5.6 Hydrology and Water Quality

5.6 HYDROLOGY AND WATER QUALITY

This section analyzes potential Project impacts on the existing drainage patterns, surface hydrology, flood control facilities, and water quality conditions in the Site vicinity. Mitigation measures are recommended to avoid potential impacts or reduce them to a less than significant level. This analysis is based on the *California Grand Villages Azusa Greens Preliminary Water Quality Management Plan* (WQMP), and the *California Grand Villages Azusa Greens Preliminary Hydrology Study* (Hydrology Study), prepared by Proactive Engineering Consultants, dated May 2017; refer to Appendix 11.6, *Hydrology/Water Quality Studies*.

5.6.1 EXISTING SETTING

REGIONAL HYDROLOGY AND DRAINAGE CONDITIONS

The Site is located within the jurisdiction of the Los Angeles Regional Water Quality Control Board (RWQCB). For planning purposes, the RWQCB uses a classification system that divides surface waters into hydrologic units, areas, and subareas. The classification system also divides groundwaters into groundwater basins. According to the RWQCB's Water *Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan), the Los Angeles region is divided into eight hydrologic units and over 20 groundwater basins.[1]

The Site is located within the Los Angeles-San Gabriel Hydrologic Unit (HU) and the San Gabriel Valley Groundwater Basin (Basin). The HU covers nearly all of Los Angeles County and a portion of Ventura County. The total drainage area represents approximately 1,608 square miles and includes the majority of the region's population. The central portion of the San Gabriel Valley is bound to the north by the San Gabriel Mountains and to the southeast, south, and southwest by a system of low lying hills. The only significant break along this system of hills is at the Whittier Narrows, where the San Gabriel and Rio Hondo Rivers and their tributaries have incised the hills and formed the drainage system for the valley. The Los Angeles and San Gabriel Rivers are the major drainage systems within the HU and drain the coastal watersheds of the transverse mountain ranges. In addition, these surface waters recharge the underlying aquifers that underlay the groundwater basin.

PROJECT SITE HYDROLOGY AND DRAINAGE CONDITIONS

The Site is located within the San Gabriel River Watershed, which drains into the San Gabriel River from the San Gabriel Mountains, flowing approximately 58 miles south until its confluence with the Pacific Ocean. The Site is specifically located within the central portion of the San Gabriel River Watershed.

Golf Course Reconfiguration Area

The Golf Course Reconfiguration Area is relatively flat and consists of a golf course with mostly vegetative cover. No underground storm drain facilities are currently present within the Golf

[1] Los Angeles Regional Water Quality Control Board, *Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties*, Figure 1-9 (Regional Groundwater Basins), August 19, 2014.

Course Reconfiguration Area. Instead, existing runoff sheet flows towards North Todd Avenue for collection and conveyance southerly via the street curb and gutter. Flows continue south towards 10th Street and are then diverted easterly into the railroad right-of-way. Ultimate flows discharge into the San Gabriel River located southwest of the Site.

Specific Plan Area

The Specific Plan Area is relatively flat with elevations ranging from 634 to 645 feet above mean sea level and consists of a golf course with mostly vegetative cover. The Specific Plan Area currently discharges into four distinct drainage areas; refer to Table 5.6-1, *Existing Drainage Conditions*, as well as Exhibit 5.6-1, *Existing Drainage Conditions*.

