5.10 HYDROLOGY AND WATER QUALITY

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential impacts of the proposed project to hydrology and water quality conditions in the City of Brea and its sphere of influence (SOI). Hydrology deals with the distribution and circulation of water, both on land and underground. Water quality deals with the quality of surface- and groundwater. Surface water includes lakes, rivers, streams, and creeks; groundwater is under the earth's surface.

- *Preliminary/Conceptual Draft Water Quality Management Plan, Brea 265*, Hunsaker & Associates Irvine, Inc., February 11, 2022 (Appendix J)
- *Preliminary Hydrology Analysis for Brea 265*, Hunsaker & Associates Irvine, Inc, February 11, 2022 (Appendix K)

Complete copies of these studies are in the Appendix J and Appendix K of this Draft EIR.

5.10.1 Environmental Setting

5.10.1.1 REGULATORY BACKGROUND

Clean Water Act

The federal Water Pollution Control Act (or Clean Water Act [CWA]) is the principal statute governing water quality. It establishes the basic structure for regulating discharges of pollutants into the waters of the United States and gives the US Environmental Protection Agency (EPA) authority to implement pollution control programs, such as setting wastewater standards for industry. The statute's goal is to completely end all discharges and to restore, maintain, and preserve the integrity of the nation's waters. The CWA regulates direct and indirect discharge of pollutants; sets water quality standards for all contaminants in surface waters; and makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit is obtained under its provisions. The CWA mandates permits for wastewater and stormwater discharges; requires states to establish site-specific water quality standards for navigable bodies of water; and regulates other activities that affect water quality, such as dredging and the filling of wetlands. The CWA funds the construction of sewage treatment plants and recognizes the need for planning to address nonpoint sources of pollution. Section 402 of the CWA requires a permit for all point source (a discernible, confined, and discrete conveyance, such as a pipe, ditch, or channel) discharges of any pollutant (except dredge or fill material) into waters of the United States.

Safe Drinking Water Act

The federal Safe Drinking Water Act regulates drinking water quality nationwide and gives the EPA the authority to set drinking water standards, such as the National Primary Drinking Water Regulations. These regulations protect drinking water by limiting the levels of contaminants that can adversely affect public health. All public water systems that provide service to 25 or more individuals must meet these standards. Water purveyors must monitor for contaminants on fixed schedules and report to the EPA when a maximum

contaminant level (MCL) is exceeded. MCL is the maximum permissible level of a contaminant in water that is delivered to any user of a public water system. Contaminants include organic and inorganic chemicals (e.g., minerals), substances that are known to cause cancer, radionuclides (e.g., uranium and radon), and microbial contaminants (e.g., coliform and E. coli). The MCL list typically changes every three years as the EPA adds new contaminants or revises MCLs. The California Department of Public Health's Division of Drinking Water and Environmental Management is responsible for implementation of the Safe Drinking Water Act in California.

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Act (Water Code sections 13000 et seq.) is the basic water quality control law for California. Under this act, the State Water Resources Control Board (SWRCB) has ultimate control over state water rights and water quality policy. In California, the EPA has delegated authority to issue National Pollutant Discharge Elimination System permits to the SWRCB. The state is divided into nine regions related to water quality and quantity characteristics. The SWRCB, through its nine Regional Water Quality Control Boards (RWQCB), carries out the regulation, protection, and administration of water quality in each region. Each regional board is required to adopt a Water Quality Control Plan, or Basin Plan, that recognizes and reflects the regional differences in existing water quality, the beneficial uses of the region's ground and surface water, and local water quality conditions and problems. The City of Brea is in the Santa Ana River Basin, Region 8. The Basin Plan gives direction on the beneficial uses of the state waters within Region 8; describes the water quality that must be maintained to support such uses; and provides programs, projects, and other actions necessary to achieve the standards established in the Basin Plan.

National Pollutant Discharge Elimination System

The NPDES permit program was established by the CWA to regulate municipal and industrial discharges to surface waters of the US from their municipal separate storm sewer systems (MS4s). Under the NPDES program, all facilities that discharge pollutants into waters of the US are required to obtain a NPDES permit. Requirements for stormwater discharges are also regulated under this program, and the EPA has recently focused on integrating the NPDES program further into watershed planning and permitting (USEPA 2012).

The term "pollutant" broadly applies to any type of industrial, municipal, and agricultural waste discharged into water. Point sources can be publicly owned treatment works, industrial facilities, and urban runoff. (The NPDES program addresses certain agricultural activities, but the majority are considered nonpoint sources and are exempt from NPDES regulation.) Under the national program, NPDES permits are issued only for direct, point-source discharges. Direct sources discharge directly to receiving waters, and indirect sources discharge to publicly owned treatment works, which in turn discharge to receiving waters.

NPDES issues two basic permit types: individual and general. The NPDES has a variety of measures designed to minimize and reduce pollutant discharges. All counties with storm drain systems that serve a population of 50,000 or more and construction sites that are one acre or more must file for and obtain an NPDES permit. Another measure for minimizing and reducing pollutant discharges to a publicly owned conveyance or system of conveyances (including roadways, catch basins, curbs, gutters, ditches, man-made channels and storm drains, designed or used for collecting and conveying stormwater) is the EPA's Storm

Water Phase II Final Rule. The Phase II Final Rule requires an operator (such as a city) of a regulated small MS4 to develop, implement, and enforce a program (e.g., best management practices, ordinances, or other regulatory mechanisms) to reduce pollutants in post-construction runoff to the city's storm drain system from new development and redevelopment projects that result in the land disturbance of greater than or equal to one acre. City of Brea Public Works Department is the local enforcing agency of the MS4 NPDES permit.

Municipal Stormwater (MS4) Permit

The project area lies within the jurisdiction of the Santa Ana RWQCB (Region 8) and is subject to the waste discharge requirements of the North Orange County MS4 Permit (Order No. R8-2009-0030) and NPDES Permit No. CAS618030, as amended by Order No. R8-2010-0062. The County of Orange, incorporated cities of Orange County, and the Orange County Flood Control District are co-permittees under the MS4 Permit. Pursuant to this permit, the co-permittees were required to develop and implement a drainage area management plan (DAMP) as well as local implementation plans, which describe urban runoff management programs for the local jurisdictions. The City of Brea, as a permittee under the General MS4 permit, has legal authority for enforcing the terms of the permit in its jurisdiction.

The General MS4 Permit requires that new development or significant redevelopment projects use best management practices (BMP), including site design planning, source control, and treatment techniques, to ensure that the water quality of receiving waters is protected. These requirements are detailed in the Orange County Model Water Quality Management Plan (WQMP) and supplemental Technical Guidance Document, updated December 2013, which the City of Brea has incorporated into its project approval processes. In the project area, any new development project or significant redevelopment project (i.e., adding 5,000 or more square feet of impervious surface) is required to prepare a WQMP that specifies the BMPs and low-impact development (LID) measures that would be implemented to minimize the effects of the project on regional hydrology, runoff flow rates and/or velocities, and pollutant loads. LID is a stormwater management strategy that emphasizes conservation and use of existing site features integrated with stormwater controls designed to mimic natural hydrologic patterns, and that minimizes runoff by reducing the elements of development that produce it. An operations and maintenance plan must be included as part of the WQMP and designate terms, conditions, and requirements for maintaining the BMPs in perpetuity.

County of Orange

The County of Orange regulates storm runoff and water quality as the principal permittee under the General MS4 Permit and the DAMP. The City of Brea is a co-permittee under the General MS4 Permit and has legal authority for enforcing the terms of the permit in its jurisdiction.

The DAMP includes a New Development and Significant Redevelopment program. This program incorporates watershed protection and stormwater quality management principles into the general-plan process, environmental review process, and development permit approval process. The New Development and Significant Redevelopment program includes a model WQMP that defines requirements for project-specific planning, selection, and incorporation of BMPs into new development or redevelopment projects.

Stormwater Program: Trash Implementation Program

On April 7, 2015, the SWRCB adopted an amendment to the Water Quality Control Plan for Ocean Waters of California to Control Trash and to Part 1, Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California. They are collectively referred to as the "Trash Amendments." The Trash Amendments do the following: (1) establish a narrative water quality objective for trash, (2) corresponding applicability, (3) establish a prohibition on the discharge of trash, (4) provide implementation requirements for permitted stormwater and other discharges, (5) set a time schedule for compliance, and (6) provide a framework for monitoring and reporting requirements. Following adoption, the Trash Amendments were submitted to the California Office of Administrative Law and the EPA for review and approval. The Office of Administrative Law approved the Trash Amendments on December 2, 2015. The EPA approved the Trash Amendments on January 12, 2016.

The Trash Amendments apply to all Phase I and II permittees under the NPDES MS4 permits who retain regulatory authority over priority land uses. The SWRCB's executive director sent separate 13383 orders to traditional and nontraditional small MS4 permittees on June 1, 2017. RWQCBs, as the permitting authority, issued to their Phase I permittees either Water Code 13383 or 13267 orders that contain region-specific requirements, which may differ from the SWRCB's orders.

The Trash Amendments apply to all surface waters of the state and prohibit the discharge of trash to surface waters of the state or depositing trash where it could be discharged into surface waters of the state. Priority land uses are developed sites that include high density residential (10 or more dwelling units/acre); industrial; commercial; mixed urban; public transportation stations and stops; alternative areas determined by the permittees; and other areas determined by the state.

The Brea 265 Specific Plan has a maximum gross density of 4.2 dwelling units per acre, and therefore is not considered a priority land use.

City of Brea

All applicants for a priority project under the City of Brea Local Implementation Plan and Water Quality Ordinance (Municipal Code Section 13.32.030) are required to prepare a WQMP to minimize the adverse effects of urbanization on site hydrology, runoff flow rates, and pollutant loads. The proposed project is in the preliminary planning phase of development, and a preliminary/conceptual draft WQMP was prepared for the proposed project (Appendix J).

Storm Water Pollution Prevention Plans

Pursuant to the CWA, in 2001 the SWRCB issued a statewide general NPDES Permit for stormwater discharges from construction sites (NPDES No. CAS000002). The current Statewide Construction General Permit is SWRCB Order No. 2009-0009-DWQ, issued in 2009. Under this statewide permit, discharges of stormwater from construction sites with a disturbed area of one or more acres are required to either obtain individual NPDES permits for stormwater discharges or be covered by the general permit. Coverage by the general permit is accomplished by completing and filing permit registration documents with the SWRCB,

which include a notice of intent (NOI), risk assessment, site map, Storm Water Pollution Prevention Plan (SWPPP), annual fee, and signed certification statement. The permit registration documents are submitted electronically to the SWRCB via the Storm Water Multiple Application and Report Tracking System website. Each applicant under the Construction General Permit must ensure that the SWPPP is prepared prior to grading and is implemented during construction. The SWPPP must list BMPs implemented on the construction site to protect stormwater runoff and must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants, to be implemented based on the risk level of the site; and inspection, reporting, training, and recordkeeping requirements. In the Santa Ana Region, the SWRCB is the permitting agency, and the Santa Ana RWQCB provides local oversight and enforcement.

National Flood Insurance Program

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 mandate the Federal Emergency Management Agency (FEMA) to evaluate flood hazards. FEMA provides Flood Insurance Rate Maps (FIRM) for local and regional planners to promote sound land use and floodplain development, identifying potential flood areas based on the current conditions. To delineate a FIRM, FEMA conducts engineering studies referred to as Flood Insurance Studies. The most recent FIRMs for the project area (FIRM No. 06059C0128J) were revised on December 3, 2009. Using information gathered in these studies, FEMA engineers and cartographers delineate special flood hazard areas on FIRMs.

The Flood Disaster Protection Act requires owners of all structures in identified special flood hazard areas to purchase and maintain flood insurance as a condition of receiving federal or federally related financial assistance, such as mortgage loans from federally insured lending institutions. Community members in designated areas are able to participate in the National Flood Insurance Program (NFIP) afforded by FEMA. The NFIP is required to offer federally subsidized flood insurance to property owners in communities that adopt and enforce floodplain management ordinances that meet minimum criteria established by FEMA. The National Flood Insurance Reform Act of 1994 further strengthened the NFIP by providing a grant program for state and community flood mitigation projects. The act also established the Community Rating System, a system for crediting communities that implement measures to protect the natural and beneficial functions of their floodplains and to manage erosion hazards.

The design standard for flood protection established by FEMA is the 100-year flood event, also described as a flood that has a 1-in-100 chance of occurring in any given year. Additionally, FEMA has developed requirements and procedures for evaluating earthen levee systems and mapping the areas affected by those systems. Levee systems are evaluated for their ability to provide protection from 100-year flood events, and the results of this evaluation are documented in the FEMA Levee Inventory System. Levee systems must meet minimum freeboard standards and must be maintained according to an officially adopted maintenance plan. Other FEMA levee system evaluation criteria include structural design and interior drainage.

