

4.8 HYDROLOGY AND WATER QUALITY

This section evaluates the potential impacts to hydrology and water quality conditions from implementation of the Tirador Residential Development Project (proposed project). The analysis in this section is based in part on the *Preliminary Hydrology Report for Paseo Tirador TTM 18148, San Juan Capistrano, CA* (Preliminary Hydrology Report) (IBI Group, November 2017a, revised March 2018) and the *Preliminary Water Quality Management Plan for Paseo Tirador, San Juan Capistrano, CA* (PWQMP) (IBI Group, November 2017b, revised March 2018, July 2018, and January 2019) (provided in Appendix F of this Environmental Impact Report [EIR]).

4.8.1 Scoping Process

The City of San Juan Capistrano (City) received 11 comment letters during the public review period of the Initial Study/Notice of Preparation (IS/NOP). For copies of the IS/NOP comment letters, refer to Appendix A of this EIR. One comment letter included comments related to Hydrology and Water Quality.

The letter from Orange County Public Works (OCPW) received on December 4, 2019, noted that the project should ensure that the property is protected from flooding during the 100-year flood event, and stated that the City should review and approve all local hydrology and hydraulic analyses. OCPW also commented that the City should ensure that the impacted Federal Emergency Management Agency (FEMA) 100-year floodplain is revised per FEMA regulations in accordance with the City's floodplains ordinances, and that encroachment should not result in any increase in flood levels within the floodway during the occurrence of base flood discharge.

4.8.2 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.

4.8.3 Existing Environmental Setting

4.8.3.1 Surface Waters

The project site is located within the San Juan Creek Watershed, which covers approximately 176 square miles and includes portions of the Cities of Dana Point, Laguna Hills, Laguna Niguel, Mission Viejo, Rancho Santa Margarita, and San Juan Capistrano.¹

For planning purposes, the San Diego Regional Water Quality Control Board (RWQCB) uses a watershed classification system that divides surface waters into hydrologic units (HUs), areas, and subareas. As designated by the RWQCB, the project site is located within the San Juan HU, which

¹ United States Army Corps of Engineers (USACE), Los Angeles District. 2002. San Juan Creek Watershed Management Study, Orange County, California Feasibility Phase F-5 Report. August.

itself is divided into Hydrologic Areas (HAs), which are then divided into Hydrologic Subareas (HSAs). The project site is located the San Juan HU, Mission Viejo HA and Ortega HSA.¹

The project site is bound on the east by San Juan Creek. San Juan Creek originates in the Santa Ana Mountains in the Cleveland National Forest in the easternmost part of Orange County (County). San Juan Creek flows into the Pacific Ocean south of Dana Point Harbor at Doheny State Beach.²

4.8.3.2 Stormwater Drainage

In the existing condition, an earthen swale located off site to the west of the project site conveys stormflows from the west to a 27-inch reinforced concrete pipe (RCP) located in the southwestern corner of the project site. Catch basins on the southeast portion of the existing project site also convey on-site stormwater flows to the RCP. The RCP conveys stormwater flows to Horno Creek Channel. Horno Creek Channel is a 16-foot-wide by 8.5-foot-tall reinforced concrete box which bisects the project site in a north/south direction, and is a County-owned and maintained facility. Additionally, there is a portion of the site that sheet flows to existing catch basins within Paseo Tirador; the catch basins then drain into the RCP culvert portion of Horno Creek. Horno Creek Channel then discharges stormwater runoff to San Juan Creek. The portion of San Juan Creek adjacent to the project site is an unimproved natural watercourse. Downstream of the project site, San Juan Creek is improved as a concrete-lined earthen channel with a soft bottom. An existing scour protection wall within the project area limits provides flood protection and soil stability on site.

4.8.3.3 Surface Water Quality

San Juan Creek is listed on the 2014/2016 California Integrated Report (CWA Section 303(d) List/305(b) Report, as described in Section 4.8.4.1, Federal Regulations, below) as impaired for dichlorodiphenyldichloroethylene (DDE), indicator bacteria, selenium, toxicity, benthic community effects, nitrogen, dissolved oxygen, and phosphorus. The mouth of San Juan Creek is impaired for cadmium, copper, nickel, ammonia, and indicator bacteria. The Pacific Ocean shoreline at San Juan Creek is impaired for indicator bacteria. Horno Creek is not listed as impaired on the 2014/2016 303(d) list.

4.8.3.4 Groundwater

The project site lies within the San Juan Groundwater Basin. The San Juan Valley groundwater basin underlies the San Juan Valley and several tributary valleys in southern Orange County. The basin is bounded on the west by the Pacific Ocean and otherwise by tertiary semi-permeable marine deposits.

For management purposes, groundwater basins are designated in the San Diego RWQCB's Basin Plan using the same HUs, HAs, and HSAs as surface waters.

¹ San Diego Regional Water Quality Control Board (RWQCB). 1994. Water Quality Control Plan for the San Diego Basin. September 8, 1994 (with amendments effective on or before May 17, 2016).

² United States Army Corps of Engineers (USACE), Los Angeles District. 2002. San Juan Creek Watershed Management Study, Orange County, California Feasibility Phase F-5 Report. August.

Groundwater recharge is from flow in San Juan Creek, Oso Creek, and Arroyo Trabuco and precipitation to the valley floor. Additional recharge is from water from springs that flow directly from Hot Spring Canyon into San Juan Creek. Groundwater in the basin flows southwest toward the Pacific Ocean.¹

As discussed in the Geotechnical Engineering Investigation prepared for the project, groundwater could be encountered at depths of 17 ft below the existing grade.

4.8.3.5 Groundwater Quality

Groundwater in the San Juan Valley groundwater basin near the coast typically has a calcium-sodium sulfate or sulfate-chloride character. In general, total dissolved solids (TDS) content is in the range of 2,000 mg/L near the coast.²

4.8.3.6 Flood Zones

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) Nos. 06059C0506J and 06059C0507J (December 3, 2009), the southern portion of the project site is located within 100-year floodplain Zone AE, a small portion of the eastern portion of the site is located within a mapped floodway, and the northern portion of the project site is located within Zone X (refer to Figure 4.8.1 at the end of this section). Zone AE is defined by FEMA as areas subject to inundation by a 1-percent-annual-chance (100-year) flood for which base flood elevations have been determined. Elevations of the floodplain over the project area range from 85 ft to 95 ft. Zone X is defined by FEMA as areas of minimal flood hazard, which are the areas outside of the Special Flood Hazard Area and higher than the elevation of the 0.2 percent annual chance flood. The northeastern portion of the project site contains a Zone AE Regulatory Floodway³ associated with El Horno Creek and San Juan Creek. In addition, according to the City's General Plan Safety Element,⁴ the project site is located within the inundation area in the event of catastrophic failure of Trampas Canyon Dam.

4.8.4 Regulatory Setting

4.8.4.1 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 an 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

¹ Department of Water Resources (DWR). 2004. California's Groundwater Bulletin 118. Hydrologic Region South Coast, San Juan Valley Groundwater Basin. February.

² Ibid.

³ FEMA defines regulatory floodways as a channel of a river or other watercourse where adjacent land is reserved in order to discharge the base flood without cumulatively increasing the water surface elevation.

⁴ City of San Juan Capistrano. 1999. General Plan Safety Element. December 14.

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 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.

As stated above, San Juan Creek is listed on the 2014/2016 303(d) list as impaired for DDE, indicator bacteria, selenium, toxicity, benthic community effects, nitrogen, dissolved oxygen, and phosphorus. The mouth of San Juan Creek is impaired for cadmium, copper, nickel, ammonia, and indicator bacteria. The Pacific Ocean shoreline at San Juan Creek is impaired for indicator bacteria. As stated previously, Horno Creek is not listed as impaired on the 2014/2016 303(d) list.

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 San Juan Capistrano manages local storm drain facilities, and the Orange County Flood Control District (OCFCD) is responsible for regional flood control planning within Orange County.

4.8.4.2 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 San Diego RWQCB.

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 are applicable to the receiving water body and therefore must be 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.

Total Maximum Daily Load Requirements. The San Diego RWQCB has established a TMDL for indicator bacteria which applies to San Juan Creek, the downstream receiving waters for the project site. On February 10, 2010, the San Diego RWQCB adopted Resolution No. R9-2010-0001, *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)*. This TMDL Basin Plan amendment was subsequently approved by the SWRCB on December 14, 2010; by the Office of Administrative Law on April 4, 2011; and by the USEPA on June 22, 2011. Under State law, this TMDL Basin Plan became fully effective on April 4, 2011, the date of Office of Administrative Law approval. The Municipal MS4s are stakeholders with waste load allocations in the TMDL. This Basin Plan amendment establishes TMDLs and associated load and wasteload allocations for total coliform, fecal coliform, and enterococci bacteria in 20 beach and creek segments, including San Juan Creek. Due to the delisting of these beaches for contact water recreation (REC1) uses in the 2010 Integrated Report, as long as water quality continues to meet delisting standards, no further actions, beyond monitoring, is required under the TMDL by the Municipal MS4s stakeholders as wasteload allocations have been met. Additionally, there are no TMDL requirements listed for Horno Creek.

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 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.

4.8.4.3 Regional Regulations

The San Diego 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.

The existing beneficial uses for San Juan Creek and Horno Creek, as designated by the RWQCB in the Basin Plan, are listed below.

- **Agricultural Supply (AGR):** Uses of water for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, and support of vegetation for range grazing.
- **Industrial Service Supply (IND):** Uses of water for industrial activities that do not depend primarily on water quality, including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
- **Contact Water Recreation (REC1):** Uses of water for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs.

- **Noncontact Water Recreation (REC2):** Uses of water for recreational activities involving proximity to water but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities.
- **Warm Freshwater Habitat (WARM):** Uses of water that support warm-water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
- **Cold Freshwater Habitat (COLD):** Uses of water that support cold-water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
- **Wildlife Habitat (WILD):** Uses of water that support terrestrial ecosystems, including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

San Juan Creek and Horno Creek are exempted from the Municipal and Domestic Supply (MUN) beneficial use. The existing beneficial uses for groundwater for the Ortega HSA are MUN, AGR, and IND.

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 San Diego RWQCB that are applicable to the receiving waters for the project site are shown in Table 4.8.A.

In addition to the water quality objectives applicable to all surface waters, bays and estuaries, and groundwater, the San Diego RWQCB has designated site-specific water quality objectives for waters. The site-specific water quality objectives for the Mission Viejo HA are:

- TDS = 500 mg/L
- Chloride = 250 mg/L
- Sulfate = 250 mg/L
- Percent Sodium = 60
- Iron = 0.3 mg/L
- Manganese = 0.05 mg/L
- Methylene Blue Active Substances = 0.5 mg/L

Table 4.8.A: Water Quality Objectives

Constituent	Objective
Ammonia, Unionized	Discharge of wastes shall not cause concentrations of unionized ammonia to exceed 0.025 mg/L (as N).
Bacteria, Coliform	In waters designated for REC1, the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a log mean of 200 organisms/100 mL, nor shall more than 10 percent of all samples collected during any 30-day period exceed 400 organisms/100 mL.
Bacteria, E. Coli	In fresh waters designated for REC1, the steady-state E. coli concentration shall not exceed 126 colonies/100 mL, the maximum concentration shall not exceed 406 colonies/100 mL at moderately or lightly used areas, and the maximum concentration shall not exceed 576 colonies/100 mL for infrequently used areas.
Bacteria, Enterococci	In salt waters designated for REC-1, the steady-state enterococci concentration shall not exceed 33 colonies/100 mL, the maximum concentration shall not exceed 108 colonies/100 mL at moderately or lightly used areas, and the maximum concentration shall not exceed 151 colonies/100 mL for infrequently used areas.
Biostimulatory Substances	<p>Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect the water for beneficial uses.</p> <p>Concentrations of nitrogen and phosphorus, by themselves or in combination with other nutrients, shall be maintained at levels below those that stimulate algae and emergent plant growth. Threshold total phosphorus (P) concentrations shall not exceed 0.05 mg/L in any stream at the point where it enters any standing body of water, or 0.025 mg/L in any standing body of water. A desired goal in order to prevent plant nuisance in streams and other flowing waters appears to be 0.1 mg/L total P. These values are not to be exceeded more than 10 percent of the time unless studies of the specific water body in question clearly show that water quality objective changes are permissible and changes are approved by the San Diego RWQCB. Analogous threshold values have not been set for nitrogen compounds; however, natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and then upheld. If data are lacking, a ratio of N:P = 10:1 on a weight-to-weight basis shall be used.</p>
Color	<p>Waters shall be free of coloration that causes nuisance or adversely affects the water for beneficial uses.</p> <p>The natural color of fish, shellfish, or other resources in inland surface waters, coastal lagoons or bays and estuaries shall not be impaired.</p>
Dissolved Oxygen	Dissolved oxygen levels shall not be less than 5 mg/L in inland surface waters with a designated WARM beneficial use. The annual mean dissolved oxygen concentration shall not be less than 7 mg/L more than 10 percent of the time.
Floating Materials	Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect the water for beneficial uses.
Oil and Grease	Waters shall not contain oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, or that cause nuisance or otherwise adversely affect beneficial uses.
Pesticides	No individual pesticide or combination of pesticides shall be present in the water column, sediments, or biota at concentration(s) that adversely affect beneficial uses. Pesticides shall not be present at levels that will bioaccumulate in aquatic organisms to levels that are harmful to human health, wildlife, or aquatic organisms.
pH	In inland surface waters, the pH shall not be depressed below 6.5 or raised above 8.5.
Radioactivity	Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

Table 4.8.A: Water Quality Objectives

Constituent	Objective
Sediment	Waters shall not contain suspended or settleable solids in concentrations that cause nuisance or adversely affect beneficial uses.
Suspended and Settleable Solids	Waters shall not contain suspended and settleable solids in concentrations that cause nuisance or adversely affect beneficial uses.
Taste and Odor	Waters shall not contain taste- or odor-producing substances in concentrations that cause a nuisance or that adversely affect beneficial uses. The natural taste and odor of fish, shellfish, or other regional water resources used for human consumption shall not be impaired for inland surface waters.
Temperature	The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the San Diego RWQCB that such alteration in temperature does not adversely affect beneficial uses. Additionally, at no time or place shall the temperature of any COLD water be increased more than 5 degrees Fahrenheit above the natural receiving water temperature.
Toxicity	All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in, human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms; analyses of species diversity, population density, and growth anomalies; bioassays of appropriate duration; or other appropriate methods as specified by the San Diego RWQCB. Inland surface waters shall not contain toxic pollutants in excess of the numerical objectives applicable to California specified in the California Toxics Rule (40 CFR 131.36)
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.

Source: San Diego RWQCB, *Water Quality Control Plan for the San Diego Basin* (1994).

CFR = Code of Federal Regulations
mg/L = milligrams per liter
mL = milliliter

REC-1 = Contact Water Recreation
RWQCB = Regional Water Quality Control Board
WARM = Warm Freshwater Habitat

- Boron = 0.75 mg/L
- Turbidity = 20 nephelometric turbidity units (NTU)
- Color = 20 units
- Fluoride = 1 mg/L

In addition, the nitrogen and phosphorus site-specific water quality objective specified that total phosphorus concentrations shall not exceed 0.05 mg/l in any stream at the point where it enters any standing body of water and shall not exceed 0.025 mg/l in any standing body of water. A desired goal to prevent plant nuisances in streams and other flowing waters is 0.1 mg/l total P. These values are not to be exceeded more than 10% of the time unless studies of the specific body in question clearly show that water quality objective changes are permissible and changes are approved by the RWQCB. Analogous threshold values have not been set for nitrogen compounds; however, natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N: P=10:1 shall be used.

The site specific groundwater quality objectives for the Ortega HSA are:

- TDS = 1,100 mg/L
- Chloride = 375 mg/L
- Sulfate = 450 mg/L
- Percent Sodium = 60
- Nitrate = 45 mg/L
- Iron = 0.3 mg/L
- Manganese = 0.05 mg/L
- Methylene Blue Active Substances = 0.5 mg/L
- Boron = 0.75 mg/L
- Turbidity = 5 NTU
- Color = 15 units
- Fluoride = 1 mg/L

Orange County National Pollutant Discharge Elimination System Permit. The City is a Permittee of the *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4) Draining the Watersheds within the San Diego Region* (South Orange County MS4 Permit), Order R9-2013-0001, NPDES No. CAS6010266, as amended by Order No. R9-2015-0001. The South Orange County MS4 Permit regulates discharges into the MS4 system in the cities and county areas within Orange County that are in the jurisdiction of the San Diego RWQCB. As discussed further below, the South 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.

The proposed project is considered a Priority Development Project under the following categories specified in the South Orange County MS4 Permit:

- **Category (a)** New development projects that create 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
- **Category (c)** New and redevelopment projects that create 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses:
 - (iv) Streets, roads, highways, freeways, and driveways. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.
- **Category (f)** New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction.

Drainage Area Management Program. The Drainage Area Management Plan (DAMP) was created by the County of Orange, the OCFCD, and incorporated cities (permittees), and includes specific water pollutant requirements of the Orange County Stormwater Program. The DAMP is the principal guidance and compliance document for the county-wide 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.

Model Water Quality Management Plan. The *Model Water Quality Management Plan (Model WQMP) for South Orange County*¹ 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.

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) in South Orange County* (TGD)² in cooperation with the incorporated cities of South 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 TGD serves as a technical guidance to complete the Project WQMP.

Hydromodification Plan. Pursuant to the requirements of the South Orange County MS4 Permit, the County prepared the *South Orange County Hydromodification Management Plan (HMP)*.³ All priority development projects that do not meet the exemption criteria are required to comply with hydromodification criteria in the HMP. The goal of hydromodification control is to integrate hydrologic controls into a proposed project so that post-project runoff discharge rates and durations do not exceed predevelopment (naturally occurring) discharge rates and durations.

Orange County Construction Runoff Guidance Manual. The *Construction Runoff Guidance Manual for Contractors, Project Owners, and Developers*⁴ presents the requirements related to construction from the DAMP. The goal of this Guidance Manual is to control pollutant discharges from

¹ County of Orange. 2017a. *Model Water Quality Management Plan for South Orange County*. September 28.

² County of Orange. 2018. *Technical Guidance Document for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans (WQMPs) in South Orange County*. December.

³ County of Orange. 2017b. *South Orange County Hydromodification Management Plan (HMP)*. September.

⁴ County of Orange, Stormwater Program. 2012. *Construction Runoff Guidance Manual for Contractors, Project Owners, and Developers*. December.

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. On June 24, 2015, the San Diego RWQCB issued the *General Waste Discharge Requirements for Discharges from Groundwater Extraction Discharges to Surface Waters within the San Diego Region* (Order No. R9-2015-0013, NPDES No. CAG919003) (Groundwater Discharge Permit). This permit regulates construction dewatering and discharges of groundwater to surface waters during excavation. This permit specifies the discharge prohibitions, receiving water limitations, monitoring and reporting program requirements, and general compliance determination criteria for groundwater dewatering during construction activities. Dischargers are required to collect and analyze representative groundwater samples for all constituents listed in the Groundwater Discharge Permit. Based on the results, dischargers would be required to provide treatment for any toxic compounds detected above the applicable screening levels. To obtain coverage under the Groundwater Discharge Permit, each permittee must submit a Notice of Intent to begin the application process.

4.8.4.4 Local Regulations

Jurisdictional Runoff Management Plan. The City Jurisdictional Runoff Management Plan (JRMP) is the principal guidance and compliance document specific to the City's jurisdiction for compliance with the requirements of the South Orange County MS4 Permit. The JRMP provides the description and details of the City's water quality program implementation activities. The JRMP is designed to work in conjunction with the Orange County DAMP.

Municipal Code. Chapter 2 of the City Municipal Code regulates construction activities within the City. Chapter 14 of the City Municipal Code contains water quality regulations for stormwater discharges within the City.

- **Section 8-2.15** of the Municipal Code requires that erosion control devices be installed year round in compliance with a City-approved erosion control plan.
- **Section 8-2.16** of the Municipal Code requires maintenance of construction BMPs during and after rain events.
- **Section 8-14.105** of the Municipal Code requires that all new development and redevelopment projects comply with the DAMP and JRMP and implement BMPs.
- **Section 8-14.106** of the Municipal Code requires developers of a priority development project to submit a WQMP to the City for approval.
- **Section 8-14.107** of the Municipal Code requires that proof of coverage under the Construction General Permit and a pollution control plan, construction BMP plan, and/or erosion and sediment control plan be prepared for construction plans and submitted to the City.
- **Section 8-11.115** of the Municipal Code specifies the design requirements for developments within a 100-year floodplain. All new residential construction shall have the lowest floor, including basement in AE zones, elevated at least 1 foot above the base flood elevation. Upon

the completion of the structure, the elevation of the lowest floor, including basement, shall be certified by a professional engineer or surveyor, or verified by the community building inspector to be properly elevated. Such certification or verification shall be provided to the Floodplain Administrator.

4.8.5 Thresholds of Significance

The thresholds for hydrology and water quality impacts used in this analysis are consistent with Appendix G of the *State CEQA Guidelines* and the *City's Local Guidelines for Implementing the California Environmental Quality Act (2019)*. The proposed project may be deemed to have a significant impact with respect to hydrology and water quality if it would:

- Threshold 4.8.1:** Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.
- Threshold 4.8.2:** Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede substantial groundwater management of the basin.
- Threshold 4.8.3:** 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:
 - Threshold 4.8.3.i:** Result in substantial erosion or siltation on- or off-site.
 - Threshold 4.8.3.ii:** Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
 - Threshold 4.8.3.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.
 - Threshold 4.8.3.iv:** Impede or redirect flood flows.
- Threshold 4.8.4:** In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.
- Threshold 4.8.5:** Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

The Initial Study, provided as Appendix A, substantiates that impacts associated with Thresholds 4.8.1, 4.8.2, 4.8.3.i through 4.8.3.iii, 4.8.4, and 4.8.5 would be less than significant because the proposed project would comply with NPDES and City requirements governing hydrology and water quality. In compliance with these requirements, drainage facilitates to accommodate stormwater runoff and BMPs to reduce pollutants in stormwater runoff would be implemented. Additionally, existing catch basins on the project site would also convey stormwater flows from the site to an existing 27-inch RCP, which would then convey stormwater to the Horno Creek Channel. Similar to existing conditions, Horno Creek Channel would then discharge the project site stormwater runoff

to San Juan Creek. Existing and proposed drainage facilities, as well as implementation of BMPs, would ensure impacts to hydrology and water quality are less than significant. Therefore, impacts related to surface and groundwater quality, groundwater supplies, erosion and siltation, flooding, storm drain capacity, polluted runoff, release of pollutants, and conflict with water quality and groundwater plans would be less than significant. These thresholds will not be addressed in the following analysis.

4.8.6 Project Impacts

Threshold 4.8.3.iv: 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 through the addition of impervious surfaces, in a manner which would *impede or redirect flood flows*?

Less Than Significant Impact. In the existing condition, an earthen swale located off site to the west of the project site conveys stormflows from the west to a 27-inch RCP located in the southwestern corner of the project site. Catch basins on the southeast portion of the existing project site also convey on-site stormwater flows to the RCP. The RCP conveys stormwater flows to Horno Creek Channel, which discharges stormwater to San Juan Creek. An existing scour protection wall within the project limits provides flood protection and soil stability on site. According to the Preliminary Hydrology Report prepared for the project (IBI Group, November 2017a, updated March 2018), in the proposed condition, the overall site drainage patterns would generally remain the same as existing drainage patterns. Storm flows would continue to reach San Juan Creek via the existing 27-inch RCP in the southwest corner of the project site and via Horno Creek Channel. Furthermore, the project would not alter the course of Horno Creek Channel or San Juan Creek, as drainage patterns would remain similar to the existing condition during project implementation.

In the event of a 100-year flood event, stormflows would be conveyed similar to existing conditions. Currently, the project site is undeveloped and consists of primarily pervious surfaces (the project site currently contains 0.9 acre of impervious surface area). As detailed in the Preliminary Hydrology Report prepared for the project, stormwater runoff from the project site is 23.5 cubic feet per second (cfs) during a 25-year storm and 30.6 cfs during a 100-year storm. Development of the project would increase impervious surface area by approximately 6.86 acres, which would increase stormwater runoff. The increase in impervious surface waters would increase stormwater runoff from the project site by 8.4 cfs (to 31.9 cfs) during a 25-year storm and by 10.6 cfs (to 41.2 cfs) during a 100-year storm. However, the proposed BMPs would capture and reduce stormwater runoff. As specified in the PWQMP prepared for the project, proposed BMPs include a subsurface water quality detention facility and a subsurface Modular Wetland System. According to the Preliminary Hydrology Report, the total peak discharge flow rate to the existing 27-inch RCP would be below existing conditions after implementation of the proposed BMPs (peak flow would decrease by 1.4 cfs during a 25-year storm and by 2.3 cfs during a 100-year storm). Discharge to El Horno Creek would increase by 5.6 cfs during a 25-year storm event and by 7.1 cfs during a 100-year storm event. However, according to the Preliminary Hydrology Report, El Horno Creek should have sufficient capacity to accommodate the small increase in runoff due to the small time of concentration of discharge from the project site compared to the longer time of concentration for the approximately 4.3-square-mile El Horno Creek watershed. El Horno Creek is a facility of the

County of Orange, and if flows to the creek are to be increased or if alterations are made to the facility, the project will be required to obtain County approval for the alterations. El Horno Creek has a design capacity of 3,100 cfs and is nearly empty during storm flows; therefore, it can accommodate the increased stormwater runoff from the project site. Finally, the project would decrease stormwater runoff to San Juan Creek by 23.5 cfs during a 25-year storm event and by 5.3 cfs during a 100-year storm event. Therefore, the increase in impervious surface area would not alter drainage patterns in a manner which would impede or redirect flood flows.

According to the FEMA FIRM Nos. 06059C0506J and 06059C0507J (December 3, 2009), the southern portion of the project site is located within 100-year floodplain Zone AE, and the northern portion of the project site is located within Zone X (refer to Figure 4.8.1). Zone AE is defined by FEMA as areas subject to inundation by a 1-percent-annual-chance (100-year) flood for which base flood elevations have been determined. Zone X is defined by FEMA as areas of minimal flood hazard, which are the areas outside of the Special Flood Hazard Area and higher than the elevation of the 0.2 percent annual chance flood. A portion of the project site contains a Zone AE Regulatory Floodway associated with El Horno Creek and San Juan Creek. Because the project site would place improvements and structures within a 100-year flood zone on the southern portion of the project site, there is potential for the project to impede or redirect flood flows. However, the proposed project would process all necessary map revisions with FEMA, as described below, to ensure the project does not impede or redirect flood flows that would impact adjacent or downstream property.

The proposed project would be designed in compliance with the design requirements of Section 8-11.115 of the City's Municipal Code, which specifies design requirements for developments within the 100-year floodplain. The proposed project would be required to obtain an Elevation certificate, as outlined in Regulatory Compliance Measure WQ-1. The Elevation Certificate is part of the National Flood Insurance Program (NFIP) and is used to provide elevation information necessary to ensure compliance with community floodplain management ordinances, to determine the proper insurance premium rate, and may serve as documentation supporting a Conditional Letter of Map Revision (CLOMR), Conditional Letter of Map Revision Based on Fill (CLOMR-F), Letter of Map Revision (LOMR), or Letter of Map Revision Based on Fill (LOMR-F). In addition, as specified in Regulatory Compliance Measure WQ-2, the project would be required to process a CLOMR or CLOMR-F during final design and a LOMR or LOMR-F upon project completion through the City, the OCFCD, and FEMA. A CLOMR and a CLOMR-F are FEMA's comment on a proposed project that would, upon construction, affect the hydrologic or hydraulic characteristics of a floodplain and thus result in the modification of the existing floodplain or floodway or the base flood elevation. A CLOMR proposes to revise the effective FIRM and a CLOMR-F does not revise an effective FIRM; instead, a CLOMR-F indicates whether the project, if built as proposed, would be raised above the base flood elevation. A LOMR is processed for properties elevated by the placement of fill, and is a letter determination that officially amends an effective FIRM, and a LOMR-F is processed when FEMA accepts a project which does not result in an adverse impact to adjacent or downstream property and does not increase the base flood elevation. The CLOMR and LOMR or CLOMR-F and LOMR-F would ensure that the FEMA FIRM reflects the changes to the floodplain that would result from project implementation. The process of obtaining a CLOMR and LOMR or CLOMR-F and LOMR-F would not occur until after certification of the Final EIR for the proposed project.

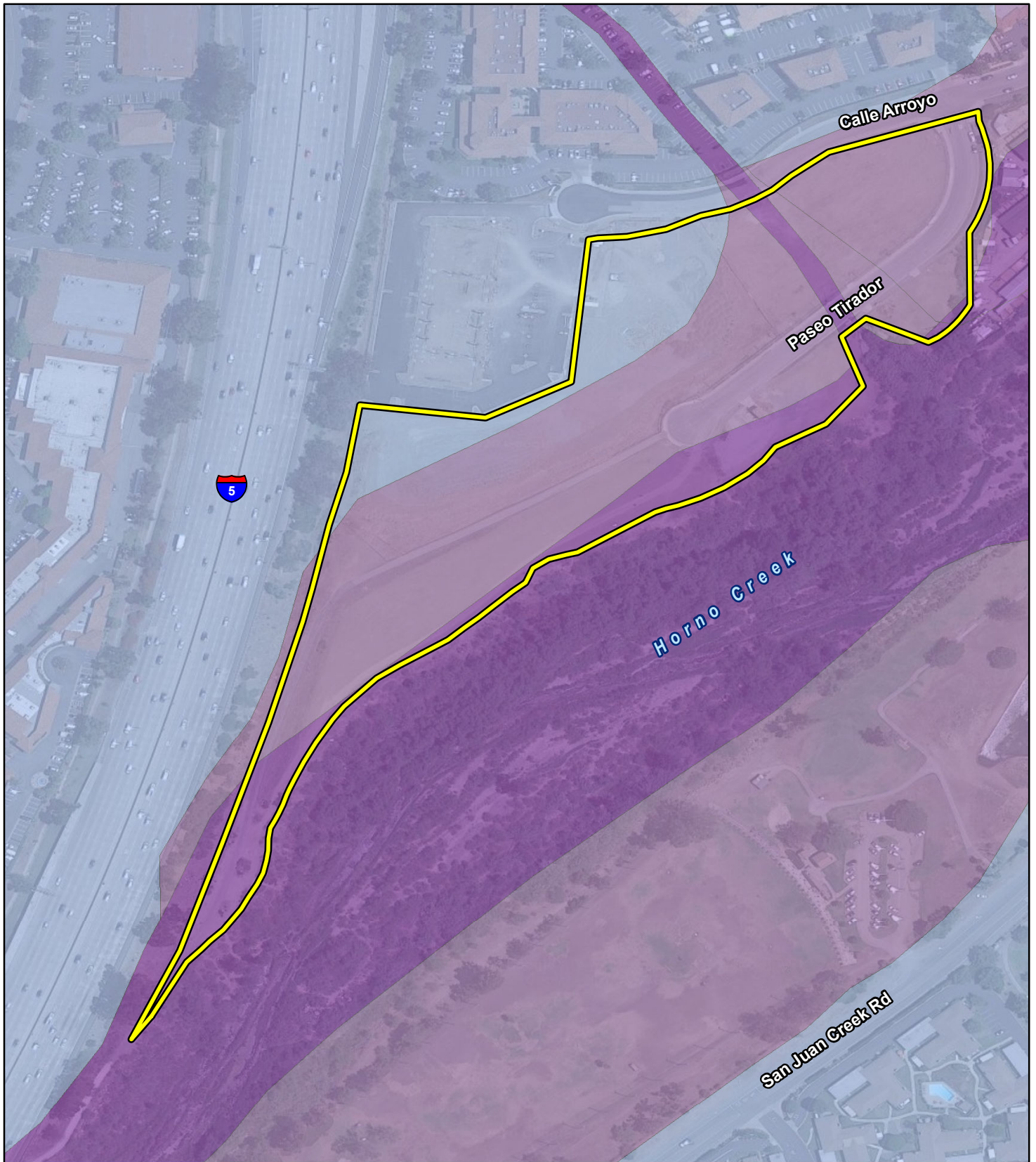




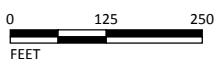


FIGURE 4.8.1

LSA

LEGEND

-  Project Boundary
- FEMA FIRM and Flood Hazard Area
-  X: Area with Minimal Flood Hazard
-  AE: 1% Annual Chance Flood Hazard
-  AE: Regulatory Floodway



SOURCE: Google Maps (2018); FEMA (2017)
 I:\JCA1802\GIS\MXD\FEMA_FIRM.mxd (2/4/2020)

Tirador Residential Development Project
 FEMA Floodplains

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Therefore, the CLOMR and LOMR or CLOMR-F and LOMR-F are conditions of approval of the project, as noted in the Project Description in Table 3.C and described in Regulatory Compliance Measure WQ-2. With implementation of Regulatory Compliance Measures WQ-1 and WQ-2, potential impacts related to impeding or redirecting flood flows would be less than significant and no mitigation is required.

4.8.7 Level of Significance Prior to Mitigation

Construction and operational impacts related to hydrology and water quality would be less than significant. No mitigation measures are required.

4.8.8 Regulatory Compliance Measures and Mitigation Measures

4.8.8.1 Regulatory Compliance Measures

The proposed project would comply with the following Regulatory Compliance Measures. The City considers these to be mandatory; therefore, they are not considered mitigation.

Regulatory Compliance Measure WQ-1

Flood Hazard Certification. Prior to issuance of any Certificates of Occupancy, the Project Applicant shall obtain certification from a registered professional engineer or surveyor that the constructed structures on comply with the requirements of Section 8-11.115 of the City of San Juan Capistrano's (City) Municipal Code. The certification shall be a Federal Emergency Management Agency (FEMA) Elevation Certificate, and shall verify that all new residential construction and substantial improvement of any structure in Zone AE of the project site shall have the lowest floor, including basement, elevated at least 1 foot above the base flood elevation. The certification shall be submitted to and verified by the City Floodplain Administrator.

Regulatory Compliance Measure WQ-2

Letter of Map Revision. Flood Insurance Rate Map Revisions. Prior to the issuance of any grading or construction permits, the Project Applicant shall process a Conditional Letter of Map Revision (CLOMR) or Conditional Letter of Map Revision based on Fill (CLOMR-F) through the City of San Juan Capistrano, Orange County Flood Control District (OCFCD), and the Federal Emergency Management Agency (FEMA). Project construction shall not commence until the CLOMR or CLOMR-F is approved by FEMA. Upon completion of construction, the Project Applicant shall process a Letter of Map Revision (LOMR) or Letter of Map Revision based on Fill (LOMR-F) through the City of San Juan Capistrano, OCFCD, and FEMA. The City of San

Juan Capistrano shall not issue the first Certificate of Occupancy until the LOMR or LOMR-F is approved by FEMA.

4.8.8.2 Mitigation Measures

No mitigation is required for the proposed project.

4.8.9 Level of Significance after Mitigation

Construction and operational impacts related to hydrology and water quality would be less than significant. No mitigation is required.

4.8.10 Cumulative Impacts

The cumulative study area for hydrology and water quality is the San Juan Creek Watershed. Cumulative development in the San Juan Creek 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, which all discharge to the same watershed as the proposed project (i.e., the San Juan Creek Watershed). 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 storm drain system and the San Juan Creek Watershed, thereby resulting in cumulative impacts to hydrology and surface water quality.

New development and redevelopment can result in increased stormwater runoff and increased urban pollutants in stormwater runoff from 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, all projects that disturb 1 acre or more of soil must comply with the requirements of the Construction General Permit, the South Orange County MS4 Permit, and the City of San Juan Capistrano Municipal Code. The preparation and approval of a SWPPP and pollution control plan, construction BMP plan, and/or erosion and sediment control plan (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 regulatory requirements or exceed the capacity of downstream stormdrain systems. In addition, the City's Building Official reviews 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

Juan Creek 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 Juan Creek Watershed would continue their 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 South 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; pollution control plan, construction BMP plan, and/or erosion and sediment control plan; 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. Because the proposed project and other related projects would comply with applicable NPDES requirements and would include BMPs 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. In addition, the cumulative projects do not encroach in the 100-year floodplain of the project, so there is no cumulative impact from placement of developments within the floodplain. Therefore, the proposed project's incremental hydrology and water quality impacts would not be cumulatively considerable.

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