitigation Measure MM-HWQ-1. The CDP prepared under LAX Master Plan EIS/EIR Commitment HWQ-1 provides a basis for future detailed drainage plans engineered for specific elements. Future developments of the proposed Project would implement all necessary drainage to comply with the CDP, which was prepared to the satisfaction of the City of Los Angeles Department of Public Works, and would incorporate methods to reduce peak flow of surface water runoff and to ensure drainage is sufficient to prevent flooding. LAWA has, through LAX Master Plan EIS/EIR Commitment HWQ-1, committed that the overall result will be a drainage infrastructure that provides adequate drainage capacity to prevent flooding and control peak flow discharges.

Drainage capacity would also be increased as needed. LAX Master Plan EIS/EIR Mitigation Measure MM-HWQ-1 would apply to the proposed Project, and the County of Los Angeles Department of Public Works and/or the City of Los Angeles Department of Public Works, Bureau of Engineering would upgrade regional drainage facilities, in this case the Argo Ditch, in order to accommodate projected future flows within the watershed of this stormwater outfall. LAWA would conduct a post-construction evaluation of the proposed Project drainage conditions in order to determine if regional drainage facilities should be upgraded.

Table 4.8-Table 4.8-11 below shows the runoff rate during a 50-year storm event for the watershed sub-areas with the LAX Northside Airport Support District. In all areas in the Northside Airport Support District, the proposed Project increases the impervious surface area and thus increases the amount of runoff during a 50-year storm event. However, in most areas, the proposed Project would have runoff rates below those incorporated into the CDP. **Table 4.8-11** below shows the increases in proposed Project runoff compared to existing conditions. Using a conservative approach, the Hydrology Technical Memorandum (Appendix K) assumed that airport support land uses would occur throughout the LAX Northside Airport Support district in order to calculate potential runoff, thereby showing an increase in the 50-year storm event runoff from Area 5 through Area 10. However, as depicted in Figure 2-6 Illustrative Site Plan, the proposed Project's reasonably foreseeable development scenario does not include new structures or impermeable surfaces in Area 5 through Area 10. Although the CDP provides for drainage improvements in these areas, and the Airport Support land use increases runoff in the Hydrology Technical Memorandum, the reasonably foreseeable development would not include an increase in impervious surface area in these areas of the LAX Northside Airport Support District. In sub-Area 4c, in Area 4, the proposed Project exceeds CDP design capacity. However, implementation of the Project Design Features and regulations discussed below would reduce the runoff rate in Area 4 to ensure that the proposed Project would not cause flooding or result in an adverse change to hydrology. In addition, this sub-area would have no increase in flows from existing conditions.

Table 4.8-11

50-year Storm Event Runoff – Northside Airport Support District (cubic feet per second)

Area	Existing	Proposed	Change between Proposed & Existing	CDP	Change between Proposed & CDP
4a	11.31	14.40	3.09	18.72	-4.32
4b	29.27	37.26	7.98	48.44	-11.18
4c	32.72	32.72	0.00	21.97	10.75
5	5.60	11.71	6.11	21.06	-9.35
6	4.31	6.21	1.91	8.27	-2.05
7	4.31	5.00	0.69	8.27	-3.27
8	4.31	5.92	1.62	8.27	-2.34
9a	4.37	9.31	4.94	16.43	-7.12
9b	12.48	18.33	5.85	43.92	-25.59
9c	7.89	17.34	9.45	28.73	-11.39
10	3.84	4.72	0.88	16.43	-11.71

Notes:
Areas are broken down to smaller units within the primary areas described in the proposed Project because areas defined in the proposed Project cross multiple watersheds.
Calculations do not incorporate Project Design Features or other elements that would reduce proposed Project cubic feet per second.
Source: URS Corporation, Hydrology Technical Memorandum, Appendix K, 2012.

In addition to the requirements set forth by the regulatory standards discussed above and by LAX Master Plan EIS/EIR Commitment HWQ-1 and LAX Master Plan EIS/EIR Mitigation Measure MM-HWQ-1, as further described in Section 4.8.3.3.2, the proposed Project would implement several Project Design Features that would reduce impacts related to surface water hydrology, as discussed in Section 4.8.3.2.2. All areas within the LAX Northside Airport Support District would integrate LID best practices into the future developments on the Project site and would incorporate stormwater management compliant with LARWQCB, City of Los Angeles, and County of Los Angeles requirements, including the preparation of a SUSMP for operations and maintenance. Existing conditions of grading strategies would be preserved except for new landscape berms constructed to limit views of the LAX Northside Airport Support District from properties on the northern side of Westchester Parkway.

LAWA would implement LAX Master Plan EIR/EIS Commitment HWQ-1, LAX Master Plan EIR/EIS Mitigation Measure MM-HWQ-1, and the Project Design Features in the proposed Project. The proposed Project's development and grading would therefore not substantially increase stormwater runoff, both onsite and flowing into the Santa Monica Bay, and would not substantially alter the movement, current, or direction of surface water hydrology. Therefore, operational impacts related to surface water hydrology in the LAX Northside Airport Support District would be less than significant.

Groundwater

Construction

LAX Northside Center District

The proposed Project would involve construction of new structures and new parking areas in the LAX Northside Center District, as well as new landscaping areas, in Area 11, Area 12A East (except LAFD Station #5), Area 12A West, and Area 13 (except First Flight Child Development Center). Construction of buildings and subterranean parking in Area 12A East and Area 13 would require typical excavation. Installation of new landscaping would require minimal excavation. However, construction of subterranean parking uses in Area 11 and Area 12A West would involve excavation at depths up to approximately 45 feet bgs. Construction of these buildings and parking areas would involve typical construction practices, including: use of large construction equipment such as cranes, bulldozers, and earthmovers; temporary storage of materials and earth; and grading of the Project site as shown in **Figure 4.8-26**.

Site-specific geotechnical borings conducted in Area 12A West and Area 11 did not encounter groundwater at depths of 50.5 feet bgs and 55.5 feet bgs, respectively. Soil types are relatively level in distribution throughout the Project site, as shown in **Figure 4.8-24**, with Older Alluvial Deposits found under most Project site Areas. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the LAX Northside Center District, and therefore would not be encountered any shallower than 50.5 feet bgs. Groundwater beneath LAX is not used for municipal or agricultural purposes.[47] Construction and operation of the proposed Project would not require the use of groundwater and, thus, would not deplete groundwater supplies.

As most construction would involve excavation for footings and subterranean parking, construction of the proposed Project would not reach groundwater and would not require dewatering or cause changes to rate or direction of groundwater flow. In addition, construction activities would not require usage of potable water in groundwater below the construction sites. Infiltration of stormwater into groundwater would not change significantly, as the proposed Project would be required to implement the NPDES GCP during all construction activities, starting from mobilization through final closeout. Construction in the LAX Northside Center District would require the implementation of a SWPPP and temporary BMPs. The SWPPP would be required to be in place prior to ground disturbance on the Project site. The SWPPP would provide a plan that manages the specific needs and requirements of the LAX Northside Center District, and individual construction sites within it, and would manage the changes to surface water that would influence hydrology of groundwater beneath the Project site during construction. Impacts related to groundwater construction are further analyzed for Area 11 and Area 12A West due to deeper construction proposed in these areas.

Area 11. As subterranean parking is a permitted use within the LAX Northside Center District, excavation may occur up to approximately 45 feet bgs for construction of this use in Area 11. Site-specific geotechnical borings in the center of Area 11 did not locate any groundwater when drilling to a depth of 55.5 feet bgs. Therefore, it is not anticipated that groundwater would be encountered when excavating up to 45 feet bgs for the construction of subterranean parking in Area 11. The NPDES GCP and SWPPP requirements discussed above would apply to Area 11 as part of the LAX Northside Center District and impacts would be similar to those in areas outside of Area 11. Therefore, construction impacts related to groundwater hydrology in Area 11 would be less than significant.

[47] City of Los Angeles, LAX Master Plan Final EIS/EIR, 2004, p. 4-759

Area 12A West. As subterranean parking is a permitted use within the LAX Northside Center District, excavation may occur approximately 45 feet bgs for construction of this use in Area 12A West. Site-specific geotechnical borings in Area 12A West did not locate any groundwater when drilling to a depth of 50.5 feet bgs. Therefore, it is not anticipated that groundwater would be encountered when excavating up to approximately 45 feet bgs for the construction of subterranean parking in Area 12A West. The NPDES GCP and SWPPP requirements discussed above would apply to Area 12A West as part of the LAX Northside Center District and impacts would be similar to those in areas outside of Area 12A West. Therefore, construction impacts related to groundwater hydrology in Area 12A West would be less than significant.

As surface water hydrology would not change significantly during construction in the LAX Northside Center District, groundwater would continue to infiltrate in a similar manner as existing conditions. Construction would be temporary, and would thus not cause changes in potable water levels sufficient to reduce the ability of a water utility to use the West Coast Basin or result in a demonstrable and sustained reduction in groundwater recharge capacity. Construction is not anticipated to reach groundwater beneath the Project site and would therefore not adversely change the rate or direction of flow of groundwater. The closest well to the LAX Northside Center District is 1.72 miles away and construction at the LAX Northside Center District would not result in changes to potable groundwater levels sufficient enough to reduce yields at the closest well. Therefore, construction impacts related to groundwater hydrology in the LAX Northside Center District would be less than significant.

LAX Northside Campus District

The proposed Project would involve construction of new structures and new parking areas in the LAX Northside Campus District, as well as new landscaping areas, in Area 1 (except Jet Pets), the majority of Area 2, and Area 3. Construction of buildings and subterranean parking would require typical excavation. Installation of new landscaping would require minimal excavation. Construction of these buildings and parking areas would involve typical construction practices, including: use of large construction equipment such as cranes, bulldozers, and earthmovers; temporary storage of materials and earth; and grading of the Project site as shown in **Figure 4.8-26**.

Site-specific geotechnical borings conducted in Area 2A and Area 3 did not encounter groundwater at a depth of 50.5 feet bgs. Soil types are relatively level in distribution throughout the Project site, as shown in **Figure 4.8-24**, with Older Alluvial Deposits found under most Project site Areas. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the LAX Northside Campus District, and therefore would not be encountered any shallower than 50.5 feet bgs. Groundwater beneath the LAX Northside Campus District is not used for municipal or agricultural purposes.[48] Construction and operation of the proposed Project would not require the use of groundwater and, thus, would not deplete groundwater supplies.

As construction would involve excavation for footings and shallow subterranean parking, construction of the proposed Project would not reach groundwater and would not require dewatering or cause changes to rate or direction of groundwater flow. In addition, construction activities would not require usage of potable water in groundwater below the construction site. Infiltration of stormwater into groundwater would not change significantly, as the proposed Project would be required to implement the NPDES GCP during all construction activities, starting from mobilization through final closeout. Construction in the LAX Northside Campus District would require the implementation of a SWPPP and temporary BMPs. The SWPPP

[48] City of Los Angeles, LAX Master Plan Final EIS/EIR, 2004, p. 4-759

would be required to be in place prior to ground disturbance on the Project site. The SWPPP would provide a plan that manages the specific needs and requirements of the LAX Northside Campus District, and individual construction sites within it, and would manage the changes to surface water that would influence hydrology of groundwater on the Project site during construction.

