



## 4.9 HYDROLOGY AND WATER QUALITY

This section evaluates the potential impacts to hydrology and water quality conditions from implementation of the Cypress City Center Project (proposed project). The analysis in this section is based in part on the *Water Quality Management Plan* (Kimley-Horn 2019) (Appendix G), the *Preliminary Hydrology and Hydraulics Study* (Kimley-Horn 2020) (Appendix G), and the *Geotechnical Due Diligence Study for Proposed Mixed-Use Development at NE Quadrant of Siboney Street and Katella Avenue, City of Cypress, California* (Geotechnical Assessment) (NMG Geotechnical, Inc., June 13, 2019) (Appendix E) that were prepared for the proposed project and are included in this Environmental Impact Report (EIR).

### 4.9.1 Existing Environmental Setting

#### 4.9.1.1 Watersheds

The project site is located within the Coyote Creek Subwatershed of the larger San Gabriel River Watershed. The San Gabriel River Watershed covers 689 square miles (sq mi), primarily in eastern Los Angeles County with a smaller portion in northwestern Orange County (Los Angeles RWQCB 2019). Coyote Creek drains a watershed of 165 sq mi, 85.5 sq mi of which lie in north Orange County, with the remainder in Los Angeles County. The main tributary of the Coyote Creek Watershed is Coyote Creek, which flows from Riverside County and empties into the San Gabriel River just above its tidal prism (Orange County Public Works [OCPW] 2019a). The San Gabriel River flows into the Pacific Ocean west of Seal Beach.

The project site is located within the jurisdictional boundary of the Santa Ana Regional Water Quality Control Board (RWQCB). For planning purposes, the Santa Ana RWQCB uses a watershed classification system that divides surface waters into hydrologic units (HUs), hydrologic areas (HA), and hydrologic subareas (HSA). As designated by the RWQCB, the project site is located within the Los Angeles-San Gabriel River HU, the Anaheim HA Split, and the Anaheim HSA Split (Santa Ana RWQCB 1995, updated 2019).

#### 4.9.1.2 Drainage

In the existing condition, stormwater runoff on the on-site parking lot flows in an east/west orientation to two separate concrete ribbon gutters that transverse the project site and convey flow from north to south. In addition to on-site stormwater runoff, off-site stormwater runoff from 11.8 acres north of the project site is also tributary to the ribbon gutters. Each gutter conveys stormwater runoff to a separate existing catch basin that connects to an existing 33-inch stormdrain, that runs on the north edge of Katella Avenue from east to west. The 33-inch stormdrain increases to a 39-inch then to a 48-inch stormdrain just downstream of the project site. Stormwater runoff that exceeds the capacity of catch basin inlets ponds onsite to a depth of 12 to 18 inches before overflowing and discharging overland to the existing on-site driveway and into the Katella Avenue curb and gutter. The Katella Avenue stormdrain conveys stormwater runoff to the west, where it connects to the Los Alamitos Channel. Los Alamitos Channel flows southwest where it discharges into the San Gabriel River just north of its mouth, and then into the Pacific Ocean.

An existing 24-inch storm drain that runs north to south is located in Winners Circle between Katella Avenue and the end of the cul-de-sac. This stormdrain conveys stormwater runoff from Winners



Circle to the Katella Avenue stormdrain. The approved City stormdrain plan for the Winners Circle stormdrain included an extension to the north, past the end of the cul-de-sac, and then west across the existing parking lot just north of the project site. The stormdrain extension was proposed to accommodate restricted flows of 0.3 cubic feet per second (cfs) per acre (cfs/acre) from the property north of the project site. However, only the portion of the stormdrain in Winners Circle has been constructed.

#### 4.9.1.3 Surface Water Quality

As discussed in greater detail in Section 4.9.3, Reach 1 of the San Gabriel River (from the estuary to Firestone Boulevard) is impaired for pH (percentage of hydrogen) and temperature. The San Gabriel River Estuary is impaired for nickel, dissolved oxygen, copper, dioxin, and indicator bacteria.

#### 4.9.1.4 Groundwater

According to the California Department of Water Resources (DWR), the project site is located within the Coastal Plain of the Orange County Groundwater Basin, which underlies a coastal alluvial plain in the northwestern portion of Orange County (County). The Coastal Plain of Orange County groundwater basin underlies a coastal alluvial plain in northwestern Orange County. The basin is bound on the northwest and the north by the Los Angeles-Orange County line, on the northeast by the Whittier Fault Zone and consolidated rocks of the Puente Hills and Chino Hills, on the east by consolidated rocks of the Santa Ana Mountains, on the south by consolidated rocks of the Laguna Hills and San Joaquin Hills, and on the southwest by the Pacific Ocean. Groundwater recharge to the basin is derived from percolation of Santa Ana River flow, infiltration of precipitation, and injection into wells (DWR 2016).

For management purposes, groundwater basins are designated in the Santa Ana RWQCB's Water Quality Control Plan (Basin Plan) as Groundwater Management Zones. The project site is within the Orange County Groundwater Management Zone in the Lower Santa Ana River Basin. The Orange County Groundwater Management Zone is bounded to the north by the Chino Hills and Santa Ana Mountains, to the east by State Route 55 (SR-55) and the Irvine Groundwater Management Zone, to the south by the Pacific Ocean, and to the west by a low topographic divide approximated by the Orange County/Los Angeles County line (Santa Ana RWQCB 1995; updated 2019).

According to the Geotechnical Assessment (included in Appendix E to this Draft EIR), groundwater at the project site is very shallow, ranging from approximately 4.5 to 6 feet (ft) below ground surface (bgs) as measured on April 16, 2019, in two groundwater monitoring wells located on the project site. In addition, groundwater was measured at approximately 6 ft bgs in an open trench at a construction site on the southwest corner of Katella Avenue and Winners Circle on April 16, 2019. This is consistent with groundwater levels reported at several other sites in the vicinity of the project site, which has been measured in the range of 1 to 7 ft bgs.

#### 4.9.1.5 Groundwater Quality

Groundwater in the Coastal Plain of the Orange County Groundwater Basin is primarily sodium-calcium bicarbonate based. In general, total dissolved solids (TDS) content in groundwater ranges from 232 milligrams per liter (mg/L) to 661 mg/L, with an average of 475 mg/L. Groundwater



impairments include salinity (from seawater intrusion), colored water (from natural organic materials), high nitrates, and methyl tertiary butyl ether (MTBE) (DWR 2004).

#### 4.9.1.6 Flooding

According to the Federal Emergency Management Agency (FEMA) Federal Insurance Rate Map (FIRM) No. 06059C0116J (December 3, 2009), the project site is located within Zone X, which comprises areas of 0.2 percent annual chance flood (500-year flood). This means that there is a very low likelihood of flooding within the project site.

According to the Safety Element of the City of Cypress (City) General Plan, the project site is located within the inundation zone of the Prado Dam and the Carbon Canyon Dam. There are no open bodies of water in the vicinity of the project site and the project is therefore not located within an inundation zone of a seiche. The project site is located more than 5 miles to the northeast of the Pacific Ocean and is not located within the tsunami inundation zone. The levee inundation zone of Coyote Creek/Carbon Creek is located to the northwest of the project site; however, the project site is not located within this inundation area.

### 4.9.1 Regulatory Setting

#### 4.9.1.1 Federal Regulations

**Clean Water Act.** In 1972, the Federal Water Pollution Control Act (now referred to as the Clean Water Act [CWA]) was amended to require that the discharge of pollutants into waters of the United States from any point source be effectively prohibited unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. In 1987, the CWA was again amended to require that the United States Environmental Protection Agency (USEPA) establish regulations for the permitting of stormwater discharges (as a point source) by municipal and industrial facilities and construction activities under the NPDES permit program. The regulations require that Municipal Separate Storm Sewer System (MS4) discharges to surface waters be regulated by an NPDES permit.

The CWA requires states to adopt water quality standards for water bodies and have those standards approved by the USEPA. Water quality standards consist of designated beneficial uses for a particular water body (e.g., wildlife habitat, agricultural supply, fishing), along with water quality criteria necessary to support those uses. Water quality criteria are set concentrations or levels of constituents (e.g., lead, suspended sediment, and fecal coliform bacteria) or narrative statements that represent the quality of water that support a particular use. Because California had not established a complete list of acceptable water quality criteria for toxic pollutants, the USEPA Region IX established numeric water quality criteria for toxic constituents in the form of the California Toxics Rule (CTR).

When designated beneficial uses of a particular water body are being compromised by water quality, Section 303(d) of the CWA requires identifying and listing that water body as impaired. Once a water body has been deemed impaired, a Total Maximum Daily Load (TMDL) must be developed for each impairing water quality constituent. A TMDL is an estimate of the total load of pollutants from point, nonpoint, and natural sources that a water body may receive without exceeding



applicable water quality standards (often with a “factor of safety” included, which limits the total load of pollutants to a level well below that which could cause the standard to be exceeded). Once established, the TMDL is allocated among current and future dischargers into the water body.