Table 5.6-1
Existing Drainage Conditions

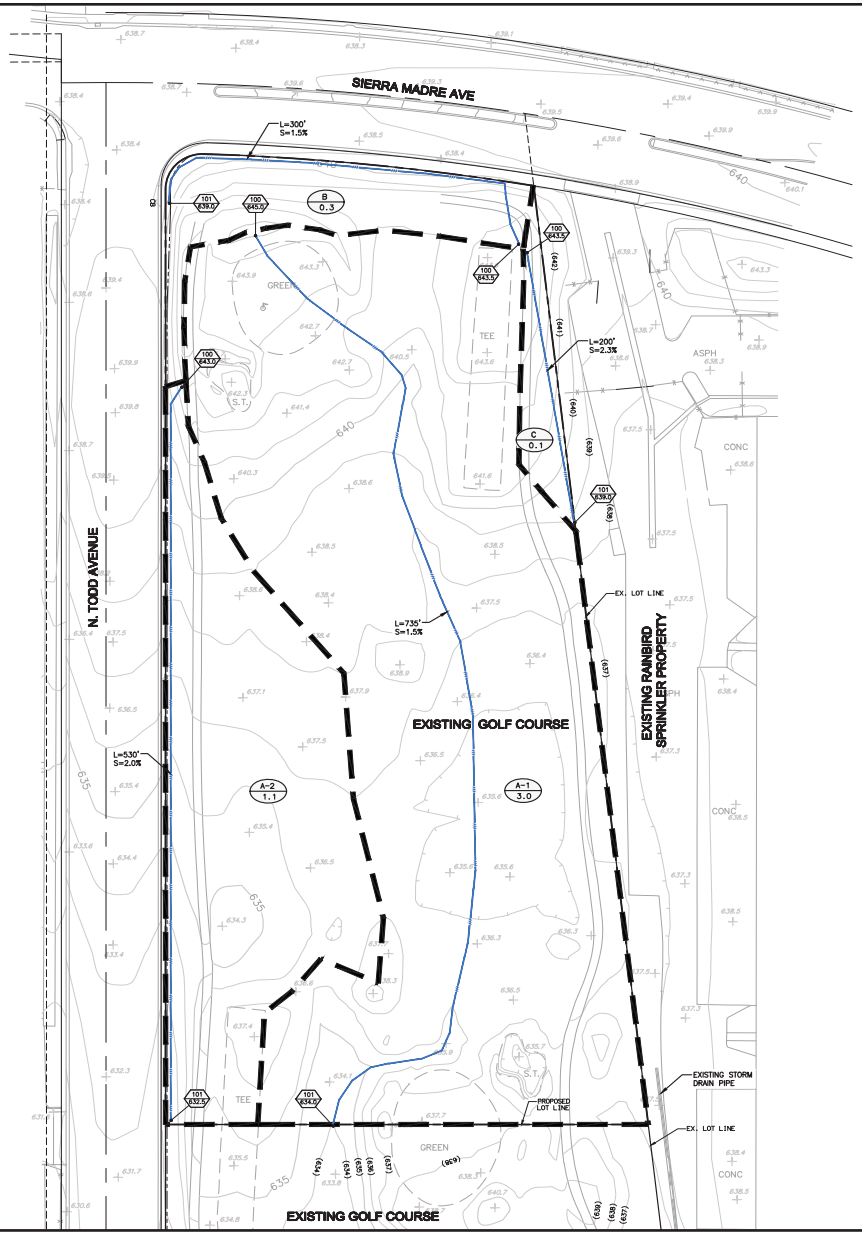
Drainage Area[1]	Area (acres)	Description	25-Year Runoff Peak Flow[2]	50-Year Runoff Peak Flow[2]
Drainage Area A-1	3.0	The majority of the drainage at the Specific Plan Area flows through the existing golf course to ultimately outlet to North Todd Avenue approximately 200 feet south of the proposed Specific Plan Area property line.	8.6	10.5
Drainage Area A-2	1.1	The second largest drainage area is in the southwest portion of the Specific Plan Area adjacent to North Todd Avenue. The drainage path for Drainage Area A-2 is similar to Drainage Area A-1.	3.6	4.5
Drainage Area B	0.3	The third largest drainage area is in the north portion of the Specific Plan Area adjacent to North Todd Avenue. The drainage path for Drainage Area B is similar to Drainage Area A-1.	1.1	1.2
Drainage Area C	0.1	The smallest drainage area is located northeast portion of the Specific Plan Area and drains to the Rainbird property to the east.	0.3	0.4

Notes:
1. Refer to Exhibit 5.6-1, *Existing Drainage Conditions*, for a mapping of drainage areas/locations.
2. Peak flow shown in cubic feet per second (cfs).

Source: Proactive Engineering Consultants, *California Grand Villages Azusa Greens Preliminary Hydrology Study*, May 2017.

No underground storm drain facilities are currently present within the Specific Plan Area. Instead, existing runoff sheet flows to surrounding street curb and gutter as well as surrounding properties. Approximately 80 percent of the Specific Plan Area drains towards North Todd Avenue for collection and conveyance southerly via the street curb and gutter. Flows continue south towards 10th Street and are then diverted easterly into the railroad right-of-way. Ultimate flows discharge into the San Gabriel River located southwest of the Site.

According to the Hydrology Study, no off-site flows currently drain onto the Specific Plan Area. Based on the Site's soil type (Hanford Silt Loam), the Site's existing infiltration rate is estimated to range from 6.3 to 7.2 inches per hour.



EXISTING HYDROLOGY SUMMARY

Subarea	Area (ac)	Flow Length (ft)	Flow Path Slope	50-yr isohyet (in)	% Imp	Soil Type	Q 25 (cfs)	Q 50 (cfs)
A1	3.0	735	0.015	7.6	1.0	8	8.6	10.5
A2	1.1	530	0.020	7.6	1.0	8	3.6	4.5
B	0.3	300	0.015	7.6	1.0	8	1.1	1.2
C	0.1	200	0.023	7.6	1.0	8	0.3	0.4
						Total:	13.6	16.6

LEGEND

WATERSHED BOUNDARY
DRAINAGE COURSE
FLOW DIRECTION AREA
A 1.0 — DRAINAGE AREA ACREAGE
101 785.5 — NODE ELEVATION

Source: PROACTIVE Engineering Consultants, *California Grand Villages Azusa Greens Preliminary Hydrology Study*, May 2017.

NOT TO SCALE

Michael Baker INTERNATIONAL

11/18 | JN 162172

ENVIRONMENTAL IMPACT REPORT
CALIFORNIA GRAND VILLAGE PROJECT

Existing Drainage Conditions

Exhibit 5.6-1

FLOODPLAIN MAPPING

The Site is published on Flood Insurance Rate Map (FIRM) Number 06037C1420F, dated September 26, 2008, and is located in Zone X, which is defined as areas of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods.[2] The Zone X designation is also used to identify base floodplains of lesser hazards, such as areas protected by levees from the one percent annual flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than one square mile. The Site is not located within a 100-year flood zone.

EXISTING STORMWATER QUALITY CONDITIONS

Nonpoint Source Pollutants

Nonpoint source pollutants have been characterized by the major categories below to assist in determining the pertinent data and its use. Nonpoint source pollution (NPS) comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters and ground waters. Nonpoint source pollution can include: excess fertilizers, herbicides and insecticides from agricultural lands and residential areas; oil, grease and toxic chemicals from urban runoff and energy production; sediment from improperly managed construction sites, crop and forest lands, and eroding streambanks; salt from irrigation practices and acid drainage from abandoned mines; bacteria and nutrients from livestock, pet wastes and faulty septic systems; and atmospheric deposition and hydromodification. A net effect of urbanization can be to increase pollutant export over naturally occurring conditions. The impact of the higher export affects the adjacent streams and also the water quality of downstream receiving waters. An important consideration in evaluating stormwater quality is to assess whether the beneficial use to the receiving waters is impaired. Receiving waters can assimilate a limited quantity of various constituent elements; however, there are thresholds beyond which the measured amount becomes a pollutant and results in an undesirable impact. Standard water quality categories of typical urbanization impacts are:

- *Sediment* – Sediment is made up of tiny soil particles that are washed or blown into surface waters. It is the major pollutant by volume in surface water. Suspended soil particles can cause the water to look cloudy or turbid. The fine sediment particles also act as a vehicle to transport other pollutants, including nutrients, trace metals, and hydrocarbons. Construction sites are the largest source of sediment for urban areas under development. Another major source of sediment is streambank erosion, which may be accelerated by increases in peak rates and volumes of run-off due to urbanization.

- *Nutrients* – Nutrients are a major concern for surface water quality, especially phosphorous and nitrogen, which can cause algal blooms and excessive vegetative growth. Of the two, phosphorus is usually the limiting nutrient that controls the growth of algae in lakes. The orthophosphorous form of phosphorus is readily available for plant growth. The ammonium form of nitrogen can also have severe effects on surface water quality. The ammonium is converted to nitrate and nitrite forms of nitrogen in a process called

[2] Federal Emergency Management Act, *Flood Insurance Rate Map, Map Number 06037C1420F*, effective September 26, 2008.

nitrification. This process consumes large amounts of oxygen, which can impair the dissolved oxygen levels in water. The nitrate form of nitrogen is very soluble and is found naturally at low levels in water. When nitrogen fertilizer is applied to lawns or other areas in excess of plant needs, nitrates can leach below the root zone, eventually reaching ground water. Orthophosphate from auto emissions also contributes phosphorus in areas with heavy automobile traffic. As a general rule of thumb, nutrient export is greatest from development sites with the most impervious areas. Other problems resulting from excess nutrients are: 1) surface algal scums; 2) water discolorations; 3) odors; 4) toxic releases; and 5) overgrowth of plants. Common measures for nutrients are total nitrogen, organic nitrogen, total Kjeldahl nitrogen (TKN), nitrate, ammonia, total phosphate, and total organic carbon (TOC).

- *Trace Metals* – Trace metals are primarily a concern because of their toxic effects on aquatic life, and their potential to contaminate drinking water supplies. The most common trace metals found in urban run-off are lead, zinc, and copper. Fallout from automobile emissions is also a major source of lead in urban areas. A large fraction of the trace metals in urban run-off are attached to sediment; this effectively reduces the level, which is immediately available for biological uptake and subsequent bioaccumulation. Metals associated with sediment settle out rapidly and accumulate in the soils. Urban run-off events typically occur over a shorter duration, reducing the amount of exposure, which could be toxic to the aquatic environment. The toxicity of trace metals in run-off varies with the hardness of the receiving water. As total hardness of the water increases, the threshold concentration levels for adverse effects increases.

- *Oxygen-Demanding Substances* – Aquatic life is dependent on the dissolved oxygen in the water. When organic matter is consumed by microorganisms, dissolved oxygen is consumed in the process. A rainfall event can deposit large quantities of oxygen-demanding substance in lakes and streams. The biochemical oxygen demand of typical urban run-off is on the same order of magnitude as the effluent from an effective secondary wastewater treatment plant. A problem from low dissolved oxygen (DO) results when the rate of oxygen-demanding material exceeds the rate of replenishment. Oxygen demand is estimated by direct measure of DO and indirect measures such as biochemical oxygen demand (BOD), chemical oxygen demand (COD), oils and greases, and TOC.

- *Bacteria* – Bacteria levels in undiluted urban run-off exceed public health standards for water contact recreation almost without exception. Studies have found that total coliform counts exceeded the U.S. Environmental Protection Agency's (EPA) water quality criteria at almost every site and almost every time it rained. The coliform bacteria that are detected may not be a health risk by themselves but are often associated with human pathogens.

- *Oil and Grease* – Oil and grease contain a wide variety of hydrocarbons, some of which could be toxic to aquatic life in low concentrations. These materials initially float on water and create the familiar rainbow-colored film. Hydrocarbons have a strong affinity for sediment and quickly become absorbed to it. The major source of hydrocarbons in urban run-off is through leakage of crankcase oil and other lubricating agents from automobiles. Hydrocarbon levels are highest in the run-off from parking lots, roads, and service stations. Residential land uses generate less hydrocarbon export, although illegal disposal of waste oil into stormwater can be a local problem.

- *Other Toxic Chemicals* – Priority pollutants are generally related to hazardous wastes or toxic chemicals and can be sometimes detected in stormwater. Priority pollutant scans have been conducted in previous studies of urban run-off, which evaluated the presence of over 120 toxic chemicals and compounds. The scans rarely revealed toxins that exceeded the current safety criteria. The urban run-off scans were primarily conducted in suburban areas not expected to have many sources of toxic pollutants (with the possible exception of illegally disposed or applied household hazardous wastes). Measures of priority pollutants in stormwater include: 1) phthalate (plasticizer compound); 2) phenols and creosols (wood preservatives); 3) pesticides and herbicides; 4) oils and greases; and 5) metals.

CHARACTERISTICS OF SURFACE WATER QUALITY

Standard parameters, which can assess the quality of stormwater, provide a method of measuring impairment. A background of these typical characteristics assists in understanding water quality requirements. The quantity of a material in the environment and its characteristics determine the degree of availability as a pollutant in surface run-off. In an urban environment, the quantity of certain pollutants in the environment is a function of the intensity of the land use. For instance, a high density of automobile traffic makes a number of potential pollutants (such as lead and hydrocarbons) more available. The availability of a material, such as a fertilizer, is a function of the quantity and the manner in which it is applied. Applying fertilizer in quantities that exceed plant needs leaves the excess nutrients available for loss to surface or ground water.

The physical properties and chemical constituents of water traditionally have served as the primary means for monitoring and evaluating water quality. Evaluating the condition of water through a water quality standard refers to its physical, chemical, or biological characteristics. Water quality parameters for stormwater comprise a long list and are classified in many ways. Typically, the concentration of an urban pollutant, rather than the annual load of that pollutant, is required to assess a water quality problem. Some of the physical, chemical, or biological characteristics that evaluate the quality of the surface run-off are listed below.

- *Dissolved Oxygen* – Dissolved oxygen (DO) in the water has a pronounced effect on the aquatic organisms and the chemical reactions that occur. It is one of the most important biological water quality characteristics in the aquatic environment. The DO concentration of a water body is determined by the solubility of oxygen, which is inversely related to water temperature, pressure, and biological activity. DO is a transient property that can fluctuate rapidly in time and space and represents the status of the water system at a particular point and time of sampling. The decomposition of organic debris in water is a slow process, as are the resulting changes in oxygen status. The oxygen demand is an indication of the pollutant load and includes measurements of biochemical oxygen demand or chemical oxygen demand.

- *Biochemical Oxygen Demand* – The biological oxygen demand (BOD) is an index of the oxygen-demanding properties of the biodegradable material in the water. Samples are taken from the field and incubated in the laboratory at 20°C, after which the residual dissolved oxygen is measured. The BOD value commonly referenced is the standard 5-day values. These values are useful in assessing stream pollution loads and for comparison purposes.

- *Chemical Oxygen Demand* – The chemical oxygen demand (COD) is a measure of the pollutant loading in terms of complete chemical oxidation using strong oxidizing agents. It can be determined quickly because it does not rely on bacteriological actions as with BOD. COD does not necessarily provide a good index of oxygen demanding properties in natural waters.

- *Total Dissolved Solids* – Total dissolved solids (TDS) concentration is determined by evaporation of a filtered sample to obtain residue whose weight is divided by the sample volume. The TDS of natural waters varies widely. There are several reasons why TDS is an important indicator of water quality. Dissolved solids affect the ionic bonding strength related to other pollutants such as metals in the water. TDS are also a major determinant of aquatic habitat. TDS affects saturation concentration of dissolved oxygen and influences the ability of a water body to assimilate wastes. Eutrophication rates depend on TDS.

- *pH* – The pH of water is the negative log, base 10, of the hydrogen ion (H^+) activity. A pH of 7 is neutral; a pH greater than 7 indicates alkaline water; a pH less than 7 represents acidic water. In natural water, carbon dioxide reactions are some of the most important in establishing pH. The pH at any one time is an indication of the balance of chemical equilibrium in water and affects the availability of certain chemicals or nutrients in water for uptake by plants. The pH of water directly affects fish and other aquatic life; generally, toxic limits are pH values less than 4.8 and greater than 9.2.

- *Alkalinity* – Alkalinity is the opposite of acidity, representing the capacity of water to neutralize acid. Alkalinity is also linked to pH and is caused by the presence of carbonate, bicarbonate, and hydroxide, which are formed when carbon dioxide is dissolved. A high alkalinity is associated with a high pH and excessive solids. Most streams have alkalinities less than 200 milligrams per liter (mg/l). Ranges of alkalinity of 100-200mg/l seem to support well-diversified aquatic life.

- *Specific Conductance* – The specific conductivity of water, or its ability to conduct an electric current, is related to the total dissolved ionic solids. Long term monitoring of project waters can develop a relationship between specific conductivity and TDS. Its measurement is quick and inexpensive and can be used to approximate TDS. Specific conductivities in excess of 2000 microohms per centimeter (µohms/cm) indicate a TDS level too high for most freshwater fish.

- *Turbidity* – The clarity of water is an important indicator of water quality that relates to the alkalinity of photosynthetic light to penetrate. Turbidity is an indicator of the property of water that causes light to become scattered or absorbed. Turbidity is caused by suspended clays and other organic particles. It can be used as an indicator of certain water quality constituents, such as predicting sediment concentrations.

- *Nitrogen* – Sources of nitrogen in stormwater are from the additions of organic matter to water bodies or chemical additions. Ammonia and nitrate are important nutrients for the growth of algae and other plants. Excessive nitrogen can lead to eutrophication since nitrification consumes dissolved oxygen in the water. Nitrogen occurs in many forms. Organic nitrogen breaks down into ammonia, which eventually becomes oxidized to nitrate-nitrogen, a form available for plants. High concentrations of nitrate-nitrogen (N/N) in water can stimulate growth of algae and other aquatic plants, but if phosphorus (P) is

present, only about 0.30 mg/l of nitrate-nitrogen is needed for algal blooms. Some fish life can be affected when nitrate-nitrogen exceeds 4.2 mg/l. There are a number of ways to measure the various forms of aquatic nitrogen. Typical measurements of nitrogen include Kjeldahl nitrogen (organic nitrogen plus ammonia), ammonia, nitrite plus nitrate, nitrite, and nitrogen in plants. The principal water quality criterion for nitrogen focuses on nitrate and ammonia.

- *Phosphorus* – Phosphorus is an important component of organic matter. In many water bodies, phosphorus is the limiting nutrient that prevents additional biological activity from occurring. The origin of this constituent in urban stormwater discharge is generally from fertilizers and other industrial products. Orthophosphate is soluble and is the only biologically available form of phosphorus. Since phosphorus strongly associates with solid particles and is a significant part of organic material, sediments influence concentration in water and are an important component of the phosphorus cycle in streams. Important methods of measurement include detecting orthophosphate and total phosphorus.

Regional Surface Water Quality

The RWQCB's Basin Plan designates "beneficial uses" for lakes, rivers, streams, and other surface waters. There is a total of 24 different categorizations that can apply, ranging from groundwater recharge to municipal and domestic water supply to water contact recreation. The following is a list of the San Gabriel's known beneficial uses, which may be existing, potential, and intermittent and not necessarily applicable to all reaches of the San Gabriel watershed: [3,4]

- *Municipal and Domestic Water Supply:* Waters are used for community, military, or individual water supply systems including, but not limited to, drinking water supply.

- *Industrial Service Supply:* Waters are used 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.

- *Industrial Process Supply:* Waters are used for industrial activities that depend primarily on water quality.

- *Groundwater Recharge:* Waters are used for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.

- *Agricultural Supply:* Waters are used for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

[3] State Water Resources Control Board, *San Gabriel River Watershed*, https://www.waterboards.ca.gov/rwqcb4/water_issues/programs/regional_program/Water_Quality_and_Watersheds/san_gabriel_river_watershed/summary.shtml, accessed August 7, 2018.

[4] State Water Resources Control Board, *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties*, Chapter 2 (Beneficial