As surface water hydrology would not change significantly during construction in the LAX Northside Campus District, groundwater would continue to infiltrate in a similar manner to existing conditions. Construction would be temporary, and would thus not cause changes in potable water levels sufficient to reduce the ability of a water utility to use the West Coast Basin or result in a demonstrable and sustained reduction in groundwater recharge capacity. Construction is not anticipated to reach groundwater beneath the Project site and would therefore not adversely change the rate or direction of flow of groundwater. The closest well to the LAX Northside Campus District is 2.43 miles away and would not experience changes to potable groundwater levels sufficient enough to reduce yields. Therefore, construction impacts related to groundwater hydrology in the LAX Northside Campus District would be less than significant.

LAX Northside Airport Support District

The proposed Project would involve construction of new structures and new parking areas in the LAX Northside Airport Support District in Area 4. The proposed Project would also include new landscaping areas in Area 4 and additions to existing landscaping in Area 5 through Area 10. Structures would reach a maximum height of 30 feet in the portions of Area 4 not designated as Limited Development Area. While subterranean parking is a permitted use throughout the Project site, it is not anticipated to occur in the LAX Northside Airport District due to the relatively low intensity of development established by FAA height requirements and the Limited Development Area. It is anticipated that construction of buildings and parking would require typical excavation. Installation of new landscaping would require minimal excavation. Construction of these buildings and parking areas would involve typical construction practices, including: use of large construction equipment such as cranes, bulldozers, and earthmovers; temporary storage of materials and earth; and grading of the Project site as shown in **Figure 4.8-26**.

Site-specific geotechnical borings conducted in Area 2A, Area 3, and Area 12A West did not encounter groundwater at a depth of 50.5 feet bgs. The boring conducted in Area 11 reached a depth of 55.5 feet bgs and did not encounter groundwater. Soil types are relatively level in distribution throughout the Project site, as shown in **Figure 4.8-24**, with Older Alluvial Deposits found under most of the Project site. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the Project site. Borings conducted in the LAX Northside Center and Campus Districts would represent groundwater conditions in the LAX Northside Airport Support District. Therefore, groundwater would not be encountered any shallower than 50.5 feet bgs in the LAX Northside Airport Support District. Groundwater beneath the LAX Northside Airport Support District is not used for municipal or agricultural purposes.[49] Construction and operation of the proposed Project would not require the use of groundwater and, thus, would not deplete groundwater supplies.

As construction would only involve excavation for footings, construction of the proposed Project would not reach groundwater and would not require dewatering or cause changes to rate or direction of groundwater flow. In addition, construction activities would not require usage of

[49] *Ibid.*

potable water in groundwater below the construction sites. Infiltration of stormwater into groundwater would not change significantly, as the proposed Project would be required to implement the NPDES GCP during all construction activities, starting from mobilization through final closeout. Construction in the LAX Northside Airport Support District would require the implementation of a SWPPP and temporary BMPs. The SWPPP would be required to be in place prior to ground disturbance on the Project site. The SWPPP would provide a plan that manages the specific needs and requirements of the LAX Northside Airport Support District, and individual construction sites within it, and would manage the changes to surface water that would influence hydrology of groundwater on the Project site during construction.

As surface water hydrology would not change significantly during construction in the LAX Northside Airport Support District, groundwater would continue to infiltrate in a similar manner to existing conditions. Construction would be temporary, and would thus not cause changes in potable water levels sufficient to reduce the ability of a water utility to use the West Coast Basin or result in a demonstrable and sustained reduction in groundwater recharge capacity. Construction is not anticipated to reach groundwater beneath the Project site and would therefore not adversely change the rate or direction of flow of groundwater. The closest well to the LAX Northside Airport Support District is 1.88 miles away and would not experience changes to potable groundwater levels sufficient enough to reduce yields. Therefore, construction impacts related to groundwater hydrology in the LAX Northside Airport Support District would be less than significant.

Operations

LAX Northside Center District

As shown in **Table 4.8-8** above, the LAX Northside Center District is largely comprised of pervious surface area (109.9 acres) and has 12.9 acres of existing impervious surface area. The LAX Northside Center District is anticipated to provide approximately 26.4 AFY of groundwater infiltration. Existing paved areas and structures in the LAX Northside Center District do not permit groundwater infiltration. No wells are present in the LAX Northside Center District. Site-specific geotechnical borings conducted in Area 12A West and Area 11 did not encounter groundwater at depths of 50.5 feet bgs and 55.5 feet bgs, respectively. Soil types are relatively level in distribution throughout the Project site, as shown in **Figure 4.8-24**, with Older Alluvial Deposits found under most of the Project site. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the LAX Northside Center District, and therefore would not be encountered any shallower than 50.5 feet bgs. Groundwater beneath the LAX Northside Center District is not used for municipal or agricultural purposes.[50] Construction and operation of the proposed Project would not require the use of groundwater and, thus, would not deplete groundwater supplies.

The proposed Project would include operations of new structures and new parking areas in the LAX Northside Center District, as well as maintenance of landscaping areas, in Area 11, part of Area 12A East, Area 12A West, and part of Area 13. New landscaping areas would remain pervious surface area and would not substantially affect the amount of groundwater infiltrated where they are installed; landscaping may potentially improve infiltration where new vegetation improves retention and absorption of surface water when compared to existing minimal vegitation. The existing uses in Area 12A East (LAFD Station #5), Area 12B (Westchester Golf Course), and Area 13 (First Flight Child Development Center) would not change in terms of pervious surface area.

[50] *Ibid.*

LAX Master Plan EIS/EIR Commitment HWQ-1 discusses measures that reduce stormwater runoff via infiltration to groundwater. While the proposed Project would involve an increase in impervious surface area, goals set forth by LAWA would apply, including decreasing impervious areas through removal of unnecessary pavement and utilization of porous concrete or modular pavement. Runoff would also be diverted to pervious areas in order to reduce directly-connected impervious areas. Vegetated swales, bioretention, and infiltration would also be implemented to control stormwater runoff, and would increase groundwater infiltration, reducing the effect the proposed increase in impervious surface area would have.

As further described in Section 4.8.3.3.2, the Project Design Features require that the proposed Project submit Stormwater Management strategies and design features and comply with LARWQCB and County of Los Angeles requirements, including the preparation of a SUSMP for operations and maintenance. The proposed Project would be designed to maximize infiltration even in areas of the Project site that are developed. Parking areas would minimize the amount of impervious area to the maximum extent feasible, and would use landscaping and design features to infiltrate stormwater from paved areas into groundwater. These Project Design Features would reduce the amount of stormwater that runs off of the Project site and maximize groundwater infiltration.

During operations, buildings would cover a total of 8.3 acres, including 6.3 acres of formerly pervious area. Parking would cover a total of 13.5 acres, including 10.7 acres of formerly pervious area. The remaining 2 acres of buildings and 2.8 acres of parking onsite during operations would cover existing impermeable areas and would not change the amount of infiltration. New buildings developed under the proposed Project would create new fully impervious surface areas. Parking would also increase impervious surface areas, but would minimize runoff through permeability requirements, as discussed in the Project Design Features. As discussed in Section 4.8.3.1.1 Groundwater Hydrology Methodology above, it is anticipated that 50 percent of stormwater on parking surface areas would be infiltrated, and 50 percent would be discharged. The effective amount of impermeable surface parking would therefore be 5.3 acres. The proposed Project would also remove 2.6 acres of existing impermeable surface area (i.e. abandoned roads), creating new pervious surface areas. The net change in impermeability in the LAX Northside Center District would thus be 9.1 acres as shown in **Table 4.8-8** above.

Therefore, of the predicted 26.4 AFY that the LAX Northside Center District infiltrates under existing conditions, the proposed Project would reduce groundwater infiltration by 2.2 AFY or 8.2%. This change represents a 0.03 percent reduction in the 6,700 AFY infiltrated into the West Coast Basin. This reduction in 2.2 AFY is also negligible in comparison to the adjudicated extraction of groundwater permitted annually in the West Coast Basin, 64,468.25 AFY. Table **4.8-12** below shows the change in infiltration within each district.

Table 4.8-12

Proposed Project Impacts on Groundwater Infiltration

District	Existing Infiltration (AFY)	Change in Infiltration (AFY)	Proposed Infiltration (AFY)	Percent Change (District) (%)	Percent Change (West Coast Basin) (%)
Center	26.4	-2.2	24.2	-8.2	-0.03
Campus	22.1	-3.6	18.5	-16.4	-0.05
Airport Support	21.2	0.6	21.8	3.0	0.01
Total	**69.7**	**-5.2**	**64.5**	**-7.4**	**-0.08**

Note:
AFY = acre-feet per year
Source: URS Corporation, 2014.

Furthermore, the primary source of groundwater for the West Coast Basin is not the 6,700 AFY infiltration from surface water, but is instead groundwater that flows from the Central Basin.[51] Development of the LAX Northside Center District would result in a negligible reduction in the amount of water recharged in the West Coast Basin and the ability of a utility to use the West Coast Basin would not be impacted. The nearest well to the LAX Northside Center District is 1.72 miles away and would therefore not be impacted by this minor change in infiltration.

The changes in infiltration related to the implementation of the proposed Project would therefore not adversely affect groundwater recharge capacity or impact the ability of a utility or of a well to utilize the groundwater in the West Coast Basin. In addition, the small changes in infiltration would not substantially change groundwater flow. Building foundations and subterranean parking would not impede groundwater and would not adversely change the rate or direction of the flow of groundwater. The level of groundwater would also not change due to the presence of these elements.

The proposed Project would not change potable levels in the West Coast Basin in a sufficient quantity to reduce yields of wells, well fields, to reduce the ability of a utility to use the basin, or to result in a demonstrable and sustained reduction of groundwater recharge capacity. The proposed Project would not directly impact groundwater hydrology, and impacts to groundwater recharge capacity would be minimal. Therefore, impacts related to groundwater hydrology in the LAX Northside Center District during operations would be less than significant.

LAX Northside Campus District

As shown in **Table 4.8-8** above, the LAX Northside Campus District is largely comprised of pervious surface area (92.2 acres) and has 13.1 acres of impervious surface area. It is anticipated provide approximately 22.1 AFY of groundwater infiltration. Existing paved areas and structures in the LAX Northside Campus District do not permit groundwater infiltration. No wells are present in the LAX Northside Campus District. Site-specific geotechnical borings conducted in Area 2A and Area 3 did not encounter groundwater at a depth of 50.5 feet bgs. Soil types are relatively level in distribution throughout the Project site, as shown in **Figure 4.8-**

[51] California Natural Resources Agency, Department of Water Resources, Southern Region, Watermaster Service in the West Coast Basin – Los Angeles County, 2011, p. 5, online at http://www.water.ca.gov/watermaster/sd_documents/west_basin_2011/westcoastbasinwatermasterreport2011.pdf

24, with Older Alluvial Deposits found under most of the Project site. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the LAX Northside Campus District, and therefore would not be encountered any shallower than 50.5 feet bgs. Groundwater beneath the LAX Northside Campus District is not used for municipal or agricultural purposes.[52] Construction and operation of the proposed Project would not require the use of groundwater and, thus, would not deplete groundwater supplies.