Direct discharges of pollutants into waters of the United States are not allowed except in accordance with the NPDES program established in Section 402 of the CWA.

**Clean Water Act, Section 303, List of Impaired Water Bodies.** The State Water Resources Control Board (SWRCB), in compliance with Section 303(d) of the CWA, prepared a 2014/2016 list of impaired water bodies in California. The SWRCB approved the 2014/2016 California Integrated Report (CWA Section 303(d) List/305(b) Report) on October 3, 2017. On April 6, 2018, the USEPA approved the 2014/2016 California 303(d) List of Water Quality Limited Segments (303[d] list) The 303(d) list includes a priority schedule for the development of TMDL implementation for each contaminant impacting the water body. Reach 1 of the San Gabriel River (from the estuary to Firestone Boulevard) is impaired for pH and temperature. The San Gabriel River Estuary is impaired for nickel, dissolved oxygen, copper, dioxin, and indicator bacteria. There are no impairments listed for Los Alamitos Channel on the 303(d) list.

The Santa Ana RWQCB has not established any TMDLs that are applicable to the proposed project. It should be noted that the San Gabriel River downstream of the project site is within the jurisdiction of the Los Angeles RWQCB. TMDLs for metals and selenium and indicator bacteria have been established for the San Gabriel River and tributaries by the Los Angeles RWQCB. However, because the San Gabriel River is within the jurisdiction of the Los Angeles RWQCB, these TMDLs are not applicable to the proposed project.

**National Flood Insurance Act.** Congress acted to reduce the costs of disaster relief by passing the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. The intent of these acts was to reduce the need for large, publicly funded flood control structures and disaster relief efforts by restricting development in floodplains. FEMA administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in a floodplain. FEMA issues FIRMs of communities participating in the NFIP. These maps delineate flood hazard zones in the community. The City of Cypress manages local stormdrain facilities, and the Orange County Flood Control District (OCFCD) is responsible for regional flood control planning within Orange County.

#### 4.9.1.2 State Regulations

**Porter-Cologne Water Quality Control Act of 1970.** The federal CWA places the primary responsibility for the control of water pollution and planning the development and use of water resources with the states, although it does establish certain guidelines for the states to follow in developing their programs.

California’s primary statute governing water quality and water pollution is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the SWRCB and the nine RWQCBs broad powers to protect water quality and is the primary vehicle for the implementation of California’s responsibility under the federal CWA. The Porter-Cologne Act grants



the SWRCB and RWQCBs the authority and responsibility to adopt plans and policies, to regulate discharges to surface water and groundwater, to regulate waste disposal sites, and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, oil, or petroleum product.

Each RWQCB must formulate and adopt a water quality plan for its region. The regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State water policy. The Porter-Cologne Act also provides that an RWQCB may include in its region a regional plan with water discharge prohibitions applicable to particular conditions, areas, or types of waste. The City, including the project site, is within the jurisdictional boundaries of the Santa Ana RWQCB (Region 8).

**California Toxics Rule.** As stated previously, because California had not established a complete list of acceptable water quality criteria for toxic pollutants, USEPA Region IX established numeric water quality criteria for toxic constituents in the form of the CTR. The CTR provides water quality criteria for certain potentially toxic compounds for inland surface waters, enclosed bays, estuaries, and waters designated for human health or aquatic life uses. The CTR is often used by the RWQCBs when establishing water quality objectives and TMDLs. Although the CTR criteria do not apply directly to discharges of stormwater runoff, they are utilized as benchmarks for toxics in urban runoff. The CTR is used as a benchmark to evaluate the potential ecological impacts of stormwater runoff to receiving waters. The CTR establishes acute and chronic surface water quality standards for certain water bodies. Acute criteria provide benchmarks for the highest permissible concentration below which aquatic life can be exposed for short periods of time without deleterious effects. Chronic criteria provide benchmarks for an extended period of time (i.e., 4 days or more) without deleterious effects. The acute CTR criteria have a shorter relevant averaging period (less than 4 days) and provide a more appropriate benchmark for comparison for stormwater flows.

CTR criteria apply to the receiving water body and are calculated based on the probable hardness values of the receiving waters. At higher hardness values for receiving waters, certain constituents (including copper, lead, and zinc) are more likely to be complexed (bound with) components in the water column. This in turn reduces the bioavailability and resulting potential toxicity of these metals.

**General Construction Activity Storm Water Permit.** The *General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities*, Order No. 2009-0009-DWQ, NPDES No. CAS000002, as amended by Order Nos. 2010-0014-DWQ and 2012-0006-DWQ (Construction General Permit), adopted by the SWRCB, regulates construction activity that includes clearing, grading, and excavation resulting in soil disturbance of at least 1 acre of total land area. The Construction General Permit authorizes the discharge of stormwater to surface waters from construction activities.

The Construction General Permit requires that all developers of land where construction activities will occur over more than 1 acre do the following:



- Complete a Risk Assessment to determine pollution prevention requirements pursuant to the three risk levels established in the General Permit;
- Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the United States;
- Develop and implement a Stormwater Pollution Prevention Plan (SWPPP) that specifies Best Management Practices (BMPs) that will reduce pollution in stormwater discharges to the Best Available Technology/Economically Achievable/Best Conventional Pollutant Control Technology standards;
- Perform inspections and maintenance of all BMPs; and
- Conduct stormwater sampling, if required based on risk level.

To obtain coverage under the Construction General Permit, a project applicant must electronically file all permit registration documents with the SWRCB prior to the start of construction. Permit registration documents must include a:

- Notice of Intent (NOI),
- Risk Assessment,
- Site map,
- SWPPP,
- Annual fee, and
- Signed certification statement.

Typical BMPs contained in SWPPPs are designed to minimize erosion during construction, stabilize construction areas, control sediment, and control pollutants from construction materials. The SWPPP must also include a discussion of the program to inspect and maintain all BMPs.

**Sustainable Groundwater Management Act.** The Sustainable Groundwater Management Act (SGMA) of 2014 is a comprehensive three-bill package that Governor Jerry Brown signed into California state law in September 2014. The SGMA provides a framework for sustainable management of groundwater supplies by local authorities, with a limited role for State intervention if necessary to protect the resource. The plan is intended to ensure a reliable groundwater supply for California for years to come.

The SGMA requires governments and water agencies of high- and medium-priority basins to halt overdrafts of groundwater basins. The SGMA requires the formation of local Groundwater Sustainability Agencies (GSAs) that are required to adopt Groundwater Sustainability Plans to manage the sustainability of the groundwater basins.

#### 4.9.1.3 Regional Regulations

**Water Quality Control Plans (Basin Plans).** The Santa Ana RWQCB has adopted a Basin Plan for their region of responsibility that delineates water resource area boundaries based on hydrological



features. For the purposes of achieving and maintaining water quality protection, specific beneficial uses have been identified for each of the surface waters and groundwater management zones described in the Basin Plan. Once beneficial uses are designated, appropriate water quality objectives can be established, and programs that maintain or enhance water quality can be implemented to ensure the protection of beneficial uses. There are no beneficial uses listed in the Basin Plan for the downstream surface receiving waters for the project site. Beneficial uses of the Orange Groundwater Management Zone include municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), industrial process supply (PROC).

Basin Plans also establish implementation programs to achieve water quality objectives to protect beneficial uses and require monitoring to evaluate the effectiveness of the programs. These objectives must comply with the State antidegradation policy (State Board Resolution No. 68-16), which is designed to maintain high-quality waters while allowing some flexibility if beneficial uses are not unreasonably affected.

Basin Plans have established narrative and numeric water quality objectives for inland surface streams and groundwater. If water quality objectives are exceeded, the RWQCBs can use their regulatory authority to require municipalities to reduce pollutant loads to the affected receiving waters. Relevant surface water quality objectives for all inland surface waters and groundwater under the jurisdiction of the Santa Ana RWQCB that are applicable to the receiving waters for the project site are shown in Tables 4.9.A and 4.9.B, respectively.

In addition, the site-specific water quality objectives for the Irvine Groundwater Management Zone are:

- **Total Dissolved Solids:** 580 mg/L
- **Nitrate as Nitrogen:** 3.4 mg/L

There are no site-specific water quality objectives listed in the Basin Plan for the surface receiving waters for the project site.

**Orange County National Pollutant Discharge Elimination System Permit.** The City is a Permittee of the *Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the Incorporated Cities of Orange County within the Santa Ana Region Areawide Urban Storm Water Runoff Orange County* (North Orange County MS4 Permit), Order R8-2009-0030, NPDES No. CAS618030, as amended by Order No. R8-2010-0062. The North Orange County MS4 Permit regulates discharges into the MS4 system in the cities and county areas within Orange County that are in the Santa Ana Region. As discussed further below, the North Orange County MS4 Permit requires preparation of a Water Quality Management Plan (WQMP) and implementation of post-construction BMPs for new development and significant redevelopment projects that qualify as Priority Development Projects.