5.10.1.2 EXISTING CONDITIONS

The project site is east of the Los Angeles Basin on the southwestern flank of the Puente Hills, which form the western to northwestern margin of the Peninsular Ranges Geomorphic Province. The Puente Hills are bracketed by the Whittier and Chino fault zones and have been created by uplift along these faults.

Based on the County of Orange Technical Guidance Document (TGD) for Preparation of WQMPs and the geotechnical investigation, onsite soils consist primarily of hydrologic groups C and D soils, characterized as having slow to very slow infiltration rates when thoroughly wet. These soils are not favorable for infiltration.

The project site is not in a shallow groundwater zone, as defined by the TGD. Groundwater is expected to be more than 10 feet below the existing ground surface.

There are currently no major utilities on the project site, and the project site receives run-on from upstream areas to the north.

Watershed-Based Plan Conditions

The project site is in the San Gabriel River–Coyote Creek Watershed west of Valencia Avenue and the Santa Ana River Watershed east of Valencia Avenue.

Section 303(d) of the CWA authorizes the EPA to assist states, territories, and authorized tribes with listing impaired waters and developing total maximum daily loads (TMDL) for these water bodies. A TMDL establishes the maximum amount of a pollutant allowed in a water body and serves as the starting point or planning tool for restoring water quality. The project area is not within 200 feet of a 303(d)-listed water body (which is defined as an "environmentally sensitive area" under Section 2.3.3.4 of the TGD).

CWA Section 303(d)-listed impairments and TMDLs for the proposed project's receiving waters are summarized in Table 5.10-1, *Receiving Water Summary*.

There is currently no approved watershed infiltration and hydromodification management plan for either watershed.

Table 5.10-1 Receiving Water Summary

Watershed Description	303(d) Listed Impairments	Applicable TMDLs
San Gabriel River–Coyote Creek Watershed		
Loftus Diversion Channel (Facility A06)	None	None
Fullerton Creek Channel (Facility A03)	None	None
Coyote Creek Channel (Facility A01)	Copper, Indicator Bacteria, Iron, Malathion, pH, Toxicity	Copper, Indicator Bacteria
San Gabriel River Reach 1	pH, Temperature	None
San Gabriel River Estuary	Copper, Dioxin, Indicator Bacteria, Nickel, Dissolved Oxygen	Copper, Indicator Bacteria
Santa Ana River Watershed		
Carbon Canyon Creek Channel (E03)	None	None
Carbon Canyon Creek Diversion Channel (E02)	None	None
Santa Ana River (E01) Reach 3	None	None
Santa Ana River (E01) Reach 2	None	None

Source: Hunsaker 2022a.

Existing Drainage Conditions

The existing project site drainage is divided into three areas: west, east, and southeast.

West Drainage Area

The western drainage is 96.4 acres and divided into three drainage areas called A, B, and C; storm runoff from these areas eventually discharges to Loftus Channel (Hunsaker 2022b). Each west drainage area is described here and shown on Figure 5.10-1, *Existing West Drainage Areas*.

- **Drainage Area A.** It has an area of 59.7 acres and generates a 10-year storm runoff of 102.8 cubic feet per second (cfs). This runoff is discharged into the existing 78-inch reinforced concrete pipe (RCP) in Brea Sports Park. A natural drainage traverses Area A in a north-south direction. Runoff from areas north of Lambert Road is conveyed south toward Lambert Road and then to the existing RCP in Brea Sports Park. A tunnel constructed for oil operational vehicles crosses under Lambert Road and also conveys drainage to south. Runoff from the areas south of Lambert Road is conveyed south and then to the existing RCP in Brea Sports Park. Runoff discharges to the Loftus Diversion Channel, which is tributary to Fullerton Creek Channel, Coyote Creek Channel, the San Gabriel River, and, ultimately, the Pacific Ocean.

- **Drainage Area B.** It has an area of 20.7 acres and generates a 10-year storm runoff of 41.5 cfs. Runoff is discharged into the existing 24-inch RCP in Lambert Road.

- **Drainage Area C.** It has an area of 16.0 acres and generates a 10-year storm runoff of 28.3 cfs. This runoff is conveyed into the existing 60-inch RCP in Bluegrass Street.

East Drainage Area A

The eastern drainage area has an area of 134.1 acres and produces a 10-year storm runoff of 90.0 cfs. Runoff is conveyed as sheet flow west to the existing 2-inch x 48-inch RCP crossing Rose Drive, then to the 5-foot x 8-foot reinforced concrete box, and is eventually discharged into the Carbon Canyon Channel (Hunsaker 2022b). The eastern drainage area is shown on Figure 5.10-2, *Existing East Drainage Area*.

Southeast Drainage Area B

The southeastern drainage has a total area of 49.7 acres and produces a total 10-year storm runoff of 90.0 cfs. As shown on Figure 5.10-3, *Existing Southeast Drainage Area*, the southeast drainage area B is divided into seven subareas. Runoff produced from subareas B1 and B2 is discharged into Carbon Canyon Channel, which traverses the project site in a southerly direction. Carbon Canyon Channel is owned by the Army Corps of Engineers and runs from the Carbon Canyon Dam to a culvert under Rose Drive. Runoff produced from subareas B3, B4, and B5 is discharged into the existing 36-inch corrugated metal pipe that connects to Carbon Canyon Channel under Rose Drive. Runoff produced from subareas B6 and B7 is discharged into the existing 36-inch RCP in Blake Road, then connected to Carbon Canyon Channel west of Rose Drive (Hunsaker 2022b).

5.10.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

HYD-1 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.

HYD-2 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

HYD-3 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i) Result in a substantial erosion or siltation on- or off-site.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite.

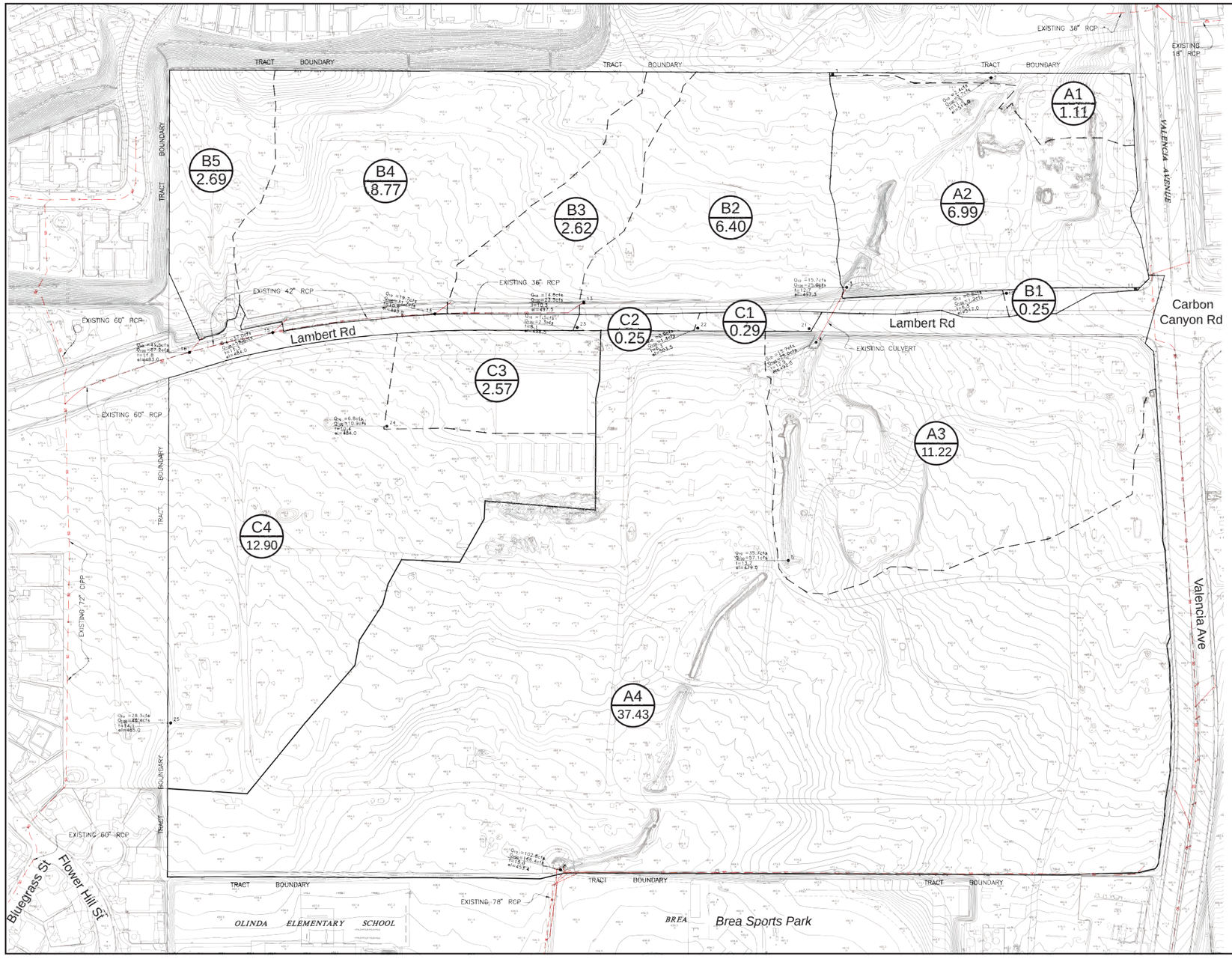
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

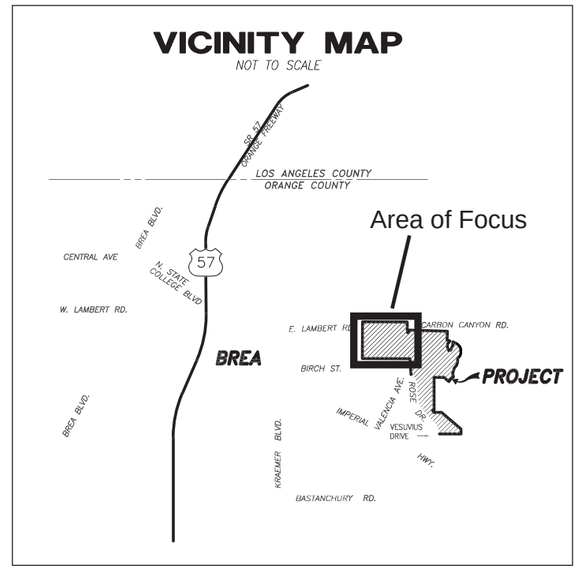
iv) Impede or redirect flood flows.

HYD-4 In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

HYD-5 Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Figure 5.10-1 - Existing West Drainage Areas
5. Environmental Analysis





LEGEND

- MAJOR DRAINAGE BOUNDARY
- MINOR DRAINAGE BOUNDARY
- 25 — NODE NUMBER
- A1 / 1.0 — AREA DESIGNATION / AREA ACREAGE (IN ACRES)
- Q_{25} =8.0cfs, t=15.0 — PEAK FLOW RATE / TIME OF CONCENTRATION
- D — SOIL GROUP

0 300
Scale (Feet)

Source: Hunsaker & Associates, Irvine, 2022

5. Environmental Analysis
HYDROLOGY AND WATER QUALITY

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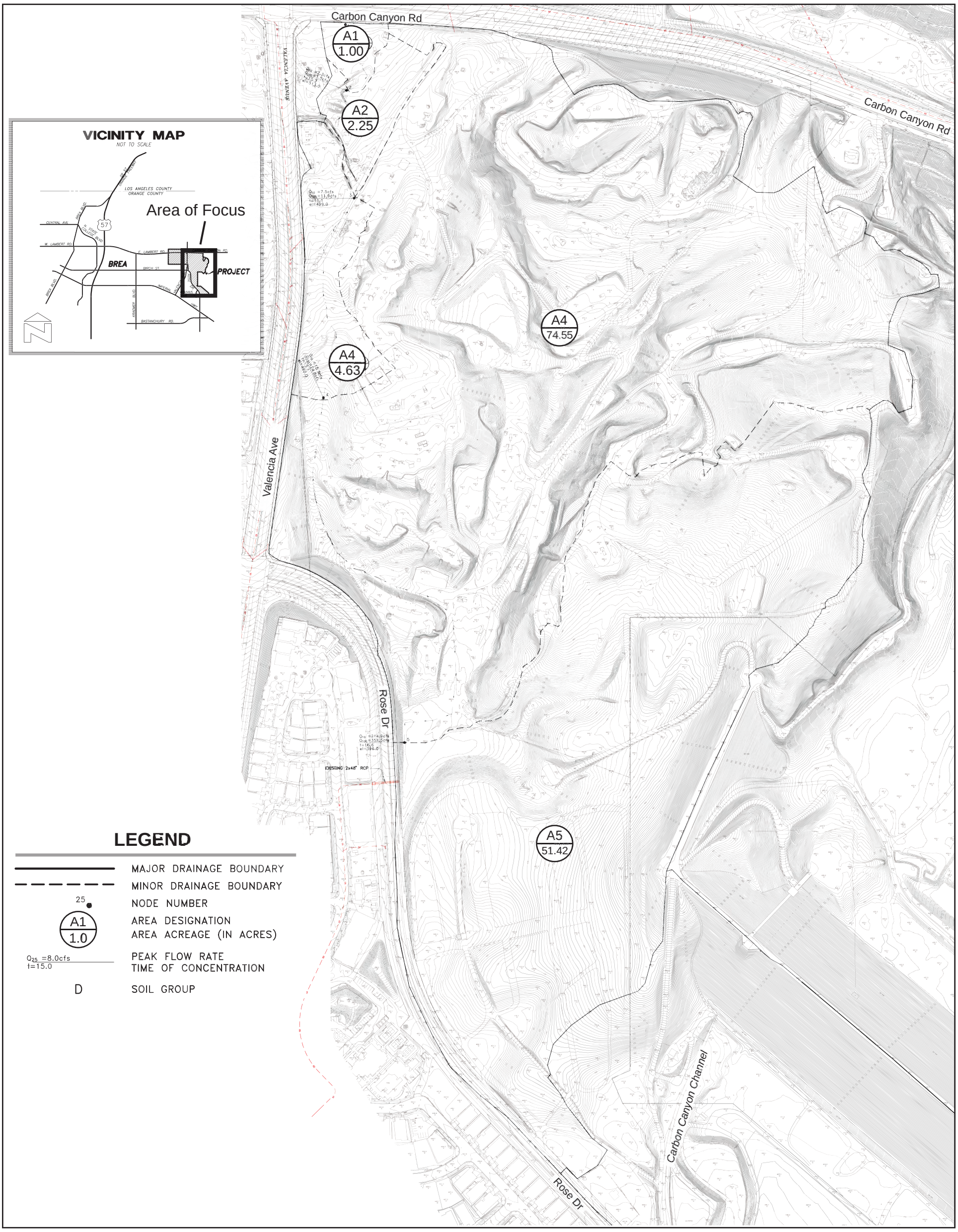
Figure 5.10-2 - Existing East Drainage Areas
5. Environmental Analysis



Source: Hunsaker & Associates Irvine, Inc. 2022

5. Environmental Analysis
HYDROLOGY AND WATER QUALITY

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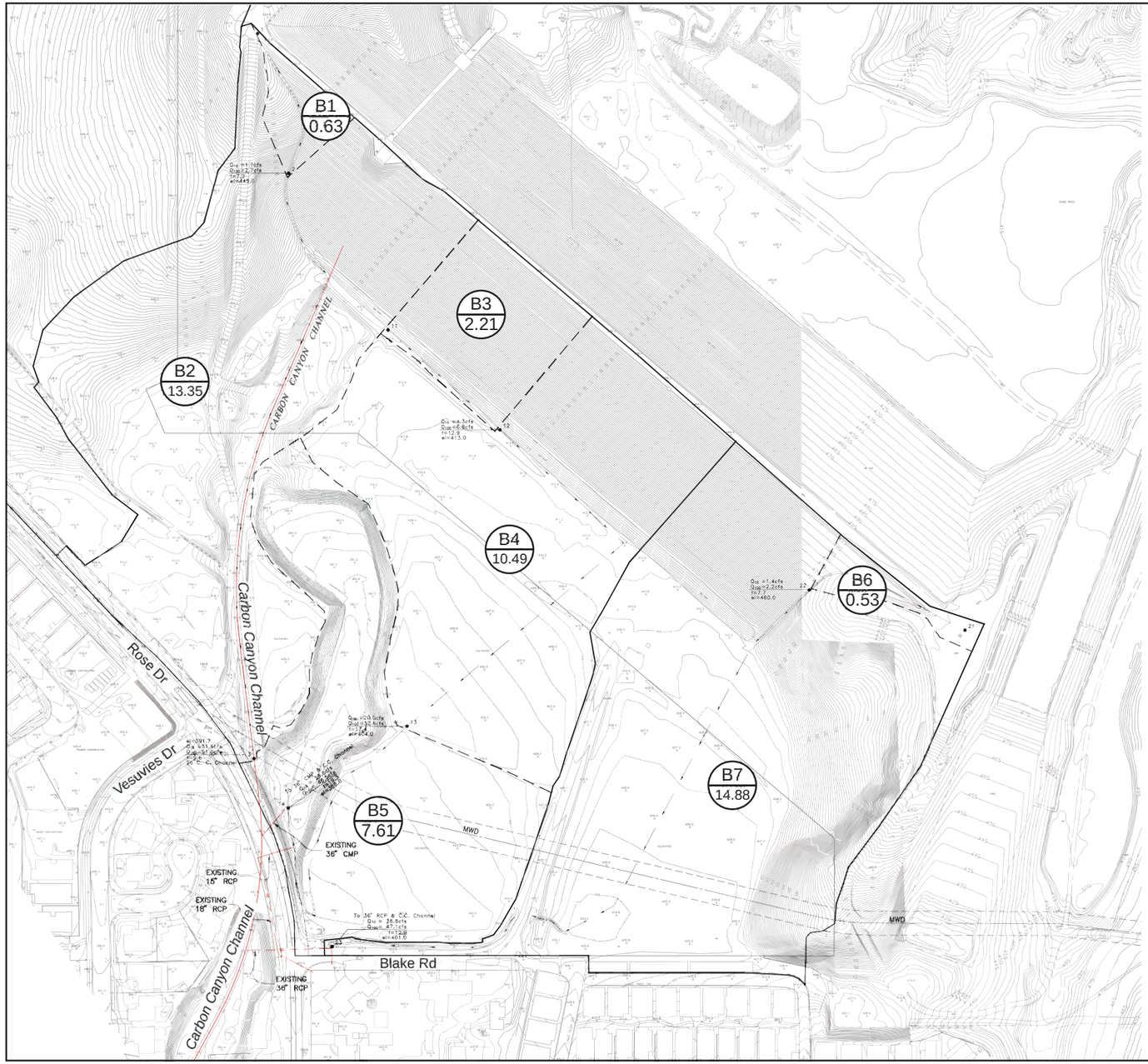
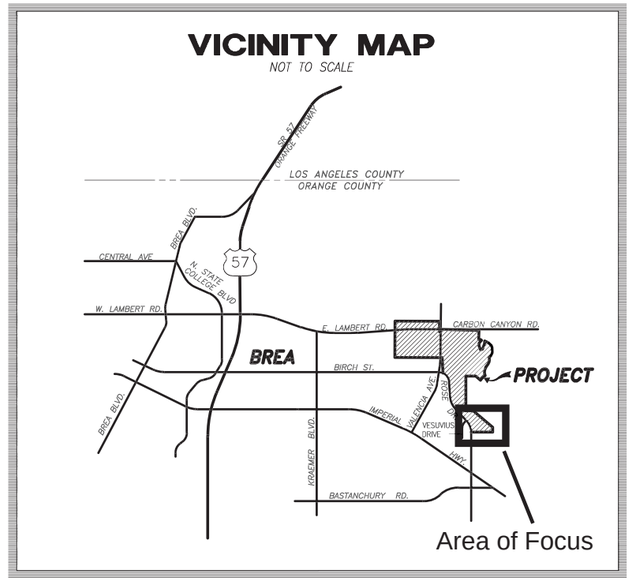
Figure 5.10-3 - Existing Southeast Drainage Areas
5. Environmental Analysis





LEGEND

- MAJOR DRAINAGE BOUNDARY
- MINOR DRAINAGE BOUNDARY
- 25 — NODE NUMBER
- A1 / 1.0 — AREA DESIGNATION / AREA ACREAGE (IN ACRES)
- Q_{100}=8.0cfs, t=15.0 — PEAK FLOW RATE / TIME OF CONCENTRATION
- D — SOIL GROUP

0 250
Scale (Feet)

Source: Hunsaker & Associates, Irvine, 2022

5. Environmental Analysis
HYDROLOGY AND WATER QUALITY

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5.10.3 Plans, Programs, and Policies

Regulatory Requirements

PPP HYD-1 The proposed project is required to be developed in compliance with the following state, regional, and local regulations concerning grading, stormwater, and water quality control.

State

- NPDES General Construction Permit. Notice of Intent and Storm Water Pollution Prevention Plan Requirements
- State Water Resources Control Board General Industrial Activities Storm Water Permit

Regional

- Santa Ana Regional Water Quality Control Board Waste Discharge Permits and Water Quality Certifications
- Orange County Municipal Separate Storm Sewer Systems Permit
- Orange County Model Water Quality Management Plan and Technical Guidance Document
- Orange County Drainage Area Management Plan. New Development/Significant Redevelopment Program
- Orange County Hydrology Manual and 1996 Addendum
- Orange County Water District Groundwater Replenishment Program
- County of Orange/Orange County Flood Control District Local Implementation Plan 2019

Local

- City of Brea Master Plan of Drainage 2013

PPP HYD-2 The project applicant will obtain a Section 408 Permit from the U.S. Army Corps of Engineers to replace the Carbon Canyon Channel with a covered, reinforced concrete box to allow for construction of the new intersection at Rose Drive and Vesuvius Drive, build internal project streets, and complete Rose Drive according to the Master Plan of Arterial Highways.

Project Design Features

PPP HYD-3 The project applicant will construct two new storm drain inlet structures on the City-owned property to the north to convey offsite run-on through the project site.

5.10.4 Environmental Impacts

5.10.4.1 IMPACT ANALYSIS

The following impact analysis addresses the thresholds of significance; the applicable thresholds are identified in brackets after the impact statement.

Impact 5.10-1: The proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality; provide substantial additional sources of polluted runoff; or conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. [Thresholds HYD-1, HYD-3.iii (part), and HYD-5]

Construction

The proposed project construction would disturb one or more acres of land. Therefore, a NPDES permit from the SWRCB is required, including submittal of an NOI and preparation of a SWPPP. The SWPPP includes BMPs to reduce water quality impacts, including various measures to control on-site erosion; reduce sediment flows into stormwater; control wind erosion; reduce tracking of soil and debris into adjacent roadways and off-site areas; and manage wastes, materials, wastewater, liquids, hazardous materials, stockpiles, equipment, and other site conditions to prevent pollutants from entering the storm drain system. Inspections, reporting, and stormwater sampling and analysis are also required to ensure that visible and nonvisible pollutants are not discharged off-site.

Implementation of the provisions of the NPDES permit and compliance with City grading requirements would minimize construction impacts through the implementation of BMPs that reduce construction-related pollutants. The proposed project would also comply with existing local and regional requirements so as not to adversely impact any of the City's and the Orange County Flood Control District's existing drainage facilities. This would ensure that any impacts to downstream waters resulting from construction activities would be less than significant.

Operation

A Preliminary/Conceptual Water Quality Management Plan (PWQMP) was prepared for the proposed project to comply with the requirements of the NPDES Stormwater Program during long-term operation of the proposed project (see Appendix J). Activities typical of residential developments are anticipated for the proposed project. These include day-to-day activities such as recreation, lounging, commuting, exercising, and other residential-related activities. And typical household wastes are anticipated to be generated daily by the project. These include food wastes, paper products, and recyclable materials. These materials would be disposed of in on-site trash enclosures and removed for disposal on a weekly basis by the local private waste management company.

Considering these typical residential activities, potential pollutants that could be generated by maximum buildout of the proposed project would include suspended solids/sediment, nutrients, metals, pathogens, pesticides, oil and grease, toxic organic compounds, and trash and debris. Primary pollutants of concern

(POC) include metals, pathogens, pesticides, and toxic organic compounds. Table 5.10-2, *Pollutants of Concern*, summarizes POCs anticipated for the proposed project.

Table 5.10-2 Pollutants of Concern

Pollutant	Additional Information and Comments
Suspended Solids/Sediment	Pollutant is a Primary POC. Potential sources of sediment include disturbed or unstabilized landscaping areas and disturbed earth surfaces.
Nutrients	Pollutant is Primary POC as downstream water is impaired for Nutrients. Potential sources of nutrients include fertilizers, sediment and trash/debris
Heavy Metals	Pollutant is a Primary POC. Potential sources for the project include automobiles and uncovered parking areas.
Pathogens (Bacteria/Virus)	Pollutant is a Primary POC. Potential sources for the project include food wastes, pet wastes, sediment and landscaping areas.
Pesticides	Pollutant is a Primary POC. Potential sources of pesticides include landscaping and open space areas.
Oil and Grease	Potential sources include project streets and parked vehicles.
Toxic Organic Compounds	Pollutant is a Primary POC. Potential sources for the project include automobiles and uncovered parking areas.
Trash and Debris	Potential sources of trash and debris include landscaping activities, food wrappers and food wastes.

Source: Hunsaker 2022a.

However, the proposed project would use biotreatment BMPs to address the project's POCs from each of the project's drainage management areas. Anticipated BMPs in this category include bioretention with underdrains and proprietary biotreatment BMPs.

Bioretention BMPs would consist of traditional basin-type bioretention facilities (with underdrains). Each bioretention facility would be designed with nutrient-sensitive media to provide a medium to high level of effectiveness at removing the project's stormwater pollutants and with subdrains to convey treated runoff to the storm drain system. Proprietary biotreatment BMPs would be sized to address the water quality volume for its tributary area and designed with volume-based or flow-based configurations. These BMPs have been selected based on their proven pollutant removal efficiencies, as well as site constraints from proposed land use areas.

Additionally, the following BMPs and LID performance requirements would be incorporated.

Site Design BMPs

Minimize Impervious Area. Landscaping will be provided throughout the site to minimize the amount of impervious area onsite—along project streets and within private lots, common lettered lots, and recreation lot.

Maximize Natural Infiltration Capacity. The project site consists primarily of hydrologic groups C and D soils, which are not feasible for infiltration. However, the project will use some retention of runoff in the

project's landscaping areas to allow for some incidental infiltration and evapotranspiration. These areas include depressed parkways and landscaped areas.

Preserve Existing Drainage Patterns and Time of Concentration. In the developed condition, runoff from each of the project's development areas will be collected and discharged to the existing drainage downstream storm drain system. Changes in the time of concentration and peak flows from natural/pre-project conditions will be controlled via the project's hydromodification controls and detention facilities.

Disconnect Impervious Areas. Landscaping will be provided within the project's development areas to minimize the amount of directly connected impervious areas.

Protect Existing Vegetation and Sensitive Areas, and Revegetate Disturbed Areas. Project site will include natural conservation areas.

Revegetate Disturbed Areas and Xeriscape Landscaping. Native and/or drought-tolerant landscaping will be incorporated into site design, consistent with City guidelines, in proposed landscaping areas.

Low Impact Development Criteria

- LID BMPs must be designed to retain on-site (i.e., infiltrate, harvest and use, or evapotranspire) stormwater runoff up to 80 percent average annual capture efficiency.
- LID BMPs must be designed to:
  - Retain onsite stormwater runoff as feasible up to the design capture volume.
  - Recover (i.e., draw down) the storage volume as soon as possible after a storm event, and if necessary,
  - Biotreat, on-site, additional runoff, as feasible, up to 80 percent average annual capture efficiency (cumulative, retention plus biotreatment), and if necessary,
  - Retain or biotreat, in a regional facility, the remaining runoff up to 80 percent annual capture efficiency (cumulative, retention plus biotreatment, onsite plus offsite), and if necessary,
  - Fulfill alternative compliance obligations for runoff volume not retained or biotreated up to 80 percent average annual capture efficiency using treatment controls.

The proposed project is anticipated to incorporate the nonstructural and structural source control BMPs identified by the PQWMP and listed in Table 5.10-3, *Nonstructural and Structural Source Control BMPs*.

Table 5.10-3 Nonstructural and Structural Source Control BMPs

Nonstructural Source Control BMPs	
Education for Property Owners, Tenants and Occupants	Educational materials will be provided to homeowners at close of escrow by the owner and periodically thereafter by the HOA to inform them of their potential impacts to downstream water quality. Materials include those described in Section VII of this WQMP and provided in the Final WQMP.
Activity Restrictions	Activity restrictions to minimize potential impacts to water quality and with the purpose of protecting water quality will be prescribed by the project's Covenant, Conditions and Restrictions (CC&Rs), or other equally effective measure.
Common Area Landscape Management	Maintenance activities for landscape areas shall be consistent with City, County and manufacturer guidelines for fertilizer and pesticide use (OC DAMP Section 5.5). Maintenance includes trimming, weeding and debris removal and vegetation planting and replacement. Stockpiled materials during maintenance activities shall be placed away from drain inlets and runoff conveyance devices. Wastes shall be properly disposed of or recycled.
BMP Maintenance	The project proponent shall be responsible for implementation of each applicable non-structural, structural and LID BMPs as well as scheduling inspection and maintenance cleaning of all applicable structural BMP facilities. The proponent shall be responsible for inspection and maintenance activities in landscape areas (see WQMP Site Plan).
Common Area Litter Control	Litter control onsite will include the use of HOA litter patrols, violation reporting and clean up during landscaping maintenance activities and as needed to ensure good housekeeping of the project's common areas.
Employee Training	All employees, contractors and subcontractors of the HOA shall be trained on the proper use and staging of landscaping and other materials with the potential to impact runoff and proper clean-up of spills and materials.
Common Area Catch Basin Inspection	As required by the Technical Guidance Document, at least 80 percent of all drainage facilities shall be inspected each year and, if necessary, cleaned and maintained prior to the storm season, no later than October 15th each year; with 100 percent of all drainage facilities inspected, cleaned and maintained within a two year period. Drainage facilities include catch basins and inlets, detention vaults and the project's LID BMPs.
Street Sweeping Public and Parking Lots	All project streets shall be vacuum swept on a weekly basis, consistent with City's sweeping schedule.
Structural Source Control BMPs	
Provide storm drain system stenciling and signage	Storm drain stenciling with a brief message or graphical icons with symbols, prohibiting the dumping of improper materials into the storm drain system shall be placed in highly visible areas adjacent to all storm drain inlets. The BMP is designed to alert and educate homeowners and guests of the destination of pollutants discharged into storm drain systems. Legibility of stencils and signs shall be maintained
Trash Enclosure	All trash and waste shall be stored in containers that have lids or tarps to minimize direct precipitation into the containers. The trash storage areas will be designed to City standards, and will be walled, roofed, have gates and proper drainage per City standards. Trash enclosure locations are not known at this time. Locations will be identified as project designs approach final.
Efficient Irrigation System & Landscape Design	Landscaping will be designed to consist of native species or drought tolerant, water conserving landscaping. Irrigation system will be designed, constructed and adjusted to eliminate overspray to hardscape areas, with timing and cycle lengths adjusted in accordance with water demands, given time of year, weather, day or night time temperatures based on system specifications and local climate patterns.
Protect slopes and channels and provide energy dissipation	The project's landscaped slopes shall be inspected for adequate vegetation cover, vegetation health and signs of erosion. Dead or dying vegetation shall be replaced as needed. Signs of erosion and concentrated flow areas shall be noted and repaired as needed.

Source: Hunsaker 2022a.

The proposed project would incorporate bioretention with underdrains, proprietary biotreatment, and detention basins to treat captured stormwater as recommended in the PWQMP and in compliance with the

LID requirements. Various structural and nonstructural BMPs would also be implemented to ensure that the proposed project does not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface- or groundwater quality, or conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Level of Significance Before Mitigation: Less than significant impact.

Impact 5.10-2: Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. [Threshold HYD-2]

The site is east of the Los Angeles Basin on the southwestern flank of the Puente Hills, which form the western to northwestern margin of the Peninsular Ranges Geomorphic Province. The project site is not in a shallow groundwater zone, as defined by the TGD. Groundwater is expected to be more than 10 feet below the existing ground surface (Hunsaker 2022a).

The City's primary sources of water are imported groundwater from the Main San Gabriel Basin through California Domestic Water Company and imported water from the Metropolitan Water District of Southern California through the Municipal Water District of Orange County. The Main San Gabriel Basin lies in eastern Los Angeles County and occupies most of San Gabriel Valley. The project site is not within the Main San Gabriel Basin, and development of the proposed project would not decrease groundwater supplies or interfere substantially with groundwater recharge of the Main San Gabriel Basin.

The City also extracts local groundwater from the La Habra Groundwater Basin. The project site is not within the limits of the La Habra Groundwater Basin. Local groundwater extraction represents approximately one percent of the total water supply, and the one groundwater well owned by the City is used strictly for irrigation purposes (Psomas 2022). Implementation of the proposed project would not impact groundwater supplies at the Main San Gabriel Basin or the La Habra Groundwater Basin. Therefore, groundwater impacts would not be significant.

Level of Significance Before Mitigation: Less than significant impact.

Impact 5.10-3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in a substantial erosion or siltation on- or off-site. [Threshold HYD-3.i]

The proposed project would result in changes to stormwater runoff and water quality during construction activities. Stormwater runoff could contain pollutants, such as soil and sediments that are released during grading and excavation activities, and petroleum-related pollutants due to spills or leaks from heavy equipment and machinery. Other common pollutants that can result from construction activities include solid or liquid chemical spills; concrete and related cutting or curing residues; wastes from paints, stains, sealants, solvents, detergents, flues, acids, lime, plaster, and cleaning agents; and heavy metals from equipment.

In the pre-project condition, on-site drainage is divided into a western drainage, eastern drainage, and southeastern drainage areas, as described in Section 5.10.1.2 under "Existing Drainage Condition." The western drainage area is west of Valencia Avenue, totals approximately 96.4 acres, and is divided into subareas A, B, and C; the eastern drainage is east of Valencia Avenue and south of Lambert Road and totals approximately 134.1 acres; and the southeastern drainage area has a total area of 49.7 acres. As shown on Figure 3-24, *Conceptual Phase Plan*, all of southeast drainage area and east drainage area east of Rose Drive would be developed in Phase 1, the west drainage area would be developed in Phase 2, and the rest of east drainage area east of Valencia Avenue would be developed in Phase 3.

Prior to construction, the proposed project is required to comply with the NPDES permit from the SWRCB, including submittal of an NOI and preparation of a SWPPP. The SWPPP includes BMPs to reduce water quality impacts, including various measures to control on-site erosion; reduce sediment flows into stormwater; control wind erosion; reduce tracking of soil and debris into adjacent roadways and off-site areas; and manage wastes, materials, wastewater, liquids, hazardous materials, stockpiles, equipment, and other site conditions to prevent pollutants from entering the storm drain system. Inspections, reporting, and stormwater sampling and analysis are also required to ensure that visible and nonvisible pollutants are not discharged off-site.

Implementation of the provisions of the NPDES permit and compliance with City grading requirements would minimize construction impacts through the implementation of BMPs that reduce construction-related pollutants. This would ensure that any impacts to downstream waters resulting from construction activities would be less than significant. In addition to the requirements of the NPDES permit, grading and building permit requirements include the reduction of erosion and sedimentation impacts during construction. Full compliance with applicable local, state, and federal regulations would reduce water quality impacts associated with construction to a less than significant level.

Level of Significance Before Mitigation: Less than significant impact.

Impact 5.10-4: The proposed project could substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage system. [Thresholds HYD-3.ii and HYD-3.iii (part)]

In compliance with the City of Brea Master Plan of Drainage 2013 (SDMP), a preliminary hydrology analysis was prepared for the proposed project (see Appendix K). This report evaluated the 10-year storm runoff produced from the project area in the pre- and post-development conditions in order to detain any excess flows. In addition, the preliminary hydrology analysis includes the 100-year peak storm runoff evaluation for informational purposes.

As shown in Table 5.10-4, *Net Decrease in Pervious Area*, the project site is currently 99.2 percent pervious, and the proposed project would reduce the perviousness of the project site to 44.8 percent, a decrease of 142.5 acres or 55.2 percent.

Table 5.10-4 Net Decrease in Pervious Area

Project Site	Pervious Area (acres)	Percentage	Impervious Area (acres)	Percentage	Total Acreage
Pre-project Conditions	260.1	99.2%	2.0	0.8%	262.1
Post-project Conditions	117.6	44.8%	144.5	-55.2%	262.1
Change	142.5	54.4%	-142.5	**-54.4%**	**n/a**

Source: Hunsaker 2022a.

In the pre-project condition, on-site drainage is divided into a western drainage, an eastern drainage, and a southeastern drainage as described in Section 5.10.1.2. In the post-development condition, runoff from each of the project's drainage areas would be consistent with pre-project drainage patterns, with each drainage area discharging to the pre-existing storm drain connections downstream. Runoff would discharge to the backbone storm drain system via a system of area drains, curb and gutters, and catch basin inlets, then be conveyed to the Loftus Channel Carbon Canyon Channel, as in pre-project condition (see Figure 5.10-4, *Proposed West Drainage Areas*, Figure 5.10-5, *Proposed East Drainage Area*, and Figure 5.10-6, *Proposed Southeast Drainage Area*). The proposed drainage conditions are described below and summarized in Table 5.10-5, *Existing and Proposed 10-Year Storm Runoff Conditions*.

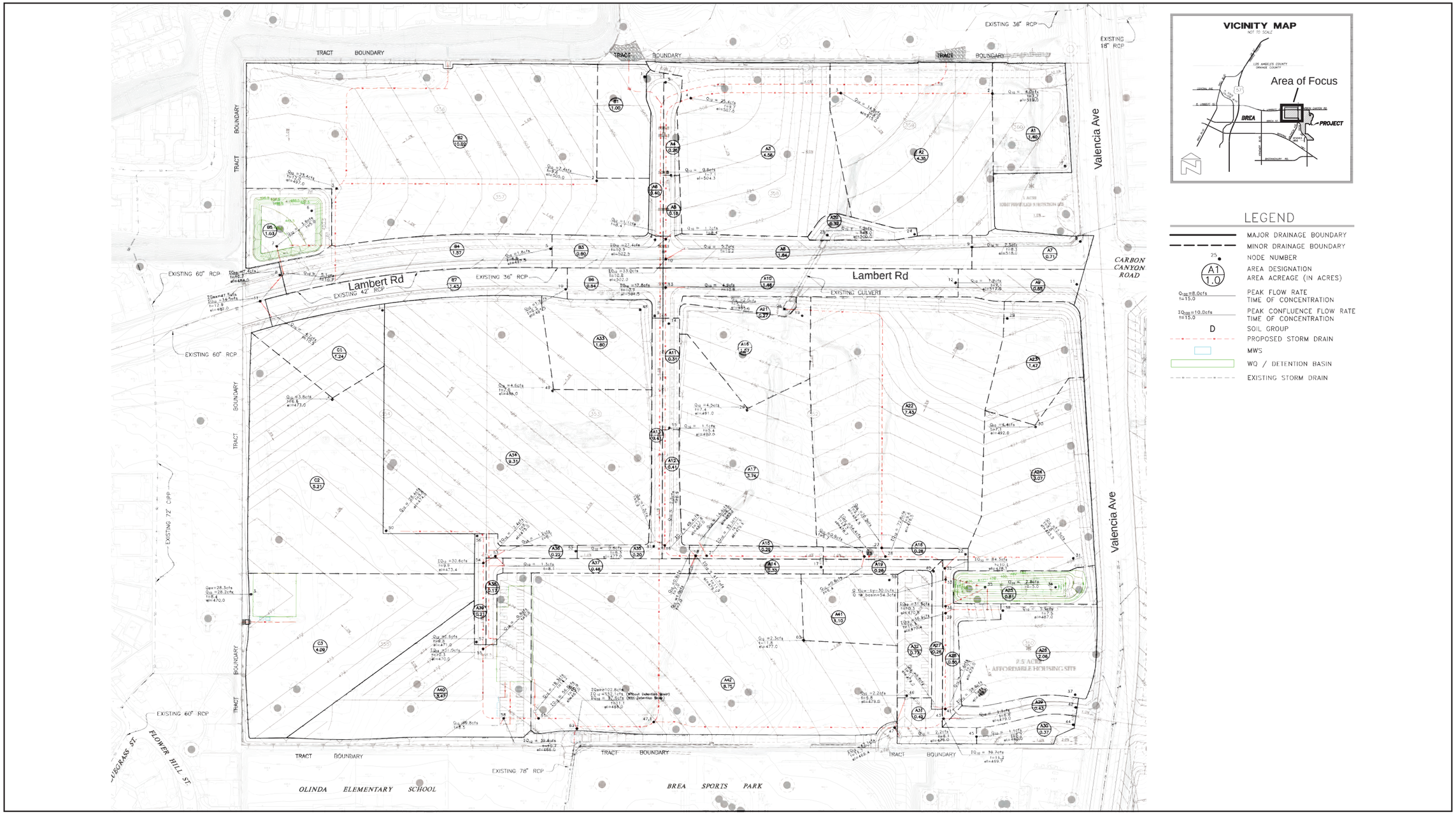
Table 5.10-5 Existing and Proposed 10-Year Runoff Conditions

West Drainage Areas						
	Area A		**Area B**		**Area C**	
	Area (ac)	**Q (cfs)**	**Area (ac)**	**Q (cfs)**	**Area (ac)**	**Q (cfs)**
Existing (pre-project)	59.70	102.80	20.70	41.50	16.00	28.30
Proposed Without Detention Facilities (post-project)	66.90	152.10	16.20	34.50	10.50	28.20
Proposed With Detention Facilities (post-project)	66.90	97.60	16.20	34.50	10.50	28.20
Differences from Existing to Proposed With Detention	7.20	-5.20	-4.50	-7.00	-5.50	-0.10

East and Southeast Drainage Areas				
	Area A (East Drainage)		**Area B (Southeast Drainage)**	
	Area (ac)	**Q (cfs)**	**Area (ac)**	**Q (cfs)**
Existing (pre-project)	134.10	214.90	49.70	90.0
Proposed Without Detention Facilities (post-project)	136.70	306.90	49.10	115.30
Proposed With Detention Facilities (post-project)	136.70	208.10	49.10	85.30
Differences from Existing to Proposed With Detention	2.60	-6.80	-0.60	-4.70

Source: Hunsaker 2022b.

Figure 5.10-4 - Proposed West Drainage Areas
5. Environmental Analysis



0 300
Scale (Feet)

Source: Hunsaker & Associates, Irvine, 2022

5. Environmental Analysis
HYDROLOGY AND WATER QUALITY

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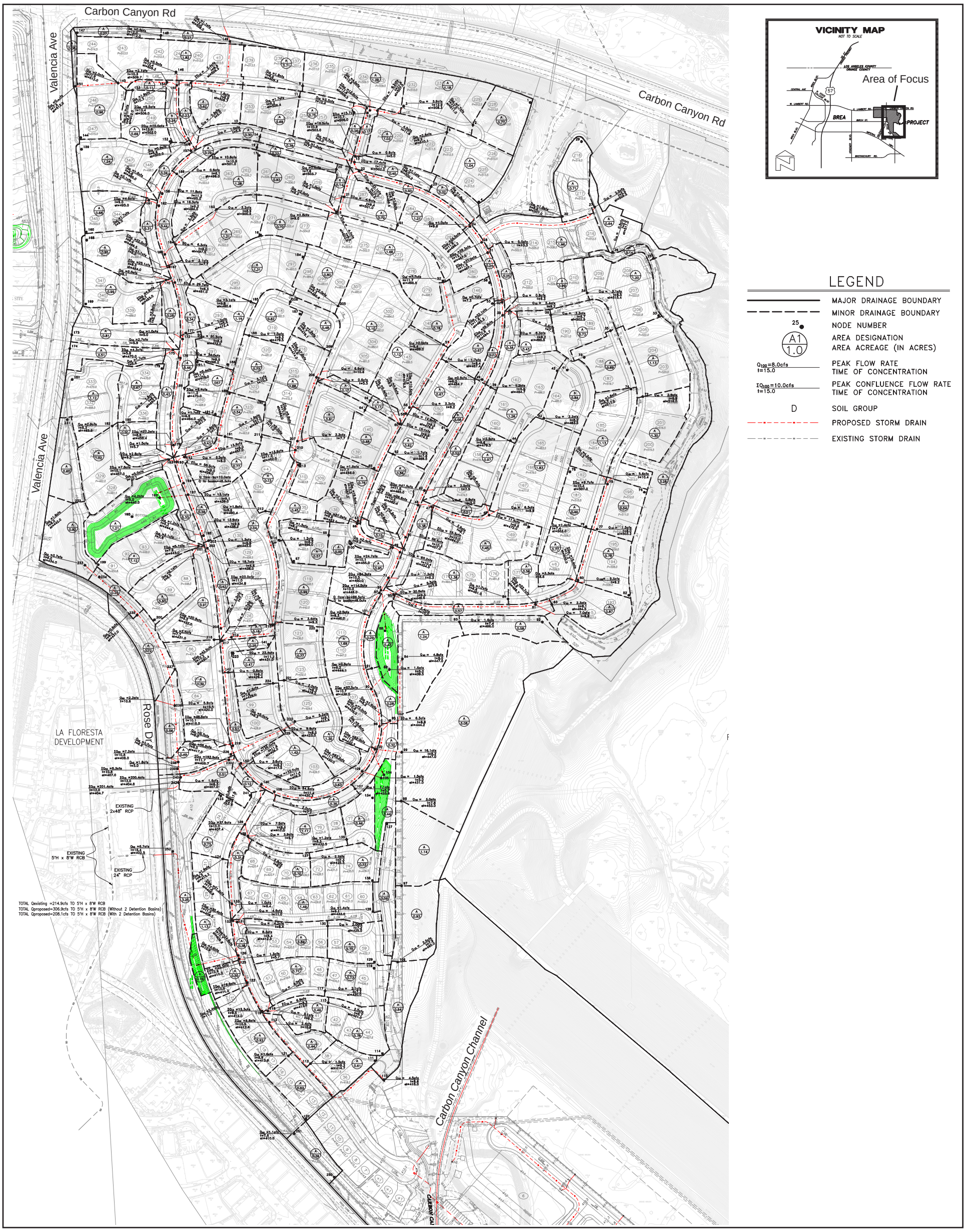
Figure 5.10-5 - Proposed East Drainage Areas
5. Environmental Analysis



Source: Hunsaker & Associates Irvine, Inc. 2022

5. Environmental Analysis
HYDROLOGY AND WATER QUALITY

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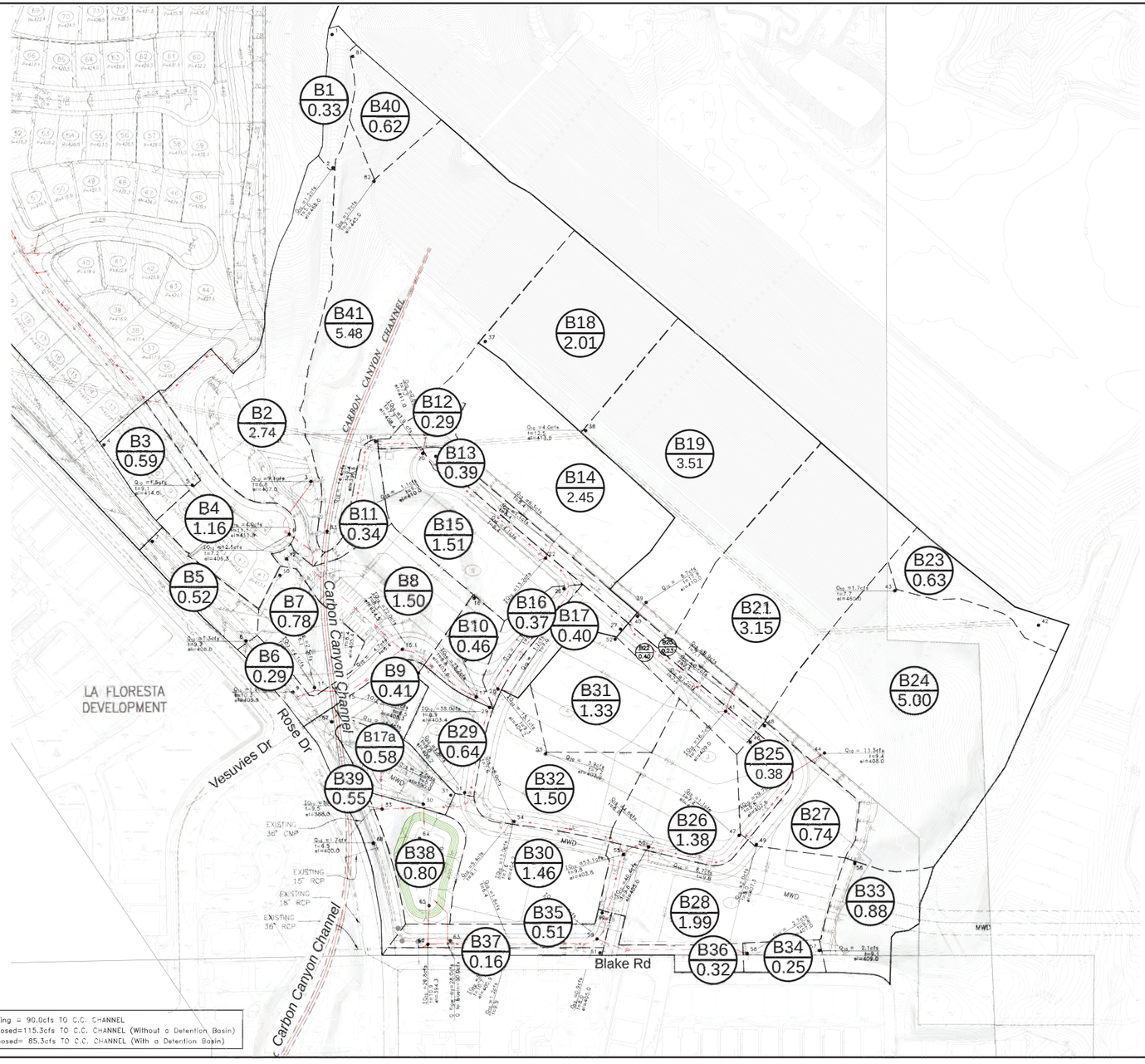
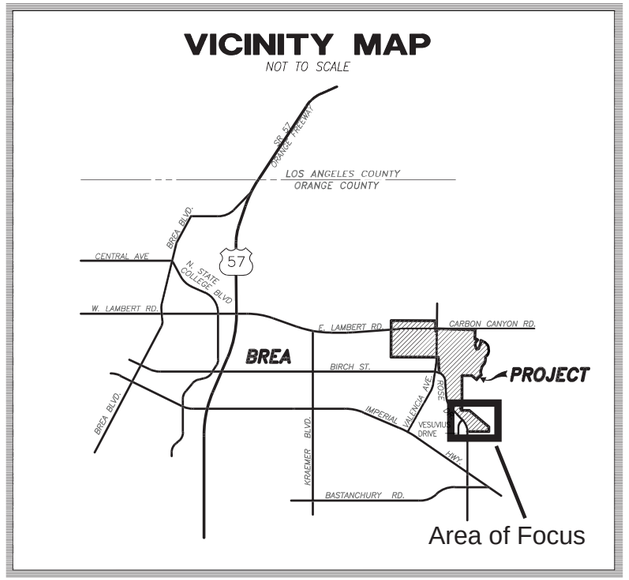
Figure 5.10-6 - Proposed Southeast Drainage Areas
5. Environmental Analysis





LEGEND

- MAJOR DRAINAGE BOUNDARY
- MINOR DRAINAGE BOUNDARY
- 25 — NODE NUMBER
- A1 / 1.0 — AREA DESIGNATION / AREA ACREAGE (IN ACRES)
- Q_{100}=8.0cfs, t=15.0 — PEAK FLOW RATE / TIME OF CONCENTRATION
- ΣQ_{100}=10.0cfs, t=15.0 — PEAK CONFLUENCE FLOW RATE / TIME OF CONCENTRATION
- D — SOIL GROUP
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN

0 250
Scale (Feet)

Source: Hunsaker & Associates, Irvine, 2022

5. Environmental Analysis
HYDROLOGY AND WATER QUALITY

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West Drainage Area A. Drainage Area A has an area of 66.9 acres and would generate a 10-year storm runoff of 152.1 cfs without detention basin. This runoff would discharge to the existing 78-inch RCP in Brea Sports Park, as it does in pre-project conditions. Two detention basins are proposed in this drainage area. With the proposed detention basins, the 10-year storm flow would decrease to 97.60 cfs, less than the existing runoff of 102.80 cfs.

West Drainage Area B. Drainage Area B has an area of 16.2 acres and would generate a 10-year storm runoff of 34.5 cfs. This runoff would be discharged to the existing 60-inch RCP in Lambert Road. A flood control basin is not needed. **West Drainage Area C.** Drainage Area C has an area of 10.5 acres and would generate a 10-year storm runoff of 28.2 cfs. This runoff would discharge to the existing 60-inch RCP in Bluegrass Street. An underground water quality basin is proposed for this area but a flood control basin is not necessary to detain the 10-year runoff.

East Drainage Area A. The East Drainage Area A has a total area of 136.7 acre. The major area is 132.9 acres and produces a 10-year storm runoff of 300.2 cfs discharged into the existing 2-inch x 48-inch RCP crossing Rose Drive. The minor area is 3.8 acres and produces a 10-year storm runoff of 6.7 cfs discharged into the existing 24-inch RCP crossing Rose Drive. Storm runoff produced from this drainage area would eventually discharge into the Carbon Canyon Channel. Four basins are proposed in this area to treat low flows produced from the development for water quality purpose. With the proposed detention basins, the 10-year storm flow would decrease to 208.10 cfs, less than the existing runoff of 214.90 cfs for this area.

Southeast Drainage Area B. Drainage Area B has a total area of 49.1 acres and would produce a total 10-year storm runoff of 115.3 cfs. Runoff produced from subareas B1 through B17a would discharge into the existing 36-inch corrugated metal pipe crossing Rose Drive, then connect to the Carbon Canyon Channel. Runoff produced from subareas B18 through B39 would be discharged into the existing 36-inch RCP in Blake Road, crossing Rose Drive, then connect to Carbon Canyon Channel. Runoff produced from subareas B40 and B41 would be discharged directly into Carbon Canyon Channel. One detention basin is proposed in this area to treat low flows produced from the proposed project for water quality purposes and to detain the excess 10-year storm runoff. With the proposed detention basin, the 10-year storm flow would decrease to 85.30 cfs, less than the existing runoff of 90 cfs for this area.

The proposed project's drainage management areas (DMA) and proposed detention facilities are described below and shown on Figure 5.10-7, *Proposed Drainage Management Areas and BMPs*. The detention basins would consist of traditional bioretention BMPs (flow-through type due to contamination from oil extraction activities), proprietary biotreatment BMPs (vault type), and open basins equipped with proprietary biotreatment media at basin bottom. The proposed detention facilities would satisfy the proposed project's requirements for LID and water quality treatment.

- **DMA 1 (11.02 acres)** Consists of the northwestern portion of the western project area and is bounded to the south by Lambert Road. Runoff from this DMA will be conveyed to a proposed bioretention (flow-through)/detention basin in the southwestern portion of the DMA. The BMP will also address hydromodification impacts. Alternative BMP for this DMA is the use of proprietary biotreatment media in the basin.

- **DMAs 2 and 3 (2.18 acres; 1.97 acres).** Consist of westbound Lambert Road and eastbound Lambert Road, just south of DMA 1. Runoff from these DMAs will be conveyed to a proprietary biofiltration BMP prior to discharging to the existing storm drain system in Lambert Road.

- **DMA 4 (11.10 acres).** Consists of the southwestern portion of the western project site. Runoff is conveyed southwest to an underground detention vault that outlets through a proprietary biofiltration BMP. The detention vault will also address hydromodification impacts.

- **DMA 5 (25.47 acres).** Consists of the central-western and south-central portions of the West Drainage Area. Runoff is conveyed southwest to an underground detention vault that outlets through a proprietary biofiltration BMP. The detention vault will also address hydromodification impacts.

- **DMA 6 (38.67 acres).** Consists of the northeastern and the central-eastern portions of the West Drainage Area. Runoff is conveyed south then southeast to an open basin that has been designed with proprietary biofiltration media. The basin will also provide mitigation for hydromodification impacts.

- **DMAs 7 through 11 (0.73 acre, 0.55 acre, 0.26 acre, 0.43 acre, and 0.79 acre).** Consist of the southeastern portion the West Drainage Area. Runoff from these DMAs will be conveyed to a proprietary biofiltration BMP prior to discharging to the backbone storm drain system.

- **DMA 12 (26.66 acres).** Consists of the northwestern portion of the East Drainage Area. Runoff from this DMA is conveyed south to an open basin that has been designed with proprietary biofiltration media.

- **DMA 13 (51.62 acres).** Consists of the northern portion of the project's East Drainage Area. Runoff from this DMA is conveyed south to an open basin that has been designed with proprietary biofiltration media.

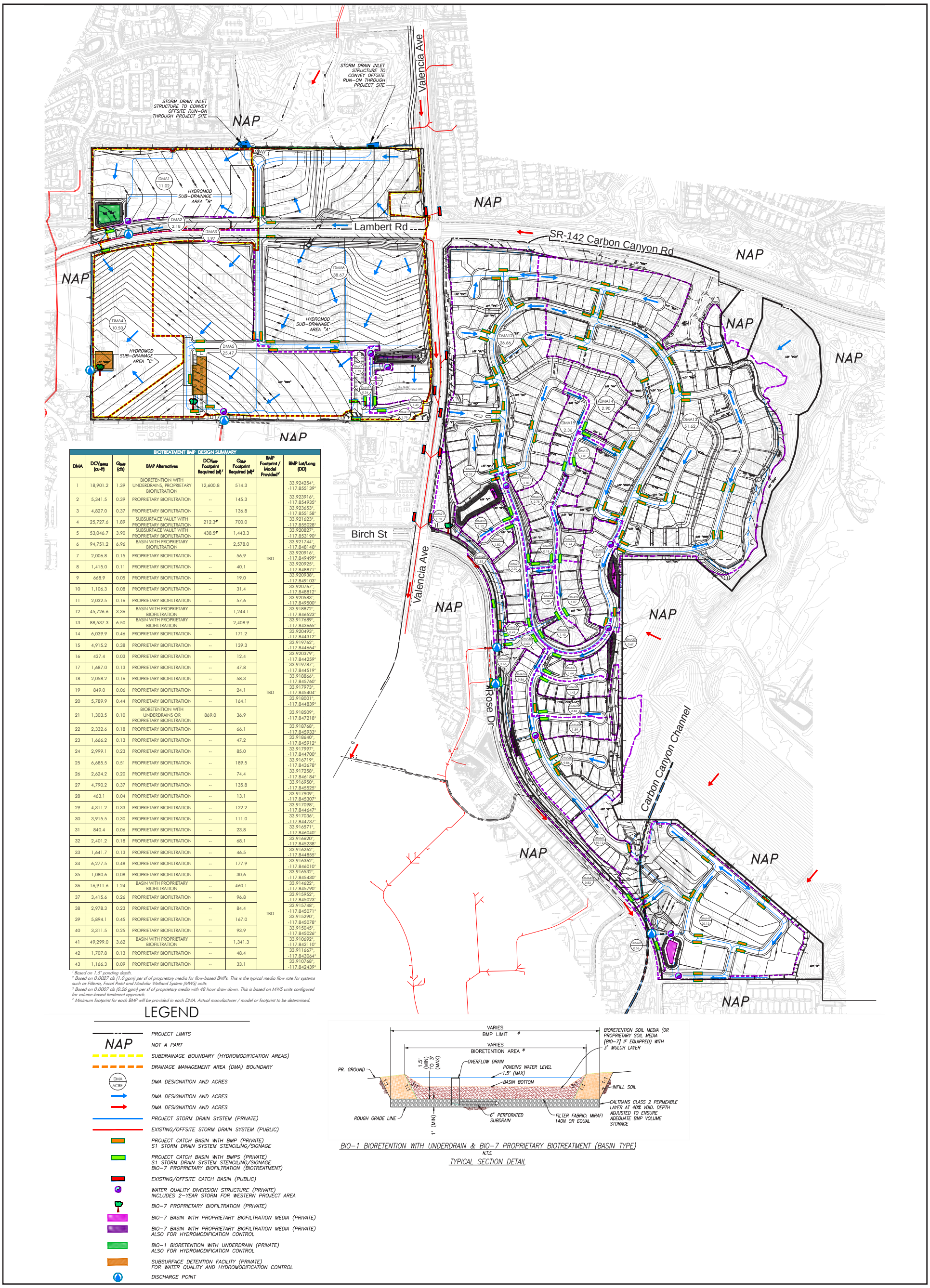
- **DMAs 14 through 20, 22 through 35, 37 through 40, 42, and 43** (see Section IV.2.2 of Appendix J for acreages). Consist of the central and southwestern portions of the East Drainage Area. Runoff from these DMAs will be conveyed to a proprietary biofiltration BMP prior to discharging to the backbone storm drain system.

- **DMA 21 (1.52 acres).** Consists of open space area just east of Valencia Avenue and Rose Drive. Runoff from this area will be conveyed to a bioretention (flow-through type) BMP or proprietary biofiltration BMP prior to discharging to the backbone storm drain system.

- **DMA 36 (9.86 acres).** Consists of the northern section of the southeast portion of the project site. Runoff from this DMA is conveyed west to an open basin that has been designed with proprietary biofiltration media.

- **DMA 41 (20.12 acres).** Consists of the southeastern-most portion of the project site. Runoff from this DMA is conveyed west to an open basin that has been designed with proprietary biofiltration media.

Figure 5.10-7 - Proposed Drainage Management Areas and BMPs
5. Environmental Analysis



BIOTREATMENT BMP DESIGN SUMMARY

DMA	DCV_{BMP} (cu-ft)	Q_{BMP} (cfs)	BMP Alternatives	DCV_{BMP} Footprint Required (sf)[1]	Q_{BMP} Footprint Required (sf)[2]	BMP Footprint / Model Provided[4]	BMP Lat/Long (DD)
1	18,901.2	1.39	BIORETENTION WITH UNDERDRAINS, PROPRIETARY BIOFILTRATION	12,600.8	514.3	TBD	33.924254°, -117.855139°
2	5,341.5	0.39	PROPRIETARY BIOFILTRATION	--	145.3		33.923916°, -117.854935°
3	4,827.0	0.37	PROPRIETARY BIOFILTRATION	--	136.8		33.923653°, -117.855158°
4	25,727.6	1.89	SUBSURFACE VAULT WITH PROPRIETARY BIOFILTRATION	212.3[3]	700.0		33.921623°, -117.855028°
5	53,046.7	3.90	SUBSURFACE VAULT WITH PROPRIETARY BIOFILTRATION	438.5[3]	1,443.3		33.920827°, -117.853190°
6	94,751.2	6.96	BASIN WITH PROPRIETARY BIOFILTRATION	--	2,578.0		33.921744°, -117.848148°
7	2,006.8	0.15	PROPRIETARY BIOFILTRATION	--	56.9		33.920916°, -117.849499°
8	1,415.0	0.11	PROPRIETARY BIOFILTRATION	--	40.1		33.920925°, -117.848871°
9	668.9	0.05	PROPRIETARY BIOFILTRATION	--	19.0		33.920938°, -117.849103°
10	1,106.3	0.08	PROPRIETARY BIOFILTRATION	--	31.4		33.920767°, -117.848812°
11	2,032.5	0.16	PROPRIETARY BIOFILTRATION	--	57.6		33.920583°, -117.849500°
12	45,726.6	3.36	BASIN WITH PROPRIETARY BIOFILTRATION	--	1,244.1		33.918872°, -117.846523°
13	88,537.3	6.50	BASIN WITH PROPRIETARY BIOFILTRATION	--	2,408.9		33.917689°, -117.843665°
14	6,039.9	0.46	PROPRIETARY BIOFILTRATION	--	171.2		33.920493°, -117.844312°
15	4,915.2	0.38	PROPRIETARY BIOFILTRATION	--	139.3	TBD	33.919762°, -117.844664°
16	437.4	0.03	PROPRIETARY BIOFILTRATION	--	12.4		33.920379°, -117.844259°
17	1,687.0	0.13	PROPRIETARY BIOFILTRATION	--	47.8		33.919787°, -117.844519°
18	2,058.2	0.16	PROPRIETARY BIOFILTRATION	--	58.3		33.918866°, -117.845760°
19	849.0	0.06	PROPRIETARY BIOFILTRATION	--	24.1		33.917973°, -117.845404°
20	5,789.9	0.44	PROPRIETARY BIOFILTRATION	--	164.1		33.918001°, -117.844839°
21	1,303.5	0.10	BIORETENTION WITH UNDERDRAINS OR PROPRIETARY BIOFILTRATION	869.0	36.9		33.918509°, -117.847218°
22	2,332.6	0.18	PROPRIETARY BIOFILTRATION	--	66.1		33.918768°, -117.845933°
23	1,666.2	0.13	PROPRIETARY BIOFILTRATION	--	47.2		33.918640°, -117.845912°
24	2,999.1	0.23	PROPRIETARY BIOFILTRATION	--	85.0		33.917997°, -117.844700°
25	6,685.5	0.51	PROPRIETARY BIOFILTRATION	--	189.5		33.916719°, -117.843678°
26	2,624.2	0.20	PROPRIETARY BIOFILTRATION	--	74.4		33.917258°, -117.846184°
27	4,790.2	0.37	PROPRIETARY BIOFILTRATION	--	135.8		33.916950°, -117.845525°
28	463.1	0.04	PROPRIETARY BIOFILTRATION	--	13.1		33.917909°, -117.845307°
29	4,311.2	0.33	PROPRIETARY BIOFILTRATION	--	122.2		33.917098°, -117.844647°
30	3,915.5	0.30	PROPRIETARY BIOFILTRATION	--	111.0		33.917036°, -117.844737°
31	840.4	0.06	PROPRIETARY BIOFILTRATION	--	23.8		33.916571°, -117.846040°
32	2,401.2	0.18	PROPRIETARY BIOFILTRATION	--	68.1		33.916620°, -117.845238°
33	1,641.7	0.13	PROPRIETARY BIOFILTRATION	--	46.5		33.916262°, -117.844855°
34	6,277.5	0.48	PROPRIETARY BIOFILTRATION	--	177.9	TBD	33.916362°, -117.846010°
35	1,080.6	0.08	PROPRIETARY BIOFILTRATION	--	30.6		33.916532°, -117.845430°
36	16,911.6	1.24	BASIN WITH PROPRIETARY BIOFILTRATION	--	460.1		33.914622°, -117.845790°
37	3,415.6	0.26	PROPRIETARY BIOFILTRATION	--	96.8		33.915952°, -117.845023°
38	2,978.3	0.23	PROPRIETARY BIOFILTRATION	--	84.4		33.915748°, -117.845071°
39	5,894.1	0.45	PROPRIETARY BIOFILTRATION	--	167.0		33.915290°, -117.845078°
40	3,311.5	0.25	PROPRIETARY BIOFILTRATION	--	93.9		33.915045°, -117.845026°
41	49,299.0	3.62	BASIN WITH PROPRIETARY BIOFILTRATION	--	1,341.3		33.910692°, -117.842110°
42	1,707.8	0.13	PROPRIETARY BIOFILTRATION	--	48.4		33.911667°, -117.843064°
43	1,166.3	0.09	PROPRIETARY BIOFILTRATION	--	33.1		33.910768°, -117.842439°

[1] Based on 1.5' ponding depth.
[2] Based on 0.0027 cfs (1.0 gpm) per sf of proprietary media for flow-based BMPs. This is the typical media flow rate for systems such as Filterra, Focal Point and Modular Wetland System (MWS) units.
[3] Based on 0.0007 cfs (0.26 gpm) per sf of proprietary media with 48 hour draw down. This is based on MWS units configured for volume-based treatment approach.
[4] Minimum footprint for each BMP will be provided in each DMA. Actual manufacturer / model or footprint to be determined.

LEGEND

- PROJECT LIMITS
- NAP — NOT A PART
- SUBDRAINAGE BOUNDARY (HYDROMODIFICATION AREAS)
- DRAINAGE MANAGEMENT AREA (DMA) BOUNDARY
- DMA / ACRE — DMA DESIGNATION AND ACRES
- DMA DESIGNATION AND ACRES
- DMA DESIGNATION AND ACRES
- PROJECT STORM DRAIN SYSTEM (PRIVATE)
- EXISTING/OFFSITE STORM DRAIN SYSTEM (PUBLIC)
- PROJECT CATCH BASIN WITH BMP (PRIVATE) S1 STORM DRAIN SYSTEM STENCILING/SIGNAGE
- PROJECT CATCH BASIN WITH BMPS (PRIVATE) S1 STORM DRAIN SYSTEM STENCILING/SIGNAGE BIO-7 PROPRIETARY BIOFILTRATION (BIOTREATMENT)
- EXISTING/OFFSITE CATCH BASIN (PUBLIC)
- WATER QUALITY DIVERSION STRUCTURE (PRIVATE) INCLUDES 2-YEAR STORM FOR WESTERN PROJECT AREA
- BIO-7 PROPRIETARY BIOFILTRATION (PRIVATE)
- BIO-7 BASIN WITH PROPRIETARY BIOFILTRATION MEDIA (PRIVATE)
- BIO-7 BASIN WITH PROPRIETARY BIOFILTRATION MEDIA (PRIVATE) ALSO FOR HYDROMODIFICATION CONTROL
- BIO-1 BIORETENTION WITH UNDERDRAIN (PRIVATE) ALSO FOR HYDROMODIFICATION CONTROL
- SUBSURFACE DETENTION FACILITY (PRIVATE) FOR WATER QUALITY AND HYDROMODIFICATION CONTROL
- DISCHARGE POINT

BIO-1 BIORETENTION WITH UNDERDRAIN & BIO-7 PROPRIETARY BIOTREATMENT (BASIN TYPE)
N.T.S.
TYPICAL SECTION DETAIL

0 625
Scale (Feet)

Source: Hunsaker & Associates Irvine, Inc. 2022

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Additionally, the project site receives run-on from upstream areas to the north. However, in the developed condition, stormwater run-on from areas to the north would be conveyed through the project site via a separate on-site storm drain line (not commingling with on-site runoff) prior to discharging to pre-existing downstream connections. Additionally, as stated in PPP HYD-3, as part of project design feature, the project applicant will construct two new inlets off-site on the City-owned property immediately to north. The off-site inlet locations are shown on Figure 5.10-7. Therefore, the off-site flows from the north would not flow more quickly to the downstream.

It should be noted that open Carbon Canyon Channel traverses the southeast drainage area, and the proposed drainage improvement would require replacing the on-site Carbon Canyon Channel with a covered, expanded RCB, allowing for building of internal streets in the project site, construction of the new intersection at Rose and Vesuvius Drive, and completion of Rose Drive according to the Master Plan of Arterial Highways (see PPP HYD-3). The Carbon Canyon Channel is within the jurisdiction of the Army Corps of Engineers, requiring a 408 permit. The modified Carbon Canyon Channel would be constructed to Corps of Engineer standards according to the 408 permit requirements.

As described above, under post-project conditions, runoff from each of the project's drainage areas would not exceed the pre-project conditions with adequately sized detention facilities that would reduce the runoff volumes. However, pursuant to the City's SDMP, the proposed project is required to provide downstream existing system capacities by preparing a Hydrology and Hydraulic (H&H) report. A final and approved H&H report, reviewed and approved by the City of Brea Public Works Department, will assess all proposed connections to the downstream system to demonstrate that downstream systems are not impacted by the proposed project. Because the downstream systems capacities have not been evaluated, this impact is considered potentially significant.

Hydrologic Conditions of Concern

As part of the PWQMP, hydrologic conditions of concern (HCOC) were identified, as specified in Section 2.3.3 of the Model WQMP. An HCOC is a combination of upland hydrologic conditions and stream biological and physical conditions that presents a condition of concern for physical and/or biological degradation of streams. In the North Orange County permit area, HCOCs are considered to exist if any streams downstream from the project are determined to be potentially susceptible to hydromodification impacts and either of the following conditions exists:

- Post-development runoff volume for the 2-year, 24-hour storm exceeds the pre-development volume by more than 5 percent, OR

- The time of concentration (Tc) of post-development runoff for the 2-yr, 24-hour storm event is less than the time of concentration of the pre-development condition by more than 5 percent.

The proposed project is potentially susceptible to hydromodification impacts because it would increase the amount of impervious area and increase runoff volume and rate. Based on the TGD for hydromodification susceptibility, only the project site west of Valencia Drive (west drainage area discharging to Loftus Channel) has potential for hydromodification impacts. As shown in Appendix J of the DEIR, Attachment C, Figure

XVI.3-1, "Susceptibility Analysis for San Gabriel River-Coyote Creek," and Figure XVI.3-3, "Susceptibility Analysis for Santa Ana River," the east and southeast drainage areas are not within the potential susceptibility areas of erosion, habitat, and physical structure susceptibility, thus do not have potential for hydromodification impact. A summary of the analysis for the west drainage area is shown in Table 5.10-6, *HCOC Analysis Summary (2-year event) for West Drainage Area*.

Table 5.10-6 HCOC Analysis Summary (2-year event) for West Drainage Area

Subdrainage Area	Existing Condition				Proposed Condition				Change Acres	Change Q_2 (cfs)	Change Tc (min)	Change V (ac-ft)
	Acres	Q_2 (cfs)	Tc (min)	V (ac-ft)	Acres	Q_2 (cfs)	Tc (min)	V (ac-ft)				
A	59.7	49.9	16.86	1.97	66.9	80.80	13.99	8.12	+7.2	+30.9	-2.87	+6.15
B	20.7	20.4	13.44	0.76	16.2	18.2	13.16	1.69	-4.5	-2.2	-0.28	+0.93
C	16	13.5	16.78	0.55	10.50	15.2	8.73	1.40	-5.5	+1.7	-8.05	+0.85
Total	**96.4**	**83.8**	**--**	**3.28**	**93.6**	**114.4**	**--**	**11.21**	**-2.8**	**+30.4**	**--**	**+7.93**

Source: Hunsaker 2022a.
Note: Discrepancy in proposed condition drainage acres results from edge grading effects and on-site routing of storm drain.

To address the project's HCOC, surface and subsurface detention facilities are proposed on the western project site to detain the volume required to mitigate the difference between the project's pre- and post-development peak runoff, and change in time of concentration at each of the project's points of compliance (outlet) to the existing downstream, drainage system. With implementation of the detention facilities, the project's hydromodification impacts (as well as impacts from larger storm events) will be minimized in the developed condition.

The proposed project would also integrate, where feasible, hydrologic source control (HSC) measures such as impervious area dispersion (HSC-2) and street trees (HSC-3) to reduce runoff volume for a given drainage area without reducing the site's true impervious area. Impervious area dispersion refers to a practice where runoff from the project's roof and walkway areas will be directed to adjacent landscaped areas for filtration, evapotranspiration, and incidental infiltration of runoff and volume reduction before discharging to the storm drain system. Also, street trees would be planted along the project's parkways and in common lot areas to intercept rainfall and provide some volume reduction benefits for the project.

To address runoff from proposed improvements to Lambert Road and Valencia Avenue/Rose Drive, the project anticipates implementing BMPs prescribed in the EPA's "Green Streets" guidance manual and consistent with the "maximum extent practicable" standard from the TGD. Anticipated BMPs include the use of LID BMPs (swales, planters, bioretention, proprietary facilities) and structural BMPs (pervious pavement).

Therefore, with implementation of the detention facilities in accordance with the LID performance criteria and various BMPs, the proposed project's hydromodification impacts would be minimized in the developed condition to a less than significant level.

Level of Significance Before Mitigation: Potentially significant impact.

Impact 5.10-5: The proposed project would not impede or redirect flood flows. [Threshold HYD-3.iv]

According to FEMA's Flood Insurance Rate Maps, the project site is not within the 100-year flood hazard zone (FIRM ID#06059C0061J and #06059C0062J) (FEMA 2009). The project site is identified as Zone X, an area of minimal flood hazard. Therefore, implementation of the proposed project would not impede or redirect flood flows.

However, the project site east of Rose Drive is adjacent to the Carbon Canyon Dam and within the dam's inundation area (see Figure 5.10-8, *Flood Hazard Area*). Carbon Canyon Dam encompasses over 221 acres and has a capacity of 7,033 acre-feet of water. The Orange County Flood Control District maintains a series of flood-retarding basins along the Carbon Creek Channel downstream of Carbon Canyon Dam. These basins are used to slow flood flows into the urbanized area downstream of the dam. Carbon Canyon Dam is vital for the flood protection of portions of the coastal plains in Orange County, including the cities of Fullerton, Placentia, and Anaheim. The U.S. Army Corps of Engineers is responsible for the dam's safety and conducts inspections on a regular basis. Dam failure inundation maps are reviewed and approved by the California Office of Emergency Services. The potential inundation zone is a "worst-case scenario" that assumes instantaneous dam failure with the reservoir filled to capacity. However, dams rarely fail instantaneously, and reservoirs are not filled to capacity at all times. Dam failure inundation zones are not FEMA-regulated flood zones, and a property's location in a dam failure inundation zone does not itself trigger the FEMA flood insurance requirement. California law requires disclosure to a prospective buyer of the fact that any portion of a sale property is within a mapped dam failure inundation zone (even during a drought when the reservoir is empty). In the event of the Carbon Canyon Dam failure, the proposed project could expose occupants of Brea 265 Specific Plan east of Rose Drive to risk of flooding.

Level of Significance Before Mitigation: Potentially significant impact.

Impact 5.10-6: The proposed project would not cause the release of pollutants due to project inundation from being in the flood hazard, tsunami, or seiche zones. [Threshold HYD-4]

As described in Impact 5.10-5, the project site is not within the 100-year flood hazard zone but is within the flood hazard zone for the Carbon Canyon Dam. A seiche is an oscillating surface wave generated by ground motion in a restricted or enclosed body of water, usually during an earthquake. Seiches are of concern for water storage facilities, because inundation from a seiche can occur if the wave overflows a containment wall, such as the wall of a reservoir, water storage tank, dam, or other artificial body of water. Although there is no identified seiche zone, the project site is adjacent to the Carbon Canyon Dam, which could create flooding impacts from a seiche. The project site could be inundated, which could result in release of pollutants as described in Impact 5.10-1. However, the project site is currently used for oil production and agricultural purposes, which could also result in release of pollutants related to those uses if the project site were to be inundated. Therefore, potential impacts from pollutants would not be greater under the proposed project, and impacts would be considered less than significant.

A tsunami is earthquake-induced flooding that is created from a large displacement of the ocean floor. The site is approximately 19 miles northeast of the Pacific Ocean and is not in a tsunami inundation area. A less than significant tsunami impact is anticipated.

Level of Significance Before Mitigation: Less than significant impact.

5.10.5 Cumulative Impacts

Water Quality

The cumulative study area for water quality is the part of Orange County in the jurisdiction of the Santa Ana RWQCB. Other projects could result in a cumulatively considerable impact to water quality due to construction activities and increases in post-development runoff. All construction projects that involve the disturbance of one or more acres of land are subject to the NPDES Construction Permit requirements for implementation of individual SWPPPs, which outline BMPs for erosion control, sediment control, wind erosion control, tracking control, nonstorm water management and waste management, and materials pollution control. Additionally, new development and significant redevelopment projects are required to prepare and implement WQMPs for long-term implementation and maintenance of source-control, site-design, and treatment-control BMPs to ensure compliance with water quality goals and with the City's NPDES ordinance. Thus, pollutants generated in the project site and cumulative projects in the Santa Ana River Basin would be mitigated during construction activities and project operation. Compliance with the Santa Ana RWQCB's waste discharge requirements and/or water quality certifications would also prevent long-term stormwater quality impacts. No significant cumulative impact would occur.

Drainage

The geographic area considered for cumulative analysis is the San Gabriel River–Coyote Creek Watershed and the Santa Ana River Watershed, where the proposed project would drain. Other projects could potentially increase the amount of impervious area in the watersheds, potentially increasing runoff and drainage volumes. However, as with the proposed project, other projects would be required to implement site design, LID, and treatment control BMPs pursuant to MS4 permits of the relevant RWQCB to ensure that postproject runoff volumes do not exceed the preproject conditions. As with the proposed project, cumulative projects are required to implement BMPs identified in the individual WQMP to reduce runoff volumes and rates on development sites. Examples of the BMPs are hydrologic source controls (impervious area dispersion and street trees), infiltration, stormwater harvest and reuse, bioretention, biofiltration, biotreatment, and detention basins. Cumulative projects must also meet the City's SDMP requirements and prepare and implement an H&H report to ensure capacities of the downstream drainage systems. Jurisdictions in the watersheds regulate development within 100-year flood zones to minimize hazards to public safety and alterations of flood flows. With regard to the existing storm drain system, compliance with local, state, and federal regulations to minimize stormwater runoff from individual projects would ensure that adequate storm drain infrastructure is constructed to serve existing and future developments. Cumulative impacts to surface water, drainage, and flood hazards would be less than significant, and project impacts would not be cumulatively considerable.

Figure 5.10-8 - Flood Hazard Area
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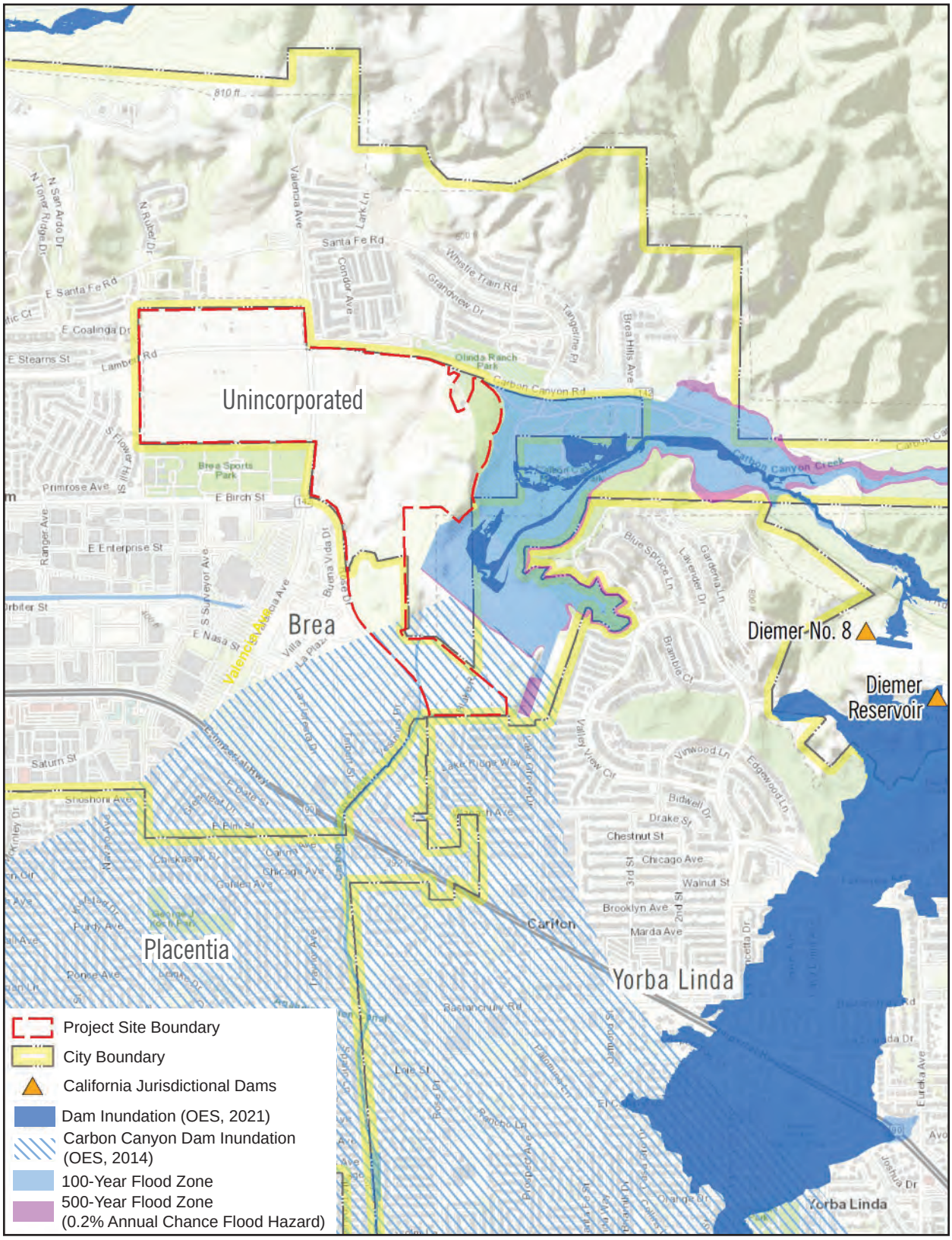

Source: FEMA, 2021; DRW, 2021

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Flood

One other project in the cumulative project list (i.e., La Floresta) is in the direct inundation pathway of Carbon Canyon Dam. As with the proposed project, it is anticipated that an emergency response plan would be prepared for the La Floresta project to ensure that adequate emergency response protocols are established. Development of the proposed project, combined with the cumulative projects, would not redirect flood paths to increase flood hazards, and with mitigation, would not be cumulatively significant.

5.10.6 Level of Significance Before Mitigation

Upon implementation of the plans, programs, and policies, the following impacts would be less than significant: 5.10-1, 5.10-2, 5.10-3, and 5.10-6.

Without mitigation, the following impact would be **potentially significant**:

- **Impact 5.10-4** The proposed project could result in inadequate capacities at downstream drainage facilities.
- **Impact 5.10-5** The proposed project could redirect flood flow from the Carbon Canyon Dam.

5.10.7 Mitigation Measures

Impact 5.10-4

HYD-1 Prior to approval of a final site improvement plans, the project applicant shall prepare a Final Hydrology and Hydraulic (H&H) report in compliance with the City of Brea's Master Plan of Drainage 2013 requirements for review and approval by the City of Brea Public Works Department. The H&H report shall address and assess all proposed connections to the downstream system, and appropriate mitigation measures shall be submitted to the City of Brea so that the downstream systems are not impacted.

Impact 5.10-5

HYD-2 Prior to recordation of any final subdivision map for areas below the Carbon Canyon Dam, the project applicant shall submit an emergency response plan (Plan) that meets the approval of the Brea Fire Department. The Plan shall provide emergency response protocols, and for the final subdivision map east of Rose Drive within the Carbon Canyon Dam inundation area, the Plan shall also demonstrate compliance with the dam failure inundation buyer notification provisions of state law.

5.10.8 Level of Significance After Mitigation

The mitigation measures above would reduce potential impacts associated with hydrology and water quality to a level that is less than significant. Therefore, no significant unavoidable adverse impacts relating to hydrology would remain.

5.10.9 References

Hunsaker & Associates Irvine, Inc. 2022a, February 11. Preliminary/Conceptual Draft Water Quality Management Plan, Brea 265. DEIR Appendix J

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