The proposed Project would involve operations of new structures and new parking areas in the LAX Northside Campus District, as well as maintenance of landscaping areas, in part of Area 1, the majority of Area 2, and Area 3. New landscaping, open space, and recreation areas would remain pervious surface area and would not substantially affect the amount of groundwater infiltrated in these locations. Landscaping may potentially improve infiltration where vegetation improves retention and absorption of surface water. The existing use in Area 1 (Jet Pets) would not change in terms of pervious surface area.

LAX Master Plan EIS/EIR Commitment HWQ-1 discusses measures that reduce stormwater runoff via infiltration to groundwater. While the proposed Project would involve an increase in impervious surface area, goals set forth by LAWA in LAX Master Plan EIS/EIR Commitment HWQ-1 would apply, including decreasing impervious areas through removal of unnecessary pavement and utilization of porous concrete or modular pavement. Runoff would also be diverted to pervious areas in order to reduce directly-connected impervious areas. Vegetated swales, bioretention, and infiltration also would be implemented to control stormwater runoff, and would increase groundwater infiltration.

As further described in Section 4.8.3.3.2, the Project Design Features require that the proposed Project submit Stormwater Management strategies and design features and comply with LARWQCB, City of Los Angeles, and County of Los Angeles requirements. The proposed Project would be designed to maximize infiltration even in areas of the Project site that are developed. Parking areas would minimize the amount of impervious area to the maximum extent feasible, and would use landscaping and design features to infiltrate stormwater from paved areas into groundwater. These Project Design Features would reduce the amount of stormwater that runs off of the Project site.

During operations, buildings would cover a total of 10.4 acres, including 9.7 acres of formerly pervious area. Parking would cover a total of 26.8 acres, including 22.5 acres of formerly pervious area. The remaining 0.7 acres of buildings and 4.3 acres of parking onsite during operations would cover existing impermeable areas and would not change the amount of infiltration. New buildings developed under the proposed Project would create new fully impervious surface areas. Parking would also increase impervious surface areas, but would minimize runoff through permeability requirements, as discussed in the Project Design Features. As discussed in Section 4.8.3.1.1 Groundwater Hydrology Methodology above, it is anticipated that 50 percent of stormwater on parking surface areas would be infiltrated, and 50 percent would be discharged. The effective amount of impermeable surface parking would therefore be 11.3 acres. The proposed Project would also remove 5.9 acres of existing impermeable surface area (i.e. abandoned roads), creating new pervious surface areas. The net change in impermeability in the LAX Northside Campus District would thus be 15.1 acres. These changes are shown in **Table 4.8-8** above.

Therefore, of the predicted 22.1 AFY that the LAX Northside Campus District infiltrates under existing conditions, the proposed Project would reduce groundwater infiltration by 3.6 AFY or

[52] City of Los Angeles, LAX Master Plan Final EIS/EIR, 2004, p. 4-759

16.4%. This change represents a 0.05 percent reduction in the 6,700 AFY infiltrated into the West Coast Basin. This reduction in 3.6 AFY is also negligible in comparison to the adjudicated extraction of groundwater permitted annually in the West Coast Basin, 64,468.25 AFY. **Table 4.8-12** above shows the change in infiltration within each district.

Furthermore, the primary source of groundwater for the West Coast Basin is not infiltration from surface water, but is groundwater that flows from the Central Basin. While there is a slight reduction in the amount of water recharged in the West Coast Basin, the ability of a utility to use the West Coast Basin would not be impacted to a measurable degree. The nearest well to the LAX Northside Campus District is 2.43 miles away and would not be impacted by this small change in infiltration.

The changes in infiltration related to the implementation of the proposed Project would therefore not adversely affect groundwater recharge capacity or impact the ability of a utility or of a well to utilize the groundwater in the West Coast Basin in any substantial amount. In addition, the small changes in infiltration would not substantially change groundwater flow. Building foundations and subterranean parking would not impede groundwater and would not adversely change the rate or direction of the flow of groundwater. The level of groundwater would also not change due to the presence of these elements.

The proposed Project would not change potable levels in the West Coast Basin in a sufficient quantity to reduce yields of wells, well fields, to reduce the ability of a utility to use the basin, or to result in a demonstrable and sustained reduction of groundwater recharge capacity. The proposed Project would not directly impact groundwater hydrology, and impacts to groundwater recharge capacity would be minimal. Therefore, impacts related to groundwater hydrology in the LAX Northside Campus District during operations would be less than significant.

LAX Northside Airport Support District

As shown in **Table 4.8-8** above, the LAX Northside Airport Support District is largely comprised of pervious surface area (88.3 acres) and has 22.2 acres of impervious surface area including existing paved roads. The LAX Northside Airport Support District is anticipated to provide approximately 21.2 AFY of groundwater infiltration. Existing paved areas and structures in the LAX Northside Airport Support District do not permit groundwater infiltration. No wells are present in the LAX Northside Airport Support District. Site-specific geotechnical borings conducted in Area 2A, Area 3, and Area 12A West, which are representative of groundwater conditions in the LAX Northside Airport Support District, did not encounter groundwater at a depth of 50.5 feet bgs. The boring conducted in Area 11 reached a depth of 55.5 feet bgs and did not encounter groundwater. Soil types are relatively level in distribution throughout the Project site, as shown in **Figure 4.8-24**, with Older Alluvial Deposits found under most of the Project site. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the Project site, and therefore would not be encountered any shallower than 50.5 feet bgs. Groundwater beneath the LAX Northside Airport Support District is not used for municipal or agricultural purposes.[53] Construction and operation of the proposed Project would not require the use of groundwater and, thus, would not deplete groundwater supplies.

The proposed Project would involve operations of new structures and new parking areas in the LAX Northside Airport Support District in Area 4, as well as maintenance of landscaping areas, in part of Area 4, and Area 5 through Area 10. While subterranean parking is a permitted use throughout the Project site, it is not anticipated to occur in the LAX Northside Airport District due to the relatively low intensity of development established by FAA height requirements and the

[53] City of Los Angeles, LAX Master Plan Final EIS/EIR, 2004, p. 4-759

Limited Development Area, where development is prohibited. New landscaping would remain pervious surface area and would not substantially affect the amount of groundwater infiltrated where it is installed. Landscaping may potentially improve infiltration where vegetation improves retention and absorption of surface water when compared to existing minimal vegetation.

LAX Master Plan EIS/EIR Commitment HWQ-1 discusses measures that reduce stormwater runoff via infiltration to groundwater. While the proposed Project would involve an increase in impervious surface area, goals set forth by LAWA in LAX Master Plan EIS/EIR Commitment HWQ-1 would apply, including decreasing impervious areas through removal of unnecessary pavement and utilization of porous concrete or modular pavement. Runoff would also be diverted to pervious areas in order to reduce directly-connected impervious areas. Vegetated swales, bioretention, and infiltration also would be implemented to control stormwater runoff, and would increase groundwater infiltration.

As further described in Section 4.8.3.3.2, the Project Design Features require that the proposed Project submit Stormwater Management strategies and design features and comply with LARWQCB, City of Los Angeles, and County of Los Angeles requirements, including the preparation of a SUSMP for operations and maintenance. The proposed Project would be designed to maximize infiltration even in areas of the Project site that are developed. Parking areas would minimize the amount of impervious area to the maximum extent feasible, and would use landscaping and design features to infiltrate stormwater from paved areas into groundwater. These Project Design Features would reduce the amount of stormwater that runs off of the Project site instead of infiltrating to groundwater.

During operations, buildings would cover a total of 7.6 acres, including 2.4 acres of formerly pervious area. Parking would cover a total of 8.9 acres, including 5.9 acres of formerly pervious area. The remaining 5.2 acres of buildings and 3.0 acres of parking onsite during operations would cover existing impermeable areas and would not change the amount of infiltration. New buildings developed under the proposed Project would create new fully impervious surface areas. Parking would also increase impervious surface areas, but would minimize runoff through permeability requirements, as discussed in the Project Design Features. As discussed in Section 4.8.3.1.1 Groundwater Hydrology Methodology above, it is anticipated that 50 percent of stormwater on parking surface areas would be infiltrated, and 50 percent would be discharged. The effective amount of impermeable surface parking would therefore be 3.0 acres. The proposed Project would also remove 8.0 acres of existing impermeable surface area (i.e. abandoned roads), creating new pervious surface areas. The net change in impermeability in the LAX Northside Airport Support District would thus be -2.6 acres, meaning that pervious surface area would increase by 2.6 acres compared to existing conditions. These changes are shown in **Table 4.8-8** above.

Therefore, of the predicted 21.2 AFY that the LAX Northside Airport Support District infiltrates under existing conditions, the proposed Project would increase groundwater infiltration by 0.6 AFY or 3 percent. This change represents a 0.01 percent increase in the 6,700 AFY infiltrated into the West Coast Basin. This increase of 0.6 AFY would therefore marginally benefit the West Coast Basin and would not reduce groundwater supply. **Table 4.8-12** above shows the change in infiltration within each district.

As the proposed Project in the LAX Northside Airport Support District would increase groundwater infiltration, yields at the nearest well to the LAX Northside Airport Support District (1.88 miles away) and the ability of a utility to use groundwater would not be impacted.

The changes in infiltration related to the implementation of the proposed Project would therefore not adversely affect groundwater recharge capacity or impact the ability of a utility or of a well to utilize the groundwater in the West Coast Basin in any substantial amount. Infiltration would

slightly increase and groundwater levels would not be reduced due to development of the proposed Project in the LAX Northside Airport Support District. Building foundations would not impede groundwater and would not adversely change the rate or direction of the flow of groundwater. The level of groundwater would also not change due to the presence of these elements.

The proposed Project would not change potable water levels in the West Coast Basin in a sufficient quantity to reduce yields of wells or well fields, to reduce the ability of a utility to use the basin, or to result in a demonstrable and sustained reduction of groundwater recharge capacity. The proposed Project would not directly impact groundwater hydrology, and impacts to groundwater recharge capacity would be minimal. Therefore, impacts related to groundwater hydrology in the LAX Northside Airport Support District during operations would be less than significant.

4.8.3.4.2 Water Quality

Surface Water

Construction

LAX Northside Center District

The proposed Project would involve construction of new structures and new parking areas in the LAX Northside Center District, as well as new landscaping areas, in Area 11, Area 12A East (except LAFD Station #5), Area 12A West, and Area 13 (except First Flight Child Development Center). Construction of buildings and parking areas would involve typical construction practices, including: use of construction equipment which has the potential to leak oils and chemicals; temporary storage of building materials and earth; construction of concrete and installation of paving; and grading of the Project site as shown in **Figure 4.8-26**. These temporary construction uses on the Project site have the potential to affect surface water quality by discharging sediments from earth and various potential pollutants from equipment operation, equipment storage, material storage, and construction activities.

The proposed Project would be required to implement the NPDES GCP during all construction activities, starting from mobilization through final closeout. The GCP includes regulations required of projects during construction. Construction in the LAX Northside Center District would require the implementation of a SWPPP and temporary BMPs. The SWPPP would provide a plan that manages the specific needs and requirements of the LAX Northside Center District, and individual construction sites within it. Implementation of the measures and requirements that the SWPPP contains would manage the release of pollutants and contaminants from construction into surface water on the Project site during construction. The SWPPP would be required to be in place prior to ground disturbance on the Project site. Erosion and sediment controls would be also established as part of the SWPPP and put in place to manage erosion of the Project site and the release of sediment into receiving water bodies, thereby reducing the potential for sediment to be released into the Argo Ditch and Santa Monica Bay.

The temporary measures and BMPs put into place by the SWPPP would prevent typical construction activity discharges from creating pollution, contamination, or nuisance in surface water, and would be compliant with all regulatory requirements. Therefore, construction impacts related to surface water quality in the LAX Northside Center District would be less than significant.

LAX Northside Campus District

The proposed Project would involve construction of new structures and new parking areas in the LAX Northside Campus District, as well as new landscaping areas, in Area 1 (except Jet Pets), the majority of Area 2, and Area 3. Construction of buildings and parking areas would involve typical construction practices, including: use of construction equipment which has the potential to leak oils and chemicals; temporary storage of building materials and earth; construction of concrete and installation of paving; and grading of the Project site as shown in **Figure 4.8-26**. These temporary construction uses on the Project site have the potential to affect surface water quality by discharging sediments from earth and various potential pollutants from equipment operation, equipment storage, material storage, and construction activities.

The proposed Project would be required to implement the NPDES GCP during all construction activities, starting from mobilization through final closeout. The GCP includes regulations required of projects during construction. Construction in the LAX Northside Campus District would require the implementation of a SWPPP and temporary BMPs. The SWPPP would provide a plan that manages the specific needs and requirements of the LAX Northside Campus District, and individual construction sites within it, and would manage the release of pollutants and contaminants from construction into surface water on the Project site during construction. The SWPPP would be required to be in place prior to ground disturbance on the Project site. Erosion and sediment controls would be also established as part of the SWPPP and put in place to manage erosion of the Project site and the release of sediment into receiving water bodies, thereby reducing the potential for sediment to be released into the Argo Ditch and Santa Monica Bay.

The temporary measures and BMPs put into place by the SWPPP would prevent typical construction activity discharges from creating pollution, contamination, or nuisance in surface water, and would be compliant with all regulatory requirements. Therefore, construction impacts related to surface water quality in the LAX Northside Campus District would be less than significant.

LAX Northside Airport District

The proposed Project would involve construction of new structures and new parking areas in the LAX Northside Airport Support District in Area 4. The proposed Project would also include new landscaping areas in Area 4 and additions to existing landscaping in Area 5 through Area 10. Structures would reach a maximum height of 30 feet in Area 4 and would be prohibited in the Limited Development Area. Buildings and parking areas in Area 4 would involve typical construction practices, including: use of construction equipment which has the potential to leak oils and chemicals; temporary storage of building materials and earth; construction of concrete and installation of paving; and grading of the Project site as shown in **Figure 4.8-26**. Installation of landscaping would require minor construction activities, such as digging, and use of fertilizers and pesticides. These temporary construction uses on the Project site have the potential to affect surface water quality by discharging sediments from earth and various potential pollutants from equipment operation and landscape installation, equipment storage, material storage, and construction activities.

The proposed Project would be required to implement the NPDES GCP during all construction activities, starting from mobilization through final closeout. The GCP includes regulations required of projects during construction. Construction in the LAX Northside Airport Support District would require the implementation of a SWPPP and temporary BMPs. The SWPPP would provide a plan that manages the specific needs and requirements of the LAX Northside Airport Support District, and individual construction sites within it, and would manage the release of pollutants and contaminants from construction into surface water on the Project site

during construction. The SWPPP would be required to be in place prior to ground disturbance on the Project site. Erosion and sediment controls would also be established as part of the SWPPP and put in place to manage erosion of the Project site and the release of sediment into receiving water bodies, thereby reducing the potential for sediment to be released into the Argo Ditch and Santa Monica Bay.

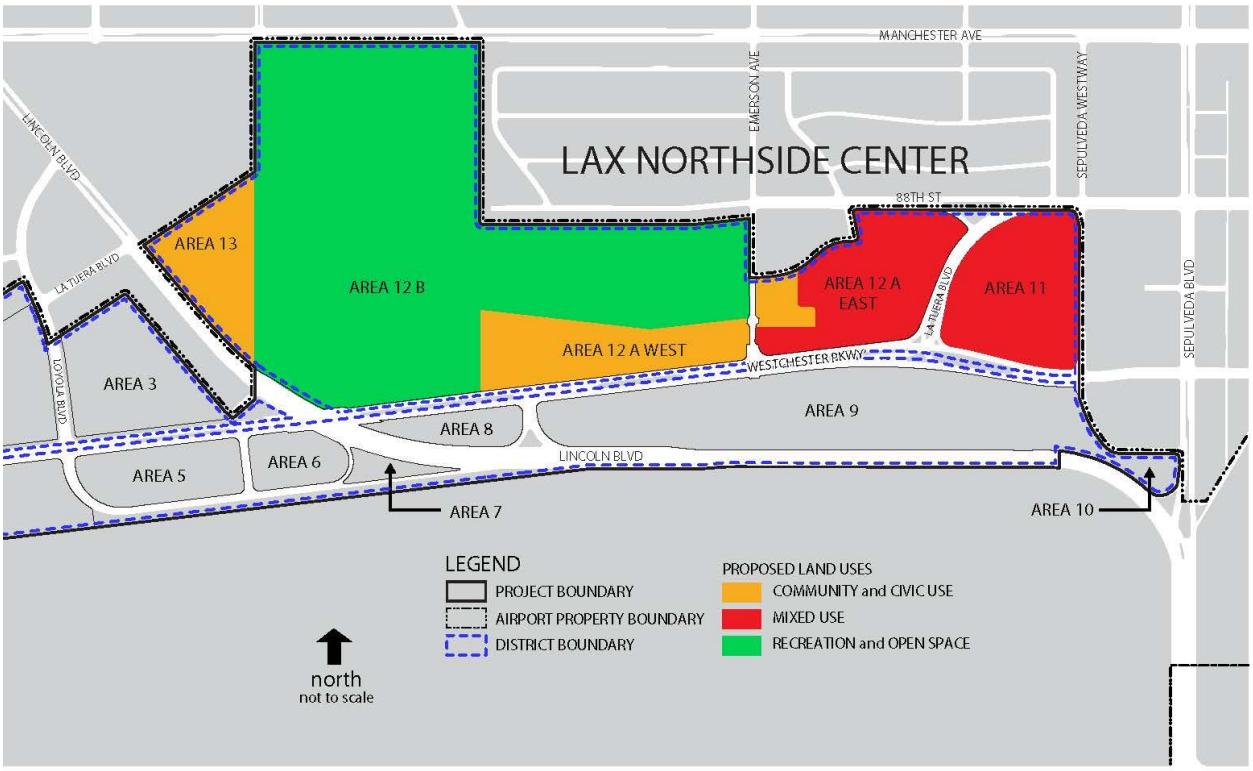
The temporary measures and BMPs put into place by the SWPPP would prevent typical construction activity discharges from creating pollution, contamination, or nuisance in surface water, and would be compliant with all regulatory requirements. Therefore, construction impacts related to surface water quality in the LAX Northside Airport Support District would be less than significant.

Operation

LAX Northside Center District

As discussed in Section 4.8.2.2.2 above, the majority of the LAX Northside Center District is currently vacant. Area 12B, the Westchester Golf Course, is an existing open space use and contributes pesticides and chemicals typical of landscaping and developed open space. Area 12B would retain the same use under the proposed Project as it has under existing conditions and would therefore not have an effect on surface water quality.

During operation, new uses would occur in Area 11, Area 12A East (except LAFD Station #5), Area 12A West, and Area 13 (except First Flight Child Development Center) with new buildings, parking, and landscaped areas. The proposed uses for the LAX Northside Center District are given in **Figure 4.8-28** below. Development of these proposed uses would reduce sedimentation as structures and paved parking would be operated on currently exposed earth. These uses would introduce potential contaminants typical of commercial and parking uses, such as metals and oils from automobiles. These new uses and developments would not increase indicator bacteria, a USEPA TMDL for Santa Monica Beach, part of Santa Monica Bay, the receiving body of water for the Project site. New landscaping areas would use pesticides and other chemicals, similar to existing conditions of Area 12B. However, the existing vacant areas that would be landscaped would release a similar amount of sediment under the proposed Project as under existing conditions, as these areas would remain vegetated.



LAX Northside Center District Proposed Land Uses	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.8-28

LAX Master Plan EIS/EIR Commitment HWQ-1 would apply to surface water hydrology during operations of the proposed Project. This commitment states that BMPs will be incorporated to prevent a net increase in pollutant loads to surface water resulting from the selected Master Plan alternative, including the proposed Project. LAWA would prepare a specific SUSMP compliant with LARWQCB, City of Los Angeles, and County of Los Angeles requirements for future developments under the proposed Project. This SUSMP would specify source control, structural, and treatment control BMPs in order to reduce discharge of pollutants from the stormwater conveyance system to the maximum extent practicable. Erosion, sedimentation, and other water quality issues would be managed through BMPs under LAX Master Plan EIS/EIR Commitment HWQ-1. Non-structural and source control BMPs would also be integrated to reduce pollutant loads.

As further described in Section 4.8.3.3.2, the Project Design Features for the proposed Project serve to implement LAWA's commitment to preventing a net increase in pollutant loads to surface water. Development projects would include Stormwater Management strategies and design features that are compliant with all LARWQCB, City of Los Angeles, and County of Los Angeles regulations for water quality. Non-structural BMPs would be used unless infeasible, where structural BMPs would then be implemented.

The water quality measures incorporated in the Project Design Features, such as bioswales, design of parking to mitigate stormwater, and the commitment to pre-treat stormwater prior to discharge from the Project site ensure that surface water quality would not violate regulatory standards or cause pollution, contamination, or nuisance. Therefore, operational impacts related to surface water quality in the LAX Northside Center District would be less than significant.

LAX Northside Campus District

As discussed in Section 4.8.2.2.2 above, the majority of the LAX Northside Campus District is currently vacant. During operation, new uses would occur in Area 1 (except Jet), the majority of Area 2, and Area 3. The majority of Area 1 and Area 2A would potentially be developed as Recreation and Open Space. Area 2B would be developed as Landscape Buffer. Part of Area 1, Area 2C, Area 2E, and Area 3 would be developed as Office and Research and Development. Area 2D would be developed as Community and Civic use. The proposed uses for the LAX Northside Campus District are given in **Figure 4.8-29** below: Development of these proposed uses would reduce sedimentation as structures and paved parking would be operated on currently exposed earth. These uses would introduce potential contaminants typical of commercial, office, parking, and open space and recreation uses, such as metals and oils dropped from automobiles as well as pesticides and chemicals used to develop and maintain landscaping and open space. These new uses and developments would not increase indicator bacteria, a USEPA TMDL for Santa Monica Beach, part of Santa Monica Bay, the receiving body of water for the Project site. Newly landscaped areas would use pesticides and other chemicals. However, the existing vacant areas that would be landscaped would release a similar amount of sediment under the proposed Project as under existing conditions, as these areas would remain vegetated

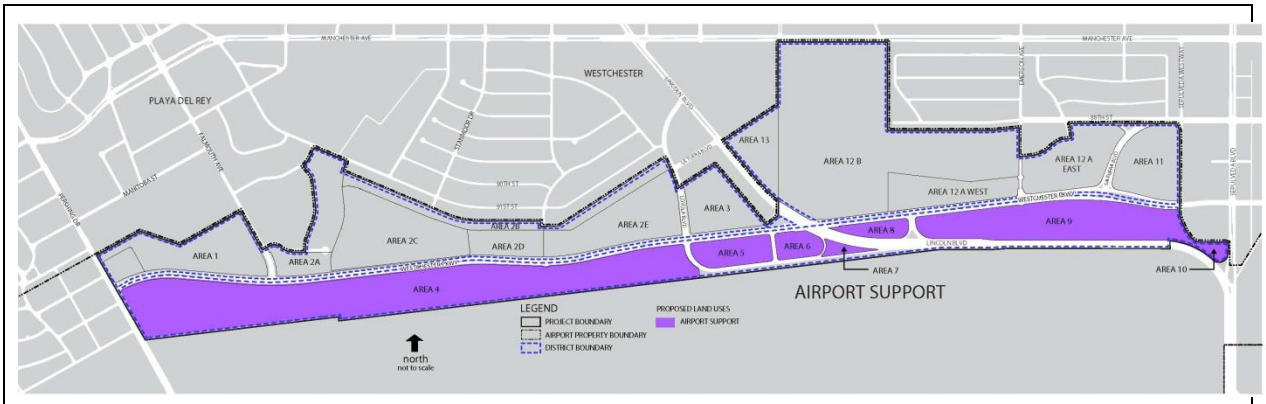
LAX Northside Campus District Proposed Land Uses	**FIGURE 4.8-29**

LAX Master Plan EIS/EIR Commitment HWQ-1 would apply to surface water hydrology during operations of the proposed Project. This commitment states that BMPs will be incorporated to prevent a net increase in pollutant loads to surface water resulting from the selected Master Plan alternative, including the proposed Project. LAWA would prepare a specific SUSMP compliant with LARWQCB, City of Los Angeles, and County of Los Angeles requirements for future developments under the proposed Project. This SUSMP would specify source control, structural, and treatment control BMPs in order to reduce discharge of pollutants from the stormwater conveyance system to the maximum extent practicable. Erosion, sedimentation, and other water quality issues would be managed through BMPs under LAX Master Plan EIS/EIR Commitment HWQ-1. Non-structural and source control BMPs would also be integrated to reduce pollutant loads.

As further described in Section 4.8.3.3.2, the Project Design Features for the proposed Project serve to implement LAWA's commitment to preventing a net increase in pollutant loads to surface water. Development projects would include Stormwater Management strategies and design features that are compliant with all LARWQCB, City of Los Angeles, and County of Los Angeles regulations for water quality. Non-structural BMPs would be used unless infeasible, where structural BMPs would then be implemented. Landscape buffers in Area 1 and Area 2B would be planted with appropriate ground cover to control erosion. Underground stormwater treatment facilities would be permitted in the LAX Northside Campus District (as a separate and independent related project within the Project site). The water quality measures incorporated in the Project Design Features, such as bioswales, design of parking to mitigate stormwater, and the commitment to pre-treat stormwater prior to discharge from the Project site ensure that surface water quality would not violate regulatory standards or cause pollution, contamination, or nuisance. Therefore, operational impacts related to surface water quality in the LAX Northside Campus District would be less than significant.

LAX Northside Airport Support District

As discussed in Section 4.8.2.2.2 above, the majority of the LAX Northside Airport Support District is currently vacant. During operation, new uses would occur in Area 4 with new buildings and parking areas, and would add new landscaping to the existing landscaped areas in Area 4 through Area 10. The landscape palette would be intentionally selected to require little to no maintenance and existing landscape berms and materials would be preserved to the extent that they are compatible with the proposed Project. Existing uses would be preserved, including mobile trailers and storage units (Area 4 and Area 5), temporary construction staging (Area 5), an electric utilities substation (Area 6), and a FAA radar facility (Area 9). As shown in Figure 2-6 (Illustrative Site Plan), all new development except for additions to existing landscaping would be focused on Area 4. The proposed uses for the LAX Northside Airport Support District are shown in **Figure 4.8-30** below. Development of these proposed uses would reduce sedimentation as structures and paved parking would be operated on currently exposed earth.



LAX Airport Support District Proposed Land Uses	FIGURE 4.8-30

New landscaping areas would potentially use pesticides and other chemicals. However, the landscaping materials would require little or no maintenance as described above, and would not require any further maintenance or use of pesticides or other chemicals than under existing conditions. In addition, the maintenance of new landscaping would maintain existing levels of erosion control and minimize release of these sediments into stormwater runoff. Therefore, for

Area 5 through Area 10, surface water quality would remain the same as under existing conditions.

In Area 4 uses would introduce potential contaminants typical of industrial, commercial, and airport uses, such as metals, oils, and chemicals released during maintenance, storage, recycling, and utility usage. These contaminants would be similar to existing conditions and would be industrial in nature, including fuel and other aircraft and machinery-related chemicals, as well as metals and debris associated with aircraft maintenance, deicing, and more. The proposed Project would also potentially release metals and oils from automobiles. These new uses and developments would not increase indicator bacteria, a USEPA TMDL for Santa Monica Beach, part of Santa Monica Bay, the receiving body of water for the Project site. The proposed uses would result in more square footage of these uses, but would not change the type of potential contaminants or introduce new contaminants from existing conditions. Newly landscaped areas would use pesticides and other chemicals. As in Area 5 through Area 10, additions to landscaping would not negatively alter the existing conditions of water quality.

LAX Master Plan EIS/EIR Commitment HWQ-1 would apply to surface water hydrology during operations of the proposed Project in the LAX Northside Airport Support District. This commitment states that BMPs will be incorporated to prevent a net increase in pollutant loads to surface water resulting from the selected Master Plan alternative, including the proposed Project. BMPs would also be incorporated to minimize the effect of airport operations on surface water quality. LAWA would prepare a specific SUSMP compliant with LARWQCB, City of Los Angeles, and County of Los Angeles requirements for future developments under the proposed Project. This SUSMP would specify source control, structural, and treatment control BMPs in order to reduce discharge of pollutants from the stormwater conveyance system to the maximum extent practicable. Erosion, sedimentation, and other water quality issues would be managed through BMPs under LAX Master Plan EIS/EIR Commitment HWQ-1. Non-structural and source control BMPs would also be integrated to reduce pollutant loadings. Source control BMPs are also incorporated into the LAX SWPPP and would be required of LAWA and all airport tenants at all locations where industrial activities occur that have the potential to impact water quality, including Area 4.

As further described in Section 4.8.3.3.2, the proposed Project's Project Design Features serve to prevent a net increase in pollutant loads to surface water. Development projects would include Stormwater Management strategies and design features that are compliant with all LARWQCB, City of Los Angeles, and County of Los Angeles regulations for water quality. Non-structural BMPs would be used unless infeasible. Structural BMPs would be implemented if non-structural BMPs are infeasible. The water quality measures incorporated in the Project Design Features, such as bioswales, use of natural drainage systems to the maximum extent feasible, and the commitment to pre-treat stormwater prior to discharge from the Project site ensure that surface water quality would not violate regulatory standards or cause pollution, contamination, or nuisance. Therefore, operational impacts related to surface water quality in the LAX Northside Airport Support District would be less than significant.

Groundwater

Construction

LAX Northside Center District

The proposed Project would involve construction of new structures and new parking areas in the LAX Northside Center District, as well as new landscaping areas, in Area 11, Area 12A East (except LAFD Station #5), Area 12A West, and Area 13 (except First Flight Child Development Center). Construction of buildings and parking areas would involve typical construction

practices, including use of construction equipment which has the potential to leak oils and chemicals; temporary storage of building materials and earth; construction of concrete and installation of paving; and grading of the Project site as shown in **Figure 4.8-26**. These temporary construction activities on the Project site have the potential to affect groundwater quality by discharging various potential pollutants from equipment operation, equipment storage, material storage, and construction activities into groundwater via infiltration and direct contact.

Site-specific geotechnical borings conducted in Area 12A West and Area 11 did not encounter groundwater at depths of 50.5 feet bgs and 55.5 feet bgs, respectively. Soil types are relatively level in distribution throughout the Project site, as shown in **Figure 4.8-24**, with Older Alluvial Deposits found under most. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the LAX Northside Center District, and therefore would not be encountered any shallower than 50.5 feet bgs.

The proposed Project would be required to implement the NPDES GCP during all construction activities, starting from mobilization through final closeout. The GCP includes regulations required of projects during construction. Construction in the LAX Northside Center District would require the implementation of a SWPPP and temporary BMPs. The SWPPP would provide a plan that manages the specific needs and requirements of the LAX Northside Center District, and individual construction sites within it, and implementation of BMPs and other measures would manage the release of pollutants and contaminants from construction into surface water on the Project site during construction. The SWPPP would be required to be in place prior to ground disturbance on the Project site. The SWPPP would address not only surface water quality and hydrology, but also impacts to groundwater hydrology and quality. The BMPs and measures required by the SWPPP would protect surface waters from pollutants. By ensuring that surface waters are not contaminated or harmed, the SWPPP would protect groundwater quality as all water infiltrated by the proposed Project during construction would be treated for any pollutants released during construction.

The majority of proposed Project construction in the LAX Northside Center District would include relatively shallow excavation. Most elements of the proposed Project, such as buildings, landscaping, and surface parking, would not encounter groundwater, which is not anticipated above 50.5 feet bgs. Construction excavation would not reach groundwater and would not directly contaminate or otherwise impact groundwater quality. As no known contaminated groundwater is present, existing contaminants are not anticipated and the rate or change of the direction of their movement would not be affected. The area of contamination would also not be expanded. Direct percolation of surface water from the Project site would not increase the level of groundwater contamination, as infiltrated water would be subject to the same surface water quality measures described above. Limited deeper excavation could occur in Area 11 and Area 12A West, which are further discussed below.

Area 11. As subterranean parking is a permitted use within the LAX Northside Center District, excavation may occur approximately 45 feet bgs for construction of this type of use in Area 11, given the proposed intensity of development in this area. The site-specific geotechnical borings in the center of Area 11 did not locate any groundwater when drilling to a depth of 55.5 feet bgs. Therefore, it is not anticipated that groundwater would be encountered when excavating up to 45 feet bgs for the construction of subterranean parking in Area 11. The NPDES GCP and SWPPP requirements discussed above would apply to Area 11 as part of the LAX Northside Center District and impacts would be similar to those in areas outside of Area 11. Therefore, construction impacts related to groundwater quality in Area 11 would be less than significant.

Area 12A West. As subterranean parking is a permitted use within the LAX Northside Center District, excavation may occur approximately 45 feet bgs for construction of this type of use in Area 12A West, given the proposed intensity of development in this area. The site-specific geotechnical borings in the center of Area 12A West did not locate any groundwater when drilling to a depth of 55.5 feet bgs. Therefore, it is not anticipated that groundwater would be encountered when excavating up to approximately 45 feet bgs for the construction of subterranean parking in Area 12A West. The NPDES GCP and SWPPP requirements discussed above would apply to Area 12A West as part of the LAX Northside Center District and impacts would be similar to those in areas outside of Area 12A West. Therefore, construction impacts related to groundwater quality in Area 12A West would be less than significant.

The temporary measures and BMPs put into place by the SWPPP would prevent typical construction activity discharges from creating pollution, contamination, or nuisance in surface water, and construction activities would be compliant with all regulatory requirements. Upon infiltration, this surface water would not affect the rate or change of existing contaminants, expand the area affected by contaminants, or result in an increased level of groundwater contamination. In addition, infiltration from the proposed Project to groundwater would not violate regulatory water quality standards at an existing production well, the nearest of which is 1.72 miles away. Furthermore, groundwater beneath LAX is not used for municipal or agricultural purposes. [54] Therefore, construction impacts related to groundwater quality in the LAX Northside Center District would be less than significant.

LAX Northside Campus District

The proposed Project would involve construction of new structures and new parking areas in the LAX Northside Campus District, as well as new landscaping areas, in Area 1 (except Jet Pets), the majority of Area 2, and Area 3. Construction of buildings and parking areas would involve typical construction practices, including use of construction equipment which has the potential to leak oils and chemicals; temporary storage of building materials and earth; construction of concrete and installation of paving; and grading of the Project site as shown in **Figure 4.8-26**. These temporary construction uses on the Project site have the potential to affect groundwater quality by discharging various potential pollutants from equipment operation, equipment storage, material storage, and construction activities into groundwater via infiltration and direct contact.

Site-specific geotechnical borings conducted in Area 2A and Area 3 did not encounter groundwater at a depth of 50.5 feet bgs. Soil types are relatively level in distribution throughout the Project site, as shown in **Figure 4.8-24**, with Older Alluvial Deposits found under most of the Project site. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the LAX Northside Campus District, and therefore would not be encountered any shallower than 50.5 feet bgs.

The proposed Project would be required to implement the NPDES GCP during all construction activities, starting from mobilization through final closeout. The GCP includes regulations required of projects during construction. Construction in the LAX Northside Campus District would require the implementation of a SWPPP and temporary BMPs. The SWPPP would provide a plan that manages the specific needs and requirements of the LAX Northside Campus District, and individual construction sites within it, and implementation of BMPs and other measures would manage the release of pollutants and contaminants from construction into surface water on the Project site during construction. The SWPPP would be required to be in place prior to ground disturbance on the Project site. The SWPPP would address not only

[54] City of Los Angeles, LAX Master Plan Final EIS/EIR, 2004, p. 4-759

surface water quality and hydrology, but also impacts to groundwater hydrology and quality. The BMPs and measures required by the SWPPP would protect surface waters from pollutants. By ensuring that surface waters are not contaminated or harmed, the SWPPP would protect groundwater quality as all water infiltrated by the proposed Project during construction would be treated for any pollutants released during construction.

The proposed Project would involve construction with relatively shallow excavation in the LAX Northside Campus District. Elements of the proposed Project in the LAX Northside Campus District, such as buildings, landscaping, and surface parking, would not encounter groundwater, which is not anticipated above 50.5 feet bgs. Construction excavation would not reach groundwater and would not directly contaminate or otherwise impact groundwater quality. As no known contaminated groundwater is present, existing contaminants are not anticipated and the rate or change of the direction of their movement would not be affected. The area of contamination would also not be expanded. Direct percolation of surface water from the Project site would not increase the level of groundwater contamination, as infiltrated water would be subject to the same surface water quality measures described above.

The temporary measures and BMPs put into place by the SWPPP would prevent typical construction activity discharges from creating pollution, contamination, or nuisance in surface water, and construction activities would be compliant with all regulatory requirements. Upon infiltration, this surface water would not affect the rate or change of existing contaminants, expand the area affected by contaminants, or result in an increased level of groundwater contamination. In addition, infiltration from the proposed Project to groundwater would not violate regulatory water quality standards at an existing production well, the nearest of which is 1.72 miles away. Furthermore, groundwater beneath LAX is not used for municipal or agricultural purposes. [55] Therefore, construction impacts related to groundwater quality in the LAX Northside Campus District would be less than significant.

LAX Northside Airport District

The proposed Project would involve construction of new structures and new parking areas in the LAX Northside Airport Support District in Area 4. The proposed Project would also include new landscaping areas in Area 4 and additions to existing landscaping in Area 5 through Area 10. Structures would be prohibited in the Limited Development Area. Construction of buildings and parking areas in Area 4 would involve typical construction practices, including use of construction equipment which has the potential to leak oils and chemicals; temporary storage of building materials and earth; construction of concrete and installation of paving; and grading of the Project site as shown in **Figure 4.8-26**. Installation of landscaping would require minor construction activities, such as digging, and use of fertilizers and pesticides. These temporary construction uses on the LAX Northside Airport Support District have the potential to affect groundwater quality by discharging various potential pollutants from equipment operation, equipment storage, material storage, and construction activities into groundwater via infiltration and direct contact.

Site-specific geotechnical borings conducted in Area 2A, Area 3, and Area 12A West did not encounter groundwater at a depth of 50.5 feet bgs. The boring conducted in Area 11 reached a depth of 55.5 feet bgs and did not encounter groundwater. Soil types are relatively level in distribution throughout the Project site, as shown in **Figure 4.8-24**, with Older Alluvial Deposits found under most of the Project site. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the Project site. Due to the even distribution of soils, the geotechnical

[55] City of Los Angeles, LAX Master Plan Final EIS/EIR, 2004, p. 4-759

borings conducted in Area 2A, Area 3, Area 12A West, and Area 11 are representative of groundwater conditions underneath the LAX Northside Airport Support District and therefore groundwater would not be encountered any shallower than 50.5 feet bgs.

The proposed Project would be required to implement the NPDES GCP during all construction activities, starting from mobilization through final closeout. The GCP includes regulations required of projects during construction. Construction in the LAX Airport Support District would require the implementation of a SWPPP and temporary BMPs. The SWPPP would provide a plan that manages the specific needs and requirements of the LAX Northside Airport Support District, and individual construction sites within it, and implementation of BMPs and other measures would manage the release of pollutants and contaminants from construction into surface water on the Project site during construction. The SWPPP would be required to be in place prior to ground disturbance on the Project site. The SWPPP would address not only surface water quality and hydrology, but also impacts to groundwater hydrology and quality. The BMPs and measures required by the SWPPP would protect surface waters from pollutants. By ensuring that surface waters are not contaminated or harmed, the SWPPP would protect groundwater quality as all water infiltrated by the proposed Project during construction would be treated for any pollutants released during construction.

The proposed Project would involve construction with relatively shallow excavation. Typical building footings would not reach depths of 50.5 feet bgs. Subterranean parking and excavation at depths up to 50.5 feet bgs would not occur. All elements of the proposed Project, such as buildings, landscaping, and surface parking, would thus not encounter groundwater, which is not anticipated above 50.5 feet bgs. Construction excavation would not reach groundwater and would not directly contaminate or otherwise impact groundwater quality. As no known contaminated groundwater is present, existing contaminants are not anticipated and the rate or change of the direction of their movement would not be affected. The area of contamination would also not be expanded. Direct percolation of surface water from the Project site would not increase the level of groundwater contamination, as infiltrated water would be subject to the same surface water quality measures described above.

The temporary measures and BMPs put into place by the SWPPP would prevent typical construction activity discharges from creating pollution, contamination, or nuisance in surface water, and construction activities would be compliant with all regulatory requirements. Upon infiltration, this surface water would not affect the rate or change of existing contaminants, expand the area affected by contaminants, or result in an increased level of groundwater contamination. In addition, infiltration from the proposed Project to groundwater would not violate regulatory water quality standards at an existing production well, the nearest of which is 1.72 miles away. Furthermore, groundwater beneath LAX is not used for municipal or agricultural purposes.[56] Therefore, construction impacts related to groundwater quality in the LAX Northside Airport Support District would be less than significant.

Operations

LAX Northside Center District

Operation of the proposed Project would include new structures and new parking areas in the LAX Northside Center District, as well as new landscaping areas, in Area 11, part of Area 12A East, Area 12A West, and part of Area 13. New landscaping, open space, and recreation areas would remain pervious surface area and would not substantially affect the amount of groundwater infiltrated where they are installed. Landscaping would maintain similar levels of

[56] City of Los Angeles, LAX Master Plan Final EIS/EIR, 2004, p. 4-759

infiltration to existing conditions as vegetation aids the retention and absorption of surface water. The existing uses in Area 12A East (LAFD Station #5), Area 12B (Westchester Golf Course), and Area 13 (First Flight Child Development Center) would continue to operate as during existing conditions and would not affect groundwater quality. Groundwater beneath the LAX Northside Center District would not be used for municipal or agricultural purposes.[57] Construction and operation of the proposed Project would not require the use of groundwater and, thus, would not deplete groundwater supplies. Municipal, agricultural, pumping, and dewatering activities would therefore also operate as during existing conditions and would not affect groundwater quality.

Site-specific geotechnical borings conducted in Area 12A West and Area 11 did not encounter groundwater at depths of 50.5 feet bgs and 55.5 feet bgs, respectively. Soil types are relatively level in distribution throughout the Project site, as shown in **Figure 4.8-24**, with Older Alluvial Deposits found under most of the Project site. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the LAX Northside Center District, and therefore would not be encountered any shallower than 50.5 feet bgs. The proposed Project would include relatively shallow building foundations and subterranean parking. As groundwater is not anticipated to be encountered higher than 50.5 feet bgs, the proposed Project would not reach groundwater during operations. The LAX Northside Center District has no known existing groundwater contamination and the proposed Project would not affect the rate or change direction of movement of existing contaminants, or otherwise alter contamination through direct contact with groundwater.

As shown in **Table 4.8-8** above, the LAX Northside Center District is largely comprised of pervious surface area (109.9 acres) and has 12.9 acres of existing impervious surface area. The LAX Northside Center District is anticipated to provide approximately 26.4 AFY of groundwater infiltration. The proposed Project would increase the impervious surface area in the LAX Northside Center District with the operation of new structures and parking areas, reducing groundwater infiltration (refer to Section 4.8.3.4.1 Project Impacts to Groundwater Hydrology). This increase in impervious surface area would create a greater amount of surface water discharge, as discussed above, than under existing conditions. Surface water discharges (i.e., rainfall, landscape irrigation) from the Project site would either discharge into the stormwater drainage system or infiltrate into groundwater. Operations of the proposed Project in the LAX Northside Center District would release potential contaminants typical of commercial and parking uses, such as metals and oils dropped from automobiles. Infiltration of these contaminants would have the potential to contaminate groundwater.

The same measures that are in place to protect surface water quality would minimize impacts to groundwater quality caused by the proposed Project. LAX Master Plan EIS/EIR Commitment HWQ-1 would apply to groundwater hydrology during operations of the proposed Project. This commitment states that BMPs will be incorporated to prevent a net increase in pollutant loads to surface water resulting from the selected Master Plan alternative, including the proposed Project. The implementation of BMPs and measures substantial enough to prevent a net increase in pollutant loads to surface water would also result in a significant reduction in the pollutant loads infiltrated into groundwater when compared to conditions without these BMPs and measures.

As further described in Section 4.8.3.3.2, the Project Design Features further reduce impacts to groundwater quality. Groundwater infiltration would be maximized through the use of Project

[57] City of Los Angeles, LAX Master Plan Final EIS/EIR, 2004, p. 4-759

Design Features. The Project Design Features require that stormwater be pre-treated prior to infiltration into groundwater. Operation of the proposed Project would include Stormwater Management strategies and design features that are compliant with all LARWQCB, City of Los Angeles, and County of Los Angeles regulations for water quality. Non-structural BMPs would be used unless infeasible. Structural BMPs would be implemented when non-structural BMPs are infeasible. The Parking and Development landscape zone would apply to surface parking areas in the LAX Northside Center District and is recommended to be compatible with stormwater management, including bioswales and permeable paving systems that would be required to treat stormwater prior to infiltration, as discussed above.

Impacts to groundwater quality under the Project site would be minimized through the implementation of the commitment and Project Design Features described above. In addition, the proposed Project would comply with all LARWQCB, City of Los Angeles, and County of Los Angeles requirements during operations, including implementing a SUSMP. Compliance with these BMPs and regulations would ensure that groundwater quality meets regulatory standards. Furthermore the groundwater beneath the Project site is not used for municipal or agricultural purposes and therefore would not be extracted from a well used for drinking water.

The proposed Project would not directly contaminate groundwater during operations, and water infiltrated from typical operations of commercial and parking uses would be pre-treated through the BMPs and elements required by LAX Master Plan Commitment HWQ-1 and the Project Design Features. The proposed Project would therefore have minimal effects on the rate, direction, area, or level of contamination in groundwater, and would comply with regulatory standards for an existing well, the nearest of which is 1.72 miles away. Therefore, impacts related to groundwater quality in the LAX Northside Center District during operations would be less than significant.

LAX Northside Campus District

Operation of the proposed Project would involve new structures and new parking areas in the LAX Northside Campus District, as well as new landscaping areas, in part of Area 1, the majority of Area 2, and Area 3. New landscaping, open space, and recreation areas would remain pervious surface area and would not substantially affect the amount of groundwater infiltrated where they are installed. Landscaping would maintain similar levels of infiltration to existing conditions as vegetation aids the retention and absorption of surface water. The existing use in Area 1 (Jet Pets) would continue to operate as during existing conditions and would not affect groundwater quality. Groundwater beneath the LAX Northside Campus District would not be used for municipal or agricultural purposes.[58] Construction and operation of the proposed Project would not require the use of groundwater and, thus, would not deplete groundwater supplies. Municipal, agricultural, pumping, and dewatering activities would therefore also operate as during existing conditions and would not affect groundwater quality.

Site-specific geotechnical borings conducted in Area 2A and Area 3 did not encounter groundwater at a depth of 50.5 feet bgs. Soil types are relatively level in distribution throughout the Project site, as shown in **Figure 4.8-24**, with Older Alluvial Deposits found under most of the Project site. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the LAX Northside Campus District, and therefore would not be encountered any shallower than 50.5 feet bgs. The proposed Project would include relatively shallow building foundations and subterranean parking that would be located below ground. As groundwater is not anticipated to be encountered higher than 50.5 feet bgs, the proposed Project would not reach groundwater

[58] City of Los Angeles, LAX Master Plan Final EIS/EIR, 2004, p. 4-759

during operations. The LAX Northside Campus District has no known existing groundwater contamination and the proposed Project would not affect the rate or change direction of movement of existing contaminants, or otherwise alter contamination through direct contact with groundwater.

As shown in **Table 4.8-8** above, the LAX Northside Campus District is largely comprised of pervious surface area (92.2 acres) and has 13.1 acres of impervious surface area. The LAX Northside Campus District is anticipated provide approximately 22.1 AFY of groundwater infiltration. Existing paved areas and structures in the LAX Northside Campus District do not permit groundwater infiltration. The proposed Project would increase the impervious surface area in the LAX Northside Campus District with the operation of new structures and parking areas, reducing groundwater infiltration (refer to Section 4.8.3.4.1 Groundwater Hydrology). This increase in impervious surface area would create a greater amount of surface water discharge, as discussed above, than under existing conditions. Surface water discharges (i.e., rainfall, landscape irrigation) from the Project site would either discharge into the stormwater drainage system or infiltrate into groundwater. Operations of the proposed Project in the LAX Northside Campus District would release potential contaminants typical of commercial and parking uses, such as metals and oils dropped from automobiles. Infiltration of these contaminants would have the potential to contaminate groundwater.

The same measures that are in place to protect surface water quality would minimize impacts to groundwater quality caused by the proposed Project. LAX Master Plan EIS/EIR Commitment HWQ-1 would apply to groundwater hydrology during operations of the proposed Project. This commitment states that BMPs will be incorporated to prevent a net increase in pollutant loads to surface water resulting from the selected Master Plan alternative, including the proposed Project. The implementation of BMPs and measures substantial enough to prevent a net increase in pollutant loads to surface water would also result in a significant reduction in the pollutant loads infiltrated into groundwater.

As further described in Section 4.8.3.3.2, the Project Design Features further reduce impacts to groundwater quality. Groundwater infiltration would be maximized through the use of Project Design Features. The Project Design Features require that stormwater be pre-treated prior to infiltration into groundwater. Operation of the proposed Project would include Stormwater Management strategies and design features that are compliant with all LARWQCB, City of Los Angeles, and County of Los Angeles regulations for water quality. Non-structural BMPs would be used unless infeasible. Structural BMPs would be implemented where non-structural BMPs are infeasible. Underground stormwater treatment facilities would be permitted, with conditions, in the LAX Northside Campus District (as a separate and independent related project within the Project site). Parking areas in the LAX Northside Campus District would be designed to be compatible with stormwater management, including bioswales and permeable paving systems that would be required to treat stormwater prior to infiltration.

Impacts to groundwater quality under the Project site would be minimized through the implementation of the commitment and Project Design Features described above. In addition, the proposed Project would comply with all LARWQCB, City of Los Angeles, and County of Los Angeles requirements during operations, including implementing a SUSMP. Compliance with these BMPs and regulations would ensure that groundwater quality meets regulatory standards. Furthermore the groundwater beneath the Project site is not used for municipal or agricultural purposes and therefore would not be extracted from a well that is used for drinking water.

The proposed Project would not directly contaminate groundwater during operations, and water infiltrated from typical operations of commercial and parking uses would be pre-treated through the BMPs and elements required by LAX Master Plan Commitment HWQ-1 and the Project

Design Features. The proposed Project would therefore have minimal effects on the rate, direction, area, or level of contamination in groundwater, and would comply with regulatory standards for an existing well, the nearest of which is 2.43 miles away. Therefore, impacts related to groundwater quality in the LAX Northside Campus District during operations would be less than significant.

LAX Northside Airport District

Operation of the proposed Project would involve new structures and new parking areas in the LAX Northside Airport Support District in Area 4, as well as new landscaping areas, in part of Area 4, and Area 5 through Area 10. While subterranean parking is a permitted use throughout the Project site, it is not anticipated to occur in the LAX Northside Airport Support District due to the relatively low intensity of development established by FAA height requirements and the prohibition of development in the Limited Development Area. New landscaping, open space, and recreation areas would remain pervious surface area and would not substantially affect the amount of groundwater infiltrated where they are installed. Landscaping would maintain similar levels of infiltration to existing conditions as vegetation aids the retention and absorption of surface water. Groundwater beneath the LAX Northside Airport Support District would not be used for municipal or agricultural purposes.[59] Construction and operation of the proposed Project would not require the use of groundwater and, thus, would not deplete groundwater supplies. Municipal, agricultural, pumping, and dewatering activities would therefore also operate as during existing conditions and would not affect groundwater quality. Site-specific geotechnical borings conducted in Area 2A, Area 3, and Area 12A West did not encounter groundwater at a depth of 50.5 feet bgs. The boring conducted in Area 11 reached a depth of 55.5 feet bgs and did not encounter groundwater. Soil types are relatively level in distribution throughout the Project site, as shown in **Figure 4.8-24**, with Older Alluvial Deposits found under most. Based on the results of the geotechnical borings and the soil distribution under the Project site, it is anticipated that groundwater would be evenly distributed throughout the LAX Northside Airport Support District, and therefore would not be encountered any shallower than 50.5 feet bgs. The proposed Project would include relatively shallow building. As groundwater is not anticipated to be encountered higher than 50.5 feet bgs, the proposed Project would not reach groundwater during operations. The LAX Northside Airport Support District has no known existing groundwater contamination and the proposed Project would not affect the rate or change direction of movement of existing contaminants, or otherwise alter contamination through direct contact with groundwater.

As shown in **Table 4.8-8** above, the LAX Northside Airport Support District is largely comprised of pervious surface area (88.3 acres) and has 22.2 acres of impervious surface area including existing paved roads. It is anticipated to provide approximately 21.2 AFY of groundwater infiltration. Existing paved areas and structures, including abandoned paved areas, in the LAX Northside Airport Support District do not permit groundwater infiltration. The proposed Project would increase the impervious surface area in the LAX Northside Airport Support District with the construction of these new structures and parking areas, reducing groundwater infiltration (refer to Section 4.8.3.4.1 Groundwater Hydrology). This increase in impervious surface area would create a greater amount of surface water discharge, as discussed above, than under existing conditions. Surface water discharges (i.e., rainfall, landscape irrigation) from the Project site would either discharge into the stormwater drainage system or infiltrate into groundwater. Operations of the proposed Project in the LAX Northside Airport Support District would release potential contaminants typical of industrial, airport-related, and parking uses, such as metals

[59] City of Los Angeles, LAX Master Plan Final EIS/EIR, 2004, p. 4-759

and oils dropped from automobiles. These uses and potential contaminants would be similar to existing conditions.

The same measures that are in place to protect surface water quality would minimize impacts to groundwater quality caused by the proposed Project. LAX Master Plan EIS/EIR Commitment HWQ-1 would apply to groundwater hydrology during operations of the proposed Project. This commitment states that BMPs will be incorporated to prevent a net increase in pollutant loads to surface water resulting from the selected Master Plan alternative, including the proposed Project. The implementation of BMPs and measures substantial enough to prevent a net increase in pollutant loads to surface water would also result in a significant reduction in the pollutant loads infiltrated into groundwater.

As further described in Section 4.8.3.3.2, the Project Design Features further reduce impacts to groundwater quality. Groundwater infiltration would be maximized through the use of Project Design Features. The Project Design Features require that stormwater be pre-treated prior to infiltration into groundwater. Operation of the proposed Project would include Stormwater Management strategies and design features that are compliant with all LARWQCB, City of Los Angeles, and County of Los Angeles regulations for water quality. Non-structural BMPs would be used unless infeasible. Structural BMPs would be implemented where non-structural BMPs are infeasible.

Impacts to groundwater quality under the Project site would be minimized through the implementation of the commitment and Project Design Features described above. In addition, the proposed Project would comply with all LARWQCB, City of Los Angeles, and County of Los Angeles requirements during operations, including implementing a SUSMP. Compliance with these BMPs and regulations would ensure that groundwater quality meets regulatory standards. Furthermore the groundwater beneath the Project site is not used for municipal or agricultural purposes and therefore would not be extracted from a well that is used for drinking water.

The proposed Project would not directly contaminate groundwater during operations, and water infiltrated from typical operations of airport support uses similar to existing uses. Infiltrated water would be pre-treated through the BMPs and elements required by LAX Master Plan Commitment HWQ-1 and the Project Design Features. The proposed Project would therefore have minimal effects on the rate, direction, area, or level of contamination in groundwater, and would comply with regulatory standards for an existing well, the nearest of which is 1.88 miles away. Therefore, impacts related to groundwater quality in the LAX Northside Airport Support District during operations would be less than significant.

4.8.3.5 Transfer Program

The proposed Project would include flexibility to allow for transfers of floor area within Districts (the LAX Northside Center District, LAX Northside Campus District, and LAX Northside Airport Support District) on a per square foot basis. While transfers of floor area across Districts would be permitted, the maximum proposed Project total of 2,320,000 square feet may not be exceeded. Additionally, all development restrictions, Project Design Features, and LAX Master Plan EIR/EIS commitments would apply to any floor area transfer.

4.8.3.5.1 Hydrology

Impervious surface area would not be substantially different than that analyzed herein with the implementation of transfers of floor area. The LAX Master Plan Commitment HWQ-1 and LAX Master Plan Mitigation Measure MM-HWQ-1 described in Section 4.8.3.3.1; the GCP; the SWPPP; and the Project Design Features described in Section 4.8.3.3.2 above, including

permeable paving, use of BMPs, LID best practices, landscaping requirements, and other stormwater management methods would continue to apply even if floor-area is transferred between uses within Districts. As such, floor area transfers would not alter the conclusions with regard to hydrology impacts. Should floor area be transferred within Districts, the resulting impacts would be similar to those evaluated herein.

4.8.3.5.2 Water Quality

Floor area and land uses within each LAX Northside district would not be substantially different than that analyzed herein would all have similar impacts on water quality and would not result in a higher or more concentrated level of contamination. The proposed Project would still be required to comply with all of the measures discussed within this analysis, including the LAX Master Plan Commitment HWQ-1 and LAX Master Plan Mitigation Measure MM-HWQ-1 described in Section 4.8.3.3.1; the GCP; the SWPPP; and the Project Design Features described in Section 4.8.3.3.2, including permeable paving, filtration of runoff prior to discharge or infiltration, use of BMPs, LID best practices, landscaping requirements, and other water quality management methods. These water quality management commitments and measures would continue to apply even if floor-area is transferred between uses within Districts and if uses are transferred within Districts. As such, floor area transfers would not alter the conclusions with regard to water quality impacts. Should floor area or land use types be transferred within Districts, the resulting impacts would be similar to those evaluated herein.

4.8.4 Cumulative Impacts

4.8.4.1 Hydrology

4.8.4.1.1 Surface Water

As discussed in Section 4.8.3.4.1, impacts related to surface water hydrology would be less than significant for the proposed Project. The existing Project drainage system consists of catch basins, subsurface storm drains and open channel, and outfalls. The Argo Drain is the storm water outfall for surface runoff captured on site. Project runoff discharged into the Argo Drain system along the LAX perimeter flows several miles off-shore and is released into the Pacific Ocean via a 10-foot diameter pipe. The surface body of water of concern receiving runoff from the Project site is the Santa Monica Bay, an embayment of the Pacific Ocean. The proposed Project in conjunction with the 106 related projects identified in Section 3.0 Environmental Setting would cumulatively increase stormwater runoff flows to the Argo Drain system and the Santa Monica Bay potentially resulting in cumulative impacts to surface water hydrology. However, each of these projects would be required to comply with LARWQCB, County of Los Angeles, and their respective city's regulations when designed and developed. These related projects would have SWPPPs for construction and SUSMPs for operations when required by the respective agencies and regulations, and would implement BMPs and other measures to manage stormwater runoff. The region where the related projects are located is highly urbanized and therefore has little potential to substantially increase regional runoff levels from existing conditions. In addition, each development would be analyzed during the compliance review for future buildout and implementation of the proposed Project, and would ensure that sufficient drainage exists or is developed both locally and within the region to handle runoff from each project. Therefore, cumulative impacts to surface water hydrology would be less than significant.

4.8.4.1.2 Groundwater

As discussed in Section 4.8.3.4.1, impacts related to groundwater hydrology would be less than significant for the proposed Project. The proposed Project is not anticipated to directly reach groundwater and would not substantially change the flow, level, or utility of existing groundwater. Impacts to groundwater hydrology would be minor and very localized, and would not have any measurable regional effect. Furthermore, as groundwater beneath the Project site is not utilized for municipal, agricultural, or drinking water purposes, these changes to groundwater recharge would not affect regional groundwater usage. The proposed Project in conjunction with the 106 related projects identified in Section 3.0 Environmental Setting would have the potential to cumulatively decrease groundwater levels, affect groundwater flows, and decrease recharge. However, the region where the related projects are located is highly urbanized and therefore has little potential to decrease the amount of groundwater recharge from existing conditions. In addition, the West Coast Basin has set limits, as discussed in Existing Conditions, on the amount of groundwater that projects can remove from groundwater each year. All related projects would be required to comply with these regulations and would therefore not substantially deplete groundwater levels. As a result, wells and utilities would not be impacted in their ability to use potable groundwater. Structures requiring dewatering during construction and operations would be required to comply with all regulations regarding groundwater and would not substantially affect the flow of groundwater. Therefore, cumulative impacts related to groundwater hydrology would be less than significant.

4.8.4.2 Water Quality

4.8.4.2.1 Surface Water

As discussed in Section 4.8.3.4.2, the proposed Project would have a less than significant impact on surface water quality. The proposed Project would be developed in compliance with regulatory requirements; the LAX Master Plan Commitment HWQ-1 and LAX Master Plan Mitigation Measure MM-HWQ-1 described in Section 4.8.3.3.1; and the proposed Project Design Features described in Section 4.8.3.3.2. The proposed Project would be developed in compliance with LARWQCB, City of Los Angeles, and County of Los Angeles requirements, and would include Stormwater Management Strategies and a SUSMP. Furthermore, LAX Master Plan Commitment HWQ-1 states that LAWA will use BMPs to prevent a net increase in pollutant loads to surface water.

The proposed Project in conjunction with the 106 related projects identified in Section 3.0 Environmental Setting would have the potential to cumulatively impact surface water quality. However, these related projects would all be subject to the same regulations as the proposed Project, including NPDES permits, TMDLs, and LARWQCB, County of Los Angeles, and cities' requirements. Construction of each individual project would be anticipated to be managed with a SWPPP and operations would be anticipated to be managed with a SUSMP where applicable. In addition, the region where the related projects are located is highly urbanized and therefore related projects would not be anticipated to substantially change regional water quality from existing conditions. The cumulative impacts of these projects along with the proposed Project would be less than significant.

4.8.4.2.2 Groundwater

As discussed in Section 4.8.3.4.2, the proposed Project would have a less than significant impact on groundwater quality. Groundwater quality in the West Coast Basin is generally good. The proposed Project would have minimal effects on groundwater quality, and these impacts

would be localized. The Project site is not used for municipal or agricultural purposes. The proposed Project in conjunction with the 106 related projects identified Section 3.0 Environmental Setting would have the potential to cumulatively impact groundwater quality. However, these related projects would all be subject to the same regulations as the proposed Project, including NPDES permits and LARWQCB, County of Los Angeles, and cities' requirements. Construction of each individual project would be anticipated to be managed with a SWPPP and operations would be anticipated to be managed with a SUSMP where applicable. In addition, the region where the related projects are located is highly urbanized and therefore related projects would not be anticipated to substantially change infiltration of contaminants into groundwater from existing conditions. Therefore, cumulative impacts related to groundwater quality would be less than significant.

4.8.5 Mitigation Measures

4.8.5.1 Hydrology

4.8.5.1.1 Surface Water

The proposed Project will be developed in compliance with all statutory requirements to preclude significant impacts on surface water hydrology. In addition, implementation of the Project Design Features described in Section 4.8.3.3.2 and compliance with LAX Master Plan EIR/EIS commitments and mitigation measures described in Section 4.8.3.3.1 would ensure that impacts relative to surface water hydrology associated with the proposed Project would be less than significant. Therefore, no mitigation measures for surface water hydrology specific to the proposed Project are required.

4.8.5.1.2 Groundwater

The proposed Project will be developed in compliance with all statutory requirements to preclude significant impacts on groundwater hydrology. In addition, implementation of the Project Design Features described in Section 4.8.3.3.2 and compliance with LAX Master Plan EIR/EIS commitments and mitigation measures described in Section 4.8.3.3.1 would ensure that impacts relative to groundwater hydrology associated with the proposed Project would be less than significant. Therefore, no mitigation measures for groundwater hydrology specific to the proposed Project are required.

4.8.5.2 Water Quality

4.8.5.2.1 Surface Water

The proposed Project will be developed in compliance with all statutory requirements to preclude significant impacts on surface water quality. In addition, implementation of the Project Design Features described in Section 4.8.3.3.2 and compliance with LAX Master Plan EIR/EIS commitments and mitigation measures described in Section 4.8.3.3.1 would ensure that impacts relative to surface water quality associated with the proposed Project would be less than significant. Therefore, no mitigation measures for surface water quality specific to the proposed Project are required.

4.8.5.2.2 Groundwater

The proposed Project will be developed in compliance with all statutory requirements to preclude significant impacts on groundwater quality. In addition, implementation of the Project Design Features described in Section 4.8.3.3.2 and compliance with LAX Master Plan EIR/EIS commitments and mitigation measures described in Section 4.8.3.3.1 would ensure that impacts relative to groundwater quality associated with the proposed Project would be less than significant. Therefore, no mitigation measures for groundwater quality specific to the proposed Project are required.

4.8.6 Level Of Significance after Mitigation

4.8.6.1 Hydrology

4.8.6.1.1 Surface Water

Impacts related to surface water hydrology are expected to be less than significant as a result of the proposed Project. Adherence to predetermined plans, building standards, and regulatory codes, along with the Project Design Features described in Section 4.8.3.3.2 and compliance with LAX Master Plan EIR/EIS commitments and mitigation measures described in Section 4.8.3.3.1 as discussed above, would ensure any potential impacts related to surface water hydrology remain at less than significant levels.

4.8.6.1.2 Groundwater

Impacts related to groundwater hydrology are expected to be less than significant as a result of the proposed Project. Adherence to predetermined plans, building standards, and regulatory codes, along with the Project Design Features described in Section 4.8.3.3.2 and compliance with LAX Master Plan EIR/EIS commitments and mitigation measures described in Section 4.8.3.3.1 as discussed above, would ensure any potential impacts related to groundwater hydrology remain at less than significant levels.

4.8.6.2 Water Quality

4.8.6.2.1 Surface Water

Impacts related to surface water quality are expected to be less than significant as a result of the proposed Project. Adherence to predetermined plans, building standards, and regulatory codes, along with the Project Design Features described in Section 4.8.3.3.2 and compliance with LAX Master Plan EIR/EIS commitments and mitigation measures described in Section 4.8.3.3.1 as discussed above, would ensure any potential impacts related to surface water quality remain at less than significant levels.

4.8.6.2.2 Groundwater

Impacts related to groundwater quality are expected to be less than significant as a result of the proposed Project. Adherence to predetermined plans, building standards, and regulatory codes, along with the Project Design Features described in Section 4.8.3.3.2 and compliance with LAX Master Plan EIR/EIS commitments and mitigation measures described in Section 4.8.3.3.1 as discussed above, would ensure any potential impacts related to groundwater quality remain at less than significant levels.

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