**Table 4.9.A: Surface Water Quality Objectives for Inland Surface Waters**

Constituent	Concentration
Algae	Waste discharges shall not contribute to excessive algal growth in inland surface receiving waters.
Boron	Shall not exceed 0.75 mg/L in inland surface waters of the region as a result of controllable water quality factors.
Chlorine (residual)	Chlorine residual in wastewater discharged to inland surface waters shall not exceed 0.1 mg/L.
Color	Waste discharges shall not result in coloration of the receiving waters that causes a nuisance or adversely affects beneficial uses. The natural color of fish, shellfish, or other surface water resources used for human consumption shall not be impaired.
Floatables	Waste discharges shall not contain floating materials, including solids, liquids, foam, or scum, that cause a nuisance or adversely affect beneficial uses.
Metals	Varies based on hardness.
Oil and Grease	Waste discharges shall not result in deposition of oil, grease, wax, or other materials in concentrations that result in a visible film or in coating objects in the water or which cause a nuisance or adversely affect beneficial uses.
Oxygen (dissolved)	Waste discharges shall not cause the median dissolved oxygen concentration to fall below 85% of saturation or the 95 <sup>th</sup> percentile concentration or fall below 75% of saturation within a 30-day period.
pH	Shall not be raised above 8.5 or depressed below 6.5 as a result of controllable water quality factors.
Solids (suspended and settleable)	Shall not cause nuisance or adversely affect beneficial uses as a result of water quality factors.
Sulfides	Shall not increase as a result of controllable water quality factors.
Surfactants	Waste discharges shall not contain concentrations of surfactants that result in foam in the course of flow or use of the receiving water or that adversely affect aquatic life.
Taste and Odor	Shall not contain taste- or odor-producing substances at concentrations that cause a nuisance or adversely affect beneficial uses. The natural taste and odor of fish, shellfish, or other regional inland surface water resources used for human consumption shall not be impaired.
Toxic Substances	Shall not be discharged at levels that will bioaccumulate in aquatic resources to levels that are harmful to human health. Concentrations of toxic pollutants in the water column, sediments, or biota shall not adversely affect beneficial uses.
Turbidity	Where natural turbidity is between 0 and 50 NTU, increases shall not exceed 20%. Where natural turbidity is between 50 NTU and 100 NTU, increases shall not exceed 10 NTU. Where natural turbidity is greater than 100 NTU, increases shall not exceed 10%.

Source: *Water Quality Control Plan, Santa Ana River Basin* (Santa Ana RWQCB 1995, updated June 2019).

mg/L = milligrams per liter

NTU = nephelometric turbidity units

RWQCB = Regional Water Quality Control Board



**Table 4.9.B: Groundwater Quality Objectives for Groundwater Basins**

<b>Constituent</b>	<b>Concentration</b>
Arsenic	Waters with MUN Beneficial Use Designation: Shall not exceed 0.05 mg/L as a result of controllable water quality factors.
Bacteria, Coliform	Waters with MUN Beneficial Use Designation: Total coliform numbers shall not exceed 2.2 organisms/100 mL median over any 7-day period as a result of controllable water quality factors.
Barium	Waters with MUN Beneficial Use Designation: Shall not exceed 1.0 mg/L as a result of controllable water quality factors.
Boron	Shall not exceed 0.75 mg/L as a result of controllable water quality factors.
Chloride	Waters with MUN Beneficial Use Designation: Shall not exceed 500 mg/L as a result of controllable factors.
Color	Waste discharges shall not result in coloration of the receiving waters that causes a nuisance or adversely affects beneficial uses.
Cyanide	Waters with MUN Beneficial Use Designation: Shall not exceed 0.2 mg/L as a result of controllable water quality factors.
Fluoride	Waters with MUN Beneficial Use Designation: Shall not exceed 1.0 mg/L as a result of controllable water quality factors.
Hardness	Waters with MUN Beneficial Use Designation: Shall not be increased as a result of waste discharges to levels that adversely affect beneficial uses.
Metals	Waters with MUN Beneficial Use Designation: Shall not exceed the following: Cadmium 0.01 mg/L; Chromium 0.05 mg/L; Cobalt 0.2 mg/L; Copper 1.0 mg/L; Iron 0.3 mg/L; Lead 0.05 mg/L; Manganese 0.05 mg/L; Mercury 0.002 mg/L; Selenium 0.01 mg/L; and Silver 0.05 mg/L, as a result of controllable water quality factors.
Methylene Blue-Activated Substances	Waters with MUN Beneficial Use Designation: Shall not exceed 0.05 mg/L as a result of controllable water quality factors.
Oil and Grease	Waste discharges shall not result in deposition of oil, grease, wax, or other materials in concentrations that cause a nuisance or adversely affect beneficial uses.
pH	Shall not be raised above 9 or depressed below 6 as a result of controllable water quality factors.
Radioactivity	Waters with MUN Beneficial Use Designation: Shall not exceed the California Code of Regulations, Title 22, standards of 5 pCi/L for combined radium-226 and radium-228, 15 pCi/L for gross alpha particle activity, 20,000 pCi/L for tritium, 8 pCi/L for strontium-90, 50 pCi/L for gross beta particle activity, and 20 pCi/L for uranium.
Sodium	Waters with AGR Beneficial Use Designation: Shall not exceed a sodium absorption rate of 9. Waters with MUN Beneficial Use Designation: Shall not exceed 180 mg/L as a result of controllable water quality factors.
Sulfate	Waters with MUN Beneficial Use Designation: Shall not exceed 500 mg/L as a result of controllable water quality factors.
Taste and Odor	Shall not contain taste- or odor-producing substances in concentrations that adversely affect beneficial uses.
Toxic Substances	All waters shall be maintained free of substances in concentrations that are toxic or that produce detrimental physiological responses in human, plant, animal, or aquatic life.

Source: *Water Quality Control Plan, Santa Ana River Basin* (Santa Ana RWQCB 1995, updated June 2019).

AGR = agricultural supply  
mg/L = milligrams per liter  
mL = milliliter  
MUN = municipal supply  
pCi/L = picocuries per liter  
pH = percentage of hydrogen



The proposed project is considered a Priority Development Project because it is a redevelopment project that includes the addition or replacement of 5,000 square feet (sf) or more of impervious surface area.

**Drainage Area Management Program.** The Drainage Area Management Plan (DAMP) (2003) was created by the County of Orange, the OCFCD, and incorporated cities (permittees), and includes specific water pollutant requirements of the North Orange County Stormwater Program. The DAMP is the principal guidance and compliance document for the countywide implementation of the Stormwater Program. It is the foundation for the permittees to implement model programs designed to prevent pollutants from entering receiving waters to the maximum extent practicable. Section 7 of the DAMP discusses issues relating to new developments and significant redevelopments.

**Local Implementation Plan.** The City Local Implementation Plan (LIP) is the principal guidance and compliance document specific to the City's jurisdiction for compliance with the requirements of the North Orange County MS4 Permit. The LIP provides the description and details of the City's water quality program implementation activities. The LIP is designed to work in conjunction with the Orange County DAMP. It should be noted that the Cypress LIP takes precedence over DAMP requirements.

**Model Water Quality Management Plan.** The *Model Water Quality Management Plan* (County of Orange 2011) was developed to aid Orange County, the OCFCD, the cities in Orange County (permittees), and developers in Orange County to address post-construction urban runoff and stormwater pollution from new development and significant redevelopment projects that qualify as Priority Development Projects. The proposed project is categorized as a redevelopment project that would add or replace more than 5,000 sf of impervious surface area and, thus, is considered a Priority Development Project.

Priority Development Projects are required to develop a Project WQMP to minimize adverse impacts of development to on-site hydrology, volume, and rate of runoff, and pollutants of concern. Project WQMPs include project-specific BMPs to minimize these effects (e.g., Low Impact Development [LID], site design measures, source control BMPs). The requirements identified in the project WQMPs are subject to Section 7 of the DAMP.

**Technical Guidance Document.** The County of Orange developed the *Technical Guidance Document (TGD) for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans (WQMPs)* (Technical Guidance Document) (County of Orange 2013) in cooperation with the incorporated cities of Orange County to aid agency staff and project proponents with addressing post-construction urban runoff and stormwater pollution from new development and significant redevelopment projects in Orange County. The Technical Guidance Document serves as the technical guidance to complete the project WQMP.

**Orange County Construction Runoff Guidance Manual.** The *Construction Runoff Guidance Manual for Contractors, Project Owners, and Developers* (County of Orange 2012) presents the requirements related to construction from the DAMP. The goal of this Guidance Manual is to control pollutant



discharges from construction sites. As such, it helps applicants with building and grading permits to understand the water quality requirements during the construction phase of development projects.

**Groundwater Dewatering Permit.** The Santa Ana RWQCB requires a permit for discharging wastes to surface waters from activities involving groundwater extraction. The *General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (De Minimis) Threat to Water Quality* (Order No. R8-2009-0003, NPDES No. CAG998001) covers general waste discharge requirements for discharges to surface waters that pose an insignificant (*de minimis*) threat to water quality within the Santa Ana Region. Under this order, permittees are required to monitor their discharges of groundwater extraction waste from construction to ensure that effluent limitations for constituents are not exceeded.

#### 4.9.1.4 Local Regulations

**Cypress Municipal Code.** Chapter 13, Article IV, Cypress Water Quality, of the City Municipal Code regulates stormwater and surface runoff water quality. The Municipal Code requires compliance with the Drainage Area Management Plan (DAMP) and Local Implementation Plan (LIP), including preparation of WQMPs for priority development project. Prior to issuance of a grading permit, building permit, and/or safety permit for any new development or significant redevelopment, the property owner is required to submit to and obtain the approval of the WQMP by the City.

#### 4.9.2 Methodology

Project impacts to hydrology and water quality are evaluated based on the proposed project's adherence to local, regional, State, and federal standards; the proposed land uses and project design; changes in pre- and post-project stormwater flows; and proposed BMPs for control of surface runoff and reduction of pollutants in stormwater runoff.

#### 4.9.3 Thresholds of Significance

The thresholds for hydrology and water quality impacts used in this analysis are consistent with the City's *Initial Study/Environmental Checklist*. The proposed project may be deemed to have a significant impact with respect to hydrology and water quality if it would:

**Threshold 4.9.1: Violate any water quality standards or waste discharge requirements?**

**Threshold 4.9.2: Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?**

**Threshold 4.9.3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?**



- Threshold 4.9.4:** Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?
- Threshold 4.9.5:** 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?
- Threshold 4.9.6:** Otherwise substantially degrade water quality?
- Threshold 4.9.7:** Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- Threshold 4.9.8:** Place within a 100-year flood hazard area structures which would impede or redirect flood flows?
- Threshold 4.9.9:** Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?
- Threshold 4.9.10:** Inundation by seiche, tsunami, or mudflow?
- Threshold 4.9.11:** Result in an increase in pollutant discharges to receiving waters? Consider water quality parameters such as temperature, dissolved oxygen, turbidity and other typical stormwater pollutants (e.g., heavy metals, pathogens, petroleum derivatives, synthetic organics, sediment, nutrients, oxygen-demanding substances, and trash).
- Threshold 4.9.12:** Result in significant alteration of receiving water quality during or following construction?
- Threshold 4.9.13:** Could the proposed project result in increased erosion downstream?
- Threshold 4.9.14:** Result in increased impervious surfaces and associated increased runoff?
- Threshold 4.9.15:** Create a significant adverse environmental impact to drainage patterns due to changes in runoff flow rates or volumes?
- Threshold 4.9.16:** Be tributary to an already impaired water body, as listed on the Clean Water Act Section 303(d) list? If so, can it result in an increase in any pollutant for which the water body is already impaired?
- Threshold 4.9.17:** Be tributary to other environmentally sensitive areas? If so, can it exacerbate already existing sensitive conditions?



**Threshold 4.9.18:** Have a potentially significant environmental impact on surface water quality to either marine, fresh, or wetland waters?

**Threshold 4.9.19:** Have a potentially significant adverse impact on groundwater quality?

**Threshold 4.9.20:** Cause or contribute to an exceeded applicable surface or groundwater receiving water quality objectives or degradation of beneficial uses?

**Threshold 4.9.21:** Impact aquatic, wetland, or riparian habitat?

**Threshold 4.9.22:** Would the project include new or retrofitted stormwater treatment control Best Management Practices (e.g., water quality treatment basin, constructed treatment wetlands), the operation of which could result in significant environmental effects (e.g., increased vectors or odors)?

#### 4.9.4 Project Impacts

**Threshold 4.9.1:** Would the project violate any water quality standards or waste discharge requirements?

Or

**Threshold 4.9.6:** Would the project otherwise substantially degrade water quality?

Or

**Threshold 4.9.11:** Would the project result in an increase in pollutant discharges to receiving waters? Consider water quality parameters such as temperature, dissolved oxygen, turbidity and other typical stormwater pollutants (e.g., heavy metals, pathogens, petroleum derivatives, synthetic organics, sediment, nutrients, oxygen-demanding substances, and trash).

Or

**Threshold 4.9.12:** Would the project result in significant alteration of receiving water quality during or following construction?

Or

**Threshold 4.9.18:** Would the project have a potentially significant environmental impact on surface water quality to either marine, fresh, or wetland waters?

#### Less Than Significant Impact.

**Construction.** Pollutants of concern during construction include sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. Each of these pollutants on its own or in combination with other pollutants can have a detrimental effect on water quality.



During construction, 13.33 acres of soil would be disturbed. During soil-disturbing construction activities, excavated soil would be exposed, and there would be an increased potential for soil erosion and sedimentation compared to existing conditions. In addition, chemicals, liquid products, petroleum products (e.g., paints, solvents, and fuels), and concrete-related waste may be spilled or leaked and have the potential to be transported via stormwater runoff into receiving waters. Sediment from increased soil erosion and chemicals from spills and leaks have the potential to be discharged to downstream receiving waters during storm events, which can affect water quality and impair beneficial uses.

Because construction of the proposed project would disturb greater than 1 acre of soil, the proposed project is subject to the requirements of the Construction General Permit, as specified in Regulatory Compliance Measure HYD-1. As also specified in Regulatory Compliance Measure HYD-1, a SWPPP would be prepared and construction BMPs detailed in the SWPPP would be implemented during construction, in compliance with the requirements of the Construction General Permit. The SWPPP would detail the BMPs to be implemented during construction. Construction BMPs would include, but not be limited to, Erosion Control and Sediment Control BMPs designed to minimize erosion and retain sediment on site, and Good Housekeeping BMPs to prevent spills, leaks, and discharge of construction debris and waste into receiving waters. Compliance with the requirements of the Construction General Permit, including incorporation of construction BMPs to target and reduce pollutants of concern in stormwater runoff, would ensure that construction impacts related to waste discharge requirements, water quality standards, degradation of water quality, increased pollutant discharge, and alteration of receiving water quality would be less than significant.

According to the Geotechnical Assessment prepared for the project, groundwater at the project site is very shallow, ranging from approximately 4.5 to 6 ft bgs. Because of the presence of very shallow groundwater, it is likely that groundwater dewatering would be required during excavation activities. Groundwater may contain high levels of total dissolved solids, nitrate, salinity, or other constituents, or high or low pH levels that could be introduced to surface waters when dewatered groundwater is discharged to receiving waters. Groundwater dewatering activities during excavation would be conducted in accordance with the *General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (De Minimis) Threat to Water Quality* (Order No. R8-2009-0003, NPDES No. CAG998001) as specified in Regulatory Compliance Measure HYD-2. This permit requires testing and treatment (as necessary) of groundwater encountered during groundwater dewatering prior to release to the stormdrain system. As a result, groundwater dewatering would not introduce pollutants to receiving waters at levels that would violate water quality standards or waste discharge requirements, degrade water quality, increase pollutant discharge, or alter the quality of the receiving water. Impacts to surface water quality from groundwater dewatering would be less than significant.

**Operation.** Expected pollutants of concern from long-term operation of the proposed project include suspended solids/sediment, nutrients, heavy metals, pathogens (bacteria/virus), pesticides, oil and grease, toxic organic compounds, and trash and debris. According to the *Water Quality Management Plan* prepared for the project, potential sources of these pollutants include the following:



- **Suspended Solids/Sediment:** Landscaping
- **Nutrients:** Landscaping
- **Heavy Metals and Toxic Organic Compounds:** Parking lots
- **Pathogens (Bacteria/Virus):** Parking lots, food uses, pet waste
- **Pesticides:** Landscaping
- **Oil and Grease:** Parking lots
- **Toxic Organic Compounds:** Parking lots and commercial uses
- **Trash and Debris:** Landscaping activities, human activities, food wastes

The project would be required to comply with the requirements of the North Orange County MS4 Permit and associated guidance documents. The North Orange County MS4 Permit requires that a WQMP be prepared for priority new development and redevelopment projects. WQMPs specify the Source Control, Low Impact Development (LID), and Treatment Control BMPs that would be implemented to capture, treat, and reduce pollutants of concern in stormwater runoff. Source Control BMPs are preventative measures that are implemented to prevent the introduction of pollutants into stormwater. LID BMPs mimic a project site's natural hydrology by using design measures that capture, filter, store, evaporate, detain, and infiltrate runoff rather than allowing runoff to flow directly to piped or impervious storm drains. Treatment Control BMPs are structural BMPs designed to treat and reduce pollutants in stormwater runoff prior to releasing it to receiving waters.

The *Water Quality Management Plan* prepared for the project specifies the Source Control and LID BMPs proposed for the project (no Treatment Control BMPs are proposed). The proposed BMPs would improve water quality compared to the existing parking lot, which is currently untreated. The BMPs specified in the *Water Quality Management Plan* would be implemented and maintained, as specified in Regulatory Compliance Measure HYD-3. The proposed project BMPs are detailed below.

Proposed Non-Structural Source Control BMPs include education for property owners, tenants and occupants; activity restrictions; common area landscape management; BMP maintenance; spill contingency plan, uniform fire code implementation, common area litter control; employee training; common area catch basin inspections; and street sweeping public streets and parking lots. Proposed Structural Source Control BMPs include stormdrain system stenciling and signage; trash and waste storage areas; use of efficient irrigation systems and landscape design, water conservation, smart controllers, and source control; energy dissipation and protection of slopes and channels; and hillside landscaping (along the Katella Avenue roadway embankment). Please refer to the *Water Quality Management Plan* included in Appendix G for additional details of the proposed Non-Structural Source Control BMPs and Structural Source Control BMPs.

Proposed LID BMPs include underground detention and biotreatment BMPs. These BMPs would be supplemented with a hydrodynamic separator for trash and debris removal. The hydrodynamic separator is proposed for BMP maintenance benefits and provides stormwater pre-treatment. Stormwater would be conveyed via on-site stormdrain facilities to the hydrodynamic separator and then to the underground detention system. A stormdrain pump would drain the detention system and control stormwater flow into the biotreatment BMP (a proprietary Modular Wetland biofiltration system) before release into the stormdrain system in Katella Avenue.



The proposed BMPs would target and reduce pollutants of concern from runoff from the project site in compliance with the North Orange County MS4 Permit requirements. Compliance with the requirements of the North Orange County MS4 Permit, including incorporation of operational BMPs to target pollutants of concern (as specified in Regulatory Compliance Measure HYD-3), would ensure that water quality impacts, degradation of water quality, increased pollutant discharge, and alteration of receiving water quality during project operation would be less than significant.

**Threshold 4.9.2: Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?**

**Less Than Significant Impact.** According to the Geotechnical Assessment prepared for the project, groundwater at the project site is very shallow, ranging from approximately 4.5 to 6 ft bgs. Because of the presence of very shallow groundwater, it is likely that groundwater dewatering would be required during excavation activities. However, groundwater dewatering would be localized and temporary, and the volume of groundwater removed would not be substantial. In addition, any volume of water removed during groundwater dewatering would be minimal compared to the size of the Coastal Plain of the Orange County Groundwater Basin, which has a surface area of 350 sq mi and a storage capacity of 38,000,000 acre-feet (DWR 2004). Construction and operation of the proposed project would not involve direct groundwater extraction. Additionally, the project would not substantially change infiltration because the site is currently primarily (90 percent) impervious surface areas and on-site soils have a low infiltration potential (on-site soils are Hydrologic Soil Ground D which have a minimal infiltration rate when thoroughly wetted). Increased water use would not substantially affect groundwater supplies, because the groundwater basin has been sustainably managed by Orange County Water District (OCWD) over the last 10 years and will continue to be sustainably managed (OCWD 2017). Therefore, construction and operational impacts related to a decrease in groundwater supplies or interference with groundwater recharge would be less than significant, and no mitigation is required.

**Threshold 4.9.3: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?**

Or

**Threshold 4.9.13: Could the proposed project result in increased erosion downstream?**

**Less Than Significant Impact.**

**Construction.** During project construction activities, soil would be exposed and disturbed, drainage patterns would be temporarily altered during grading and other construction activities, and there would be an increased potential for soil erosion and siltation compared to existing conditions. Additionally, during a storm event, soil erosion and siltation could occur at an accelerated rate.



Project construction would not alter the course of a stream or river. As discussed above, the Construction General Permit requires preparation of a SWPPP (Regulatory Compliance Measure HYD-1). The SWPPP would detail Erosion Control and Sediment Control BMPs to be implemented during project construction to minimize erosion and retain sediment on site. With compliance with the requirements of the Construction General Permit and with implementation of the construction BMPs, construction impacts related to on-site, off-site, or downstream erosion or siltation would be less than significant, and no mitigation is required.

**Operation.** According to the *Water Quality Management Plan* prepared for the project, the project would not change the impervious surface area on site (the site would be 12 acres of impervious surface area in the existing and proposed condition). In the proposed condition, 12 acres of the project site would be impervious surface area and not prone to on-site erosion or siltation because no soil would be included in these areas. The remaining acreage of the approximately 13-acre project site would consist of pervious surface area, which would contain landscaping that would minimize on-site erosion and siltation by stabilizing the soil. Therefore, on-site erosion and siltation impacts would be minimal.

Increases in stormwater runoff can lead to downstream erosion in receiving waters. However, the proposed project would not increase impervious area on the project site and would therefore not result in a net increase in stormwater runoff. An on-site detention system and pump also restricts runoff from the proposed site to 0.3 cfs/acre, a substantial reduction from the existing condition. Additionally, according to the *Water Quality Management Plan (2019)* and the *Preliminary Hydrology and Hydraulics Study (2020)* prepared for the project, downstream receiving waters are not susceptible to hydromodification.<sup>1</sup> Therefore, the proposed project would not increase downstream erosion or siltation impacts. For these reasons, operational impacts related to substantial on-site, off-site, or downstream erosion or siltation would be less than significant, and no mitigation is required.

**Threshold 4.9.4:** Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Or

**Threshold 4.9.15:** Would the project create a significant adverse environmental impact to drainage patterns due to changes in runoff flow rates or volumes?

**Less than Significant Impact.**

**Construction.** As discussed above, project construction would comply with the requirements of the Construction General Permit and would include the preparation and implementation of a SWPPP.

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<sup>1</sup> Hydromodification is the alteration of the hydrologic characteristics of water bodies. Increased stream flows and changes in sediment transport caused by increased impervious areas from urbanization or other land use changes can result in increased stream flows, erosion, and changes in sediment transport.



The SWPPP would include construction BMPs to control and direct on-site surface runoff and would include detention facilities, if required to ensure that stormwater runoff from the construction site does not exceed the capacity of the stormwater drainage systems. With implementation of BMPs, construction impacts related to a substantial increase in the rate or amount of surface runoff, flow, and volume that would result in flooding would be less than significant, and no mitigation is required.

**Operation.** In the existing condition, stormwater runoff on the parking lot flows in an east/west orientation to two separate concrete ribbon gutters. The ribbon gutters convey stormwater runoff south to catch basins that connects to the existing stormdrain system that varies in size from 33 inches to 39 inches in Katella Avenue. The proposed project would alter the on-site drainage patterns; however, stormwater runoff on the project site would still ultimately be conveyed to the Katella Avenue stormdrain system. In the proposed condition, stormwater would flow away from the proposed buildings, into one of the several low points on the project site where it would be conveyed to the underground detention system via a proposed on-site stormdrain system. Stormwater runoff would then be discharged to the Katella Avenue stormdrain system via a new stormdrain connection. The proposed on-site stormdrain system would be adequately sized to accommodate stormwater runoff so that on-site flooding would not occur.

According to the *Preliminary Hydrology and Hydraulics Study (2020)* prepared for the project, the downstream stormdrain system is at-capacity. As a result, the City restricts peak discharges from the project site to 0.3 cfs/acre (or 4.0 cfs for the project site). As demonstrated by the hydraulic modeling conducted as part of the *Preliminary Hydrology and Hydraulics Study (2020)*, the detention system would be designed to attenuate the 100-year storm event peak flow difference between the stormwater flow generated on the project site (49.8 cfs) and the allowable discharge flow of 4.0 cfs. A stormdrain pump would drain the detention system to meet the 0.3 cfs/acre runoff restriction by limiting the pump discharge to 4.0 cfs.

In addition to the high-flow detention system described above, a low-flow detention system would be installed to capture and treat the “first flush” storm event. A bifurcation manhole would be placed upstream of the first flush detention system and divert the first flush volume into a separate detention system. This system would be pumped separately and the runoff would slowly discharge through a manufactured bioretention system over a 48-hour period. The outlet pipe from the biofiltration system would connect separately to the existing 48-inch Katella Avenue storm drain. Because the proposed on-site detention system would convey flow to the existing Katella Avenue stormdrain and would be adequately sized and designed to reduce flow to the 0.3 cfs/acre runoff restriction, impacts related to off-site flooding would be less than significant. No mitigation is required.

In the existing condition, off-site stormwater runoff from 11.8 acres north of the project site is also tributary to the on-site ribbon gutters, across the project site, and into the existing storm drain in Katella Avenue. This off-site flow is approximately 34.96 cfs during a 100-year storm event. In the proposed condition, a portion of this off-site flow would be captured by extending the existing 18-inch storm drain at the end of Winners Circle. As discussed in Section 4.9.2, above, the approved stormdrain plan for the Winners Circle stormdrain included an extension to the north, past the end of the cul-de-sac, and then west across the existing parking lot just north of the project site.



However, this stormdrain extension was never constructed. The proposed project plans to construct this extension, per the approved plans. Specifically, off-site stormwater flow would be captured via two proposed catch basins along the northern property line of the project site and routed east through a proposed 18-inch storm drain, and into the existing 18-inch storm drain at the end of Winners Circle. A proposed curb and gutter and an approximately 2 ft high berm installed north of the project site’s property line would block off-site flow from entering the project site. Two scenarios, described below, are proposed to convey off-site runoff that exceeds the 0.3 cfs capacity of the Winners Circle stormdrain system to the curb and gutter in Katella Avenue.

In Scenario 1, flow that exceeds the 0.3 cfs capacity of the Winner Circle stormdrain system would be conveyed west toward Siboney Street. Siboney Street would be reconstructed to crown the road to provide sufficient slope to allow stormwater to drain to Katella Avenue without ponding. Additionally, a portion of the parking lot to the north of the project site would be repaved. The off-site flows would temporarily pond along the project site’s northern property line at variable depths up to approximately 13 inches during a 100-year storm, 11.5 inches during a 10-year storm, and 10 inches during a 2-year storm before discharging to the west, into Siboney Street, then would flow overland to the south into Katella Avenue (see Table 4.9.C). During a 100-year storm event, the Winners Circle stormdrain would accommodate 3.54 cfs of the off-site runoff. The remaining 31.55 cfs during a 100-year storm, 19.78 cfs during 10-year storm, and 9.39 cfs during a 2-year storm would be directed to Siboney Street. The ponding would only occur during storms that produce more runoff than 0.3 cfs/acre and only during the peak intensity of the storm event. For example, during a 100-year storm event, the capacity of the Winners Circle stormdrain system would only be exceeded for approximately 3–4 hours and the maximum ponding would only occur for approximately 30 minutes. This ponding would not flood any structures and would only affect the portions of the parking lot north of the project site that are farthest away from the Los Alamitos Race Course grandstand. It should be noted that racing and other major events at the Los Alamitos Race Course that rely on the use of the race track are typically cancelled on days in which heavy rain falls. Therefore, this minor ponding is not expected to result in the loss of any parking spaces or inconvenience to visitors to the Los Alamitos Race Course. The ponding along the project site’s northern property line would be a temporary condition until the area to the north has been developed and a stormwater management and detention system is constructed during future development on the 11.8 acres to the north of the project site.

**Table 4.9.C: Ponding Depths for Scenario 1**

Storm Event	Maximum Overflow (cfs)	Existing Conditions Flow Depth	Maximum Instantaneous Flow Depth
2-year	9.38	N/A	2.5”–10”
10-year	19.78	N/A	3.5”–11.5”
100-year	31.55	0”–4.5”	4”–13”

Source: *Preliminary Hydrology and Hydraulics Study* (2020).  
 N/A = not applicable



In Scenario 2, flow exceeding the capacity of the Winners Circle stormdrain system would be conveyed across the project site via an underground storm drain to the Katella Avenue storm drain system near the existing on-site driveway. An on-site stormwater pump would likely be required to convey flow from the project site to Katella Avenue. The connection to the Katella Avenue storm drain would have a capacity of 0.3 cfs/acre (3.53 cfs total). Flows in excess of the pump capacity (31.55 cfs during a 100-year storm) would reverse out of a proposed catch basin into the Katella Avenue curb and gutter. As the stormwater is currently conveyed across the project site to Katella Avenue, this option mimics the existing drainage pattern, but flow would be conveyed via an on-site underground stormdrain system instead of via the existing ribbon gutters. The runoff diverted under the project site would reach Katella Avenue at a similar location as in the existing condition. Under Scenario 2, the proposed project would not result in any additional off-site ponding over existing conditions. This option would also be a temporary condition until the area to the north has been developed and a stormwater management and detention system is constructed during future development on the 11.8 acres to the north of the project site.

In Scenario 1, the stormwater runoff diverted around the proposed site in the proposed condition would have reached Katella Avenue in the existing condition at a similar location. Instead of overflowing at the existing catch basins and running off through the existing on-site driveway, the overflow would instead flow into Katella Avenue at Siboney Street. In Scenario 2, stormwater would reach Katella Avenue at a similar location as in the existing condition. Since the on-site portion of the area tributary to Katella Avenue would connect directly into the Katella Avenue storm drain and would be reduced to 4.0 cfs by the detention systems, the overall amount of flows that would reach the Katella Avenue curb and gutter is greatly reduced compared to the existing condition. With implementation of the proposed stormdrain systems and detention system, operational impacts related to a substantial increase in the rate or amount of surface runoff, flow, and volume that would result in flooding would be less than significant, and no mitigation is required.

**Threshold 4.9.5: Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

**Less Than Significant Impact.**

**Construction.** As discussed above, construction of the proposed project has the potential to introduce pollutants to the stormdrain system from erosion, siltation, and accidental spills. However, as specified in Regulatory Compliance Measure HYD-1, the Construction General Permit requires preparation of a SWPPP, which would identify the construction BMPs to be implemented during construction to reduce impacts to water quality, including those impacts associated with soil erosion, siltation, and spills. In addition, any groundwater extracted during groundwater dewatering activities that is discharged to surface waters would be tested and treated (if necessary) to ensure that any discharges meet the water quality limits specified in the applicable NPDES permit (as specified in Regulatory Compliance Measure HYD-2). Regulatory Compliance Measures HYD-1 and HYD-2 are existing NPDES requirements with which the project is required to comply. These measures would prevent substantial additional sources of polluted runoff being discharged to the stormdrain system through implementation of construction BMPs that target pollutants of concern



in runoff from the project site as well as testing and treatment (if required) of groundwater prior to its discharge to surface waters.

Additionally, the SWPPP would include construction BMPs to control and direct surface runoff on site and would include detention measures if required to ensure that stormwater runoff from the construction site does not exceed the capacity of the stormwater drainage systems. For these reasons, construction impacts related to creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would be less than significant, and no mitigation is required.

**Operation.** As discussed above, operation of the project has the potential to introduce pollutants to the stormdrain system from the proposed on-site uses. However, as specified in Regulatory Compliance Measure HYD-3, permanent operational BMPs that target and reduce pollutants of concern in stormwater runoff would be implemented and maintained throughout the life of the project. Regulatory Compliance Measure HYD-3 is an existing NPDES requirement with which the project is required to comply. This measure would prevent substantial additional sources of polluted runoff being discharged to the stormdrain system through implementation of operational BMPs to target pollutants of concern in runoff from the project site. Additionally, the proposed detention system would reduce stormwater runoff from the project site to below existing conditions and at the allowable system capacity of 0.3 cfs/acre. For these reasons, operational impacts related to creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would be less than significant, and no mitigation is required.

**Threshold 4.9.7: Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?**

Or

**Threshold 4.9.8: Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?**

**No Impact.** The project site is not located within a 100-year floodplain. According to the Federal Emergency Management Agency (FEMA) Federal Insurance Rate Map (FIRM) No. 06059C0116J (December 3, 2009), the project site is located within Zone X, which comprises areas of 0.2 percent annual chance flood (500-year flood). As the project is not located within a 100-year floodplain, the project would not place housing or structures within a 100-year flood hazard area. No impact would occur, and no mitigation is required.

**Threshold 4.9.9: Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?**



**Less Than Significant Impact.** The project site is not located within the inundation zone of a levee. However, the project site is located within the inundation zone of Prado Dam and the Carbon Canyon Dam.

The Carbon Canyon Dam, which was constructed in 1961 by the USACE and is operated by the USACE Los Angeles District, works in conjunction with the Brea and Fullerton Dams for flood protection of portions of the coastal plains in Orange County (USACE 2016). According to the City's General Plan Safety Element (2001), the dam is designed to hold 12,000 acre-feet of water. During a flood event that would cause the dam to exceed its capacity, the portion of Cypress below Orange Avenue could be completely inundated.

Prado Dam was designed in the 1930s, but increased its functioning capability due to Seven Oaks Dam, which was completed in November 1999, and is approximately 40 miles upstream on the Santa Ana River. During a flood, Seven Oaks Dam stores water destined for Prado Dam for as long as the reservoir pool at Prado Dam is rising. When the flood threat at Prado Dam has passed, Seven Oaks Dam begins to release its stored flood water at a rate that does not exceed the downstream channel capacity. Working in tandem, the Prado and Seven Oaks Dams provide increased flood protection to Orange County.

Prado Dam is maintained and inspected to ensure its integrity and to ensure that risks are minimized. In addition, construction of the Santa Ana River Mainstem Project was initiated in 1989, and is scheduled for completion in 2021. The Santa Ana River Mainstem Project will increase levels of flood protection to more than 3.35 million people in Orange, San Bernardino, and Riverside Counties. Improvements to 23 miles of the Lower Santa Ana River channel, from Prado Dam to the Pacific Ocean, are 95 percent complete, with the remaining bank protection improvements in Yorba Linda currently under construction. Improvements to the Santa Ana River channel include construction of new levees and dikes. In addition, the Santa Ana River Mainstem Project includes improvements to Prado Dam that are currently underway and are estimated to be completed in 2021. The Prado Dam embankment has been raised and the outlet works have been reconstructed to convey additional discharges. Remaining improvements to Prado Dam include acquisition of additional land for the expansion of the Prado Reservoir, construction of protective dikes, and raising of the spillway (OCPW Orange County Flood Division 2019b).

Although the project would construct new structures in an inundation zone, the proposed project would not increase the chance of inundation from failure of Carbon Canyon Dam or Prado Dam. Additionally, the entire City of Cypress is within a dam inundation zone. The potential for dam failure is remote and the City's emergency evacuation plans would be implemented if these dams were susceptible to rupture during heavy rains or other events. Therefore, project impacts related to the exposure of people and structures to significant risk associated with flooding as a result of dam failure would be less than significant. No mitigation is required.

**Threshold 4.9.10: Would the project be subject to inundation by seiche, tsunami, or mudflow?**

**No Impact.** The project site is relatively flat and not at risk of mudflow. The project site is not located within an inundation zone of a seiche or tsunami. Therefore, no impact from inundation by seiche, tsunami, or mudflow would occur, and no mitigation is required.



**Threshold 4.9.14: Would the project result in increased impervious surfaces and associated increased runoff?**

**No Impact.** The proposed project would not change the impervious surface area on site (the site would be 12 acres of impervious surface area in the existing and proposed condition); therefore, the proposed project would not increase stormwater runoff from the project site. The proposed project would include a detention system to reduce peak discharges from the project site to 0.3 cfs/acre (or 4.0 cfs for the project site) per City requirements. Because the proposed project would not increase impervious surface area or runoff, no impacts would occur, and no mitigation is required.

**Threshold 4.9.16: Would the project be tributary to an already impaired water body, as listed on the Clean Water Act Section 303(d) list? If so, can it result in an increase in any pollutant for which the water body is already impaired?**

**Less Than Significant Impact.** After entering the stormdrain system in Katella Avenue, runoff from the project site is eventually discharged to the San Gabriel River. Reach 1 of the San Gabriel River (from the estuary to Firestone Boulevard) is impaired for pH and temperature. The San Gabriel River Estuary is impaired for nickel, dissolved oxygen, copper, dioxin, and indicator bacteria.

As discussed above, construction of the proposed project has the potential to introduce pollutants to the stormdrain system from erosion, siltation, and accidental spills. During construction activities, excavated soil would be exposed and there would be an increased potential for soil erosion and sediment to reach downstream receiving waters, which could result in decreases in dissolved oxygen levels. During construction activities, chemicals, liquid products, petroleum products (e.g., paints, solvents, and fuels), and concrete-related waste may be spilled or leaked. Therefore, construction has the potential to contribute to the temperature and pH impairments. Grading and earthmoving equipment are sources of chemicals, liquid products, and petroleum products if the equipment leaks and could contribute to the metals (nickel and copper) and pH impairments in downstream receiving waters. If concrete-related wastes are spilled or leaked, they could affect the pH of downstream receiving waters. Temporary or portable sanitary facilities provided for construction workers could be a source of sanitary waste and contribute to downstream indicator bacteria impairments. However, sanitary waste generated from temporary or portable sanitary facilities would be disposed of in compliance with all applicable regulations. Project construction would not involve use of dioxin, which was banned in the U.S. in 1979. Therefore, project construction would not contribute to the dioxin impairment.

As specified in Regulatory Compliance Measure-HYD-1, compliance with the Construction General Permit requires preparation of a SWPPP to identify construction BMPs to be implemented during project construction to reduce impacts to water quality. Construction BMPs would include, but not be limited to, Erosion and Sediment Control BMPs designed to minimize erosion and retain sediment on-site, as well as Good Housekeeping BMPs to prevent spills, leaks, and discharge of construction debris and waste into receiving waters. In addition, during groundwater dewatering, Regulatory Compliance Measure HYD-2 would ensure that pollutants are not introduced to receiving waters and that water quality standards and waste discharge requirements are met.



During operation, expected pollutants of concern include suspended solids/sediment, nutrients, heavy metals, pathogens (bacteria/virus), pesticides, oil and grease, toxic organic compounds, and trash and debris. Pets utilizing the landscaped areas would be a potential source of bacteria (e.g., fecal matter) which could contribute to the indicator bacteria and dissolved oxygen impairment. Vehicles operating within the project site could be a source of heavy metals (nickel and copper). Therefore, there is the potential for operational pollutants to contribute to the indicator bacteria, nickel, copper, pH, and temperature impairments in receiving waters. Project operation would not involve the use of dioxin. Therefore, the project would not contribute to the dioxin impairment.

As specified in Regulatory Compliance Measure HYD-3, post-construction BMPs would be implemented and maintained during operation to target and reduce pollutants in stormwater runoff from the project site during operation. The Source Control and LID BMPs specified in the WQMP would target and reduce pollutants in stormwater runoff from the project site, including those contributing to downstream water quality impairments. Therefore, with implementation of Regulatory Compliance Measure HYD-3, impacts related to an increase in pollutants for which the receiving waterbody is already impaired as listed on the CWA Section 303(d) list would be less than significant, and no mitigation is required.

**Threshold 4.9.17: Would the project be tributary to other environmentally sensitive areas? If so, can it exacerbate already existing sensitive conditions?**

**No Impact.** According to the North Orange County MS4 Permit, Environmentally Sensitive Areas are areas such as those designated in the Ocean Plan as Areas of Special Biological Significance (ASBS) or waterbodies listed on the CWA Section 303(d) list of impaired waters. The project site is not tributary to an ASBS (SWRCB 2019). In addition, the proposed project does not meet the priority development project definition of “a development of 2,500 sf of impervious surface or more, adjacent to (within 200 ft) or discharging directly into Environmentally Sensitive Areas.” The nearest CWA Section 303(d) impaired waterbody is the San Gabriel River, which is located approximately 6 miles downstream of the project site. In addition, the project would not discharge directly into this CWA Section 303(d) impaired water. Therefore, implementation of the proposed project would not result in any impacts to environmentally sensitive areas. No mitigation is required.

**Threshold 4.9.19: Would the project have a potentially significant adverse impact on groundwater quality?**

Or

**Threshold 4.9.20: Would the project cause or contribute to an exceeded applicable surface or groundwater receiving water quality objectives or degradation of beneficial uses?**

**Less Than Significant Impact.** Although groundwater dewatering would be required, dewatered groundwater would be discharged to the stormdrain system rather than back into groundwater and therefore would not introduce pollutants to groundwater. Infiltration of stormwater has the potential to affect groundwater quality in areas of shallow groundwater. However, according to the *Water Quality Management Plan* prepared for the project, the on-site soils are not favorable for



infiltration. Specifically, on-site soils are classified as Hydrologic Soil Group D, which has a minimal infiltration rate when thoroughly wetted. Therefore, minimal infiltration would occur on site during construction and operation. Project construction and operation would not involve groundwater injection. Additionally, infiltration BMPs are not proposed. Because minimal infiltration would occur and no groundwater injection would occur, project construction activities would not substantially degrade groundwater quality or result in the exceedance of water quality objectives or degradation of beneficial uses. Impacts would be less than significant, and no mitigation would be required.

**Threshold 4.9.21: Would the project impact aquatic, wetland, or riparian habitat?**

**No Impact.** There is no aquatic, wetland, or riparian habitat present on the project site. Los Alamitos Channel, the downstream receiving water, is concrete-lined and does not provide aquatic, wetland, or riparian habitat. Therefore, development of the proposed project would not impact any aquatic, wetland, or riparian habitat. No mitigation is required.

**Threshold 4.9.22: Would the project include new or retrofitted stormwater treatment control Best Management Practices (e.g., water quality treatment basin, constructed treatment wetlands), the operation of which could result in significant environmental effects (e.g., increased vectors or odors)?**

**Less Than Significant Impact.** As discussed above, the project would include implementation of post-construction BMPs (underground detention basins) to reduce impacts related to hydrology and water quality. These post-construction BMPs would not result in additional impacts not already evaluated throughout this EIR. The post-construction BMPs would be underground and would be designed and routinely inspected and maintained to reduce impacts related to vectors and odors. Therefore, impacts related to BMPs would be less than significant, and no mitigation is required.

#### 4.9.2 Level of Significance Prior to Mitigation

Construction and operational impacts related to hydrology and water quality would be less than significant with implementation of Regulatory Compliance Measures HYD-1 through HYD-3.

#### 4.9.3 Regulatory Compliance Measures and Mitigation Measures

##### 4.9.3.1 Regulatory Compliance Measures

The following Regulatory Compliance Measures are existing regulations that are applicable to the proposed project and are considered in the analysis of potential impacts related to hydrology and water quality. The City of Cypress considers these requirements to be mandatory; therefore, they are not mitigation measures.

**Regulatory Compliance Measure HYD-1 Construction General Permit.** Prior to commencement of construction activities, the Applicant/Developer shall obtain coverage under the *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit)*,



NPDES No. CAS000002, Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ and Order No. 2012-0006-DWQ, or any other subsequent permit. This shall include submission of Permit Registration Documents (PRDs), including permit application fees, a Notice of Intent (NOI), a risk assessment, a site plan, a Stormwater Pollution Prevention Plan (SWPPP), a signed certification statement, and any other compliance-related documents required by the permit, to the State Water Resources Control Board via the Stormwater Multiple Application and Report Tracking System (SMARTS). Construction activities shall not commence until a Waste Discharge Identification Number (WDID) is obtained for the project from the SMARTS and provided to the Director of the City of Cypress Community Development Department, or designee, to demonstrate that coverage under the Construction General Permit has been obtained. Project construction shall comply with all applicable requirements specified in the Construction General Permit, including, but not limited to, preparation of a SWPPP and implementation of construction site best management practices (BMPs) to address all construction-related activities, equipment, and materials that have the potential to impact water quality for the appropriate risk level identified for the project. The SWPPP shall identify the sources of pollutants that may affect the quality of stormwater and shall include BMPs (e.g., Sediment Control, Erosion Control, and Good Housekeeping BMPs) to control the pollutants in stormwater runoff. Construction Site BMPs shall also conform to the requirements specified in the latest edition of the Orange County Stormwater Program *Construction Runoff Guidance Manual for Contractors, Project Owners, and Developers* to control and minimize the impacts of construction and construction-related activities, materials, and pollutants on the watershed. Upon completion of construction activities and stabilization of the project site, a Notice of Termination shall be submitted via SMARTS.

**Regulatory Compliance Measure HYD-2 Groundwater Dewatering Permit.** If groundwater dewatering is required during excavation activities, the Applicant/Developer shall obtain coverage under the *General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (De Minimis)*



*Threat to Water Quality* (Order No. R8-2009-0003, NPDES No. CAG998001) (*De Minimis* Permit). This shall include submission of a Notice of Intent (NOI) for coverage under the permit to the Santa Ana Regional Water Quality Control Board (RWQCB) at least 45 days prior to the start of dewatering. Groundwater dewatering activities shall comply with all applicable provisions in the permit, including water sampling, analysis, treatment (if required), and reporting of dewatering-related discharges. Upon completion of groundwater dewatering activities, a Notice of Termination shall be submitted to the Santa Ana RWQCB.

**Regulatory Compliance Measure HYD-3 Best Management Practices.** The Applicant/Developer shall implement the BMPs identified in Section IV of the Water Quality Management Plan and the drainage improvements identified in the Hydrology and Hydraulics Study. In addition, the Property Management Association shall be the responsible party for inspection and maintenance of the BMPS as identified in Section V of the Preliminary Water Quality Management Plan.

#### 4.9.3.2 Mitigation Measures

No mitigation measures are required.

#### 4.9.4 Level of Significance after Mitigation

The proposed project would not result in significant impacts related to hydrology and water quality, and no mitigation is required.

#### 4.9.5 Cumulative Impacts

Cumulative development in the San Gabriel River Watershed is a continuation of the existing urban pattern of development that has already resulted in extensive modifications to watercourses in the area. The area's watercourses have been channelized, and drainage systems have been put into place to respond to the past urbanization that has occurred in this area. For the cumulative analysis related to hydrology and water quality, the cumulative projects being considered include the related projects within the same watershed as the proposed project (i.e., the San Gabriel River Watershed) and/or discharging to the same stormdrain systems as the proposed project (i.e., the Katella Avenue stormdrain and the Los Alamitos Channel). Please refer to Table 4.A and Figure 4-1, in Chapter 4.0, Existing Setting, Environmental Analysis, Impacts, and Mitigation Measures, for the descriptions and locations of these related projects.

Related Projects 7–15, 18, and 19 would discharge to the Katella Avenue stormdrain and then the Los Alamitos Channel. Related Projects 1–5 would discharge to the stormdrain system in Cerritos Avenue, which connects to the Los Alamitos Channel. Each of these related projects could



potentially increase the volume of stormwater runoff and contribute to pollutant loading in stormwater runoff reaching both the City's stormdrain system and the San Gabriel River Watershed, thereby resulting in cumulative impacts to hydrology and surface water quality. Projects 6, 16, and 17 are located within the Anaheim Bay-Huntington Harbour Watershed and do not discharge to the same stormdrain systems or receiving waters as the project site. These related projects are not considered in this cumulative analysis because they do not have the potential to contribute to the hydrology- and water quality-related impacts of the proposed project to result in cumulative impacts.

New development and redevelopment can result in increased stormwater runoff and increased urban pollutants in stormwater runoff from each of the related project sites. Each related project must include BMPs to reduce impacts to water quality and hydrology in compliance with local ordinances and plans adopted to comply with requirements of the various NPDES permits. Specifically, the related projects that disturb 1 acre or more of soil must comply with the requirements of the Construction General Permit and the North Orange County MS4 Permit. The preparation and approval of a SWPPP (for construction) and a WQMP (for operation) would be required for each related project to determine appropriate BMPs to minimize water quality impacts. In addition, the preparation and approval of a hydrology study would be required to determine the hydrologic control required to minimize increases in runoff from each site so they do not exceed existing conditions or result in hydromodification impacts. In addition, cities review all development projects on a case-by-case basis to ensure that sufficient local and regional drainage capacity is available.

Each related project must consider impaired receiving waters and TMDLs for receiving waters. The TMDL program is designed to identify all constituents that adversely affect the beneficial uses of water bodies and then identify appropriate reductions in pollutant loads or concentrations from all sources so that the receiving waters can maintain/attain the beneficial uses in the Basin Plan. Thus, by complying with TMDLs, a project's contribution to overall water quality improvement in the San Gabriel River Watershed in the context of the regulatory program is designed to account for cumulative impacts.

Regional programs and BMPs such as TMDL programs and the MS4 Permit Program have been designed under an assumption that the San Gabriel River Watershed would continue its pattern of urbanization. The regional control measures contemplate the cumulative effects of proposed development. The proposed project would be required to comply with the requirements of the Construction General Permit and the North Orange County MS4 Permit and implement construction and operational BMPs to reduce pollutants in stormwater runoff. Compliance with these regional programs and permits constitutes compliance with programs intended to address cumulative water quality impacts. As stated above, each related project would be required to develop a SWPPP, a WQMP, and a hydrology study, and would be evaluated individually to determine appropriate BMPs and treatment measures to reduce impacts to surface water quality and hydrology.

Many City stormdrain systems, including the Katella Avenue stormdrain system, are currently at capacity. Other related projects that would discharge stormwater to the same stormdrain system as the proposed project would have the potential to result in a cumulative impact related to stormdrain capacity and flooding. However, each individual project would be required to prepare a



hydrology study, which would be reviewed and approved by the applicable city. The hydrology study would be required to demonstrate that the project would reduce stormwater discharge to at or below that allowed by the city for the individual project site. The City of Cypress has established discharge requirements for each property within its jurisdiction. As those properties are developed or redeveloped, the projects are required to reduce stormwater runoff from the property to meet the runoff restriction established by the City. The runoff restriction ensures that as development and redevelopment within the City continues, stormwater discharged to the existing stormdrain system will continue to be reduced, lessening the existing stormdrain capacity deficit. Because the proposed project includes an on-site detention system that would be adequately sized and designed to reduce flow to the 0.3 cfs/acre runoff restriction, the project would not contribute to the existing stormdrain capacity deficit.

In summary, because the proposed project and other related projects would comply with applicable NPDES requirements and would include BMPs and drainage facilities to reduce the volume of stormwater runoff and pollutants of concern in stormwater runoff, the cumulative hydrology and water quality impacts of the proposed project and the related projects would be less than significant. Therefore, the proposed project's incremental hydrology and water quality impacts would not be cumulatively considerable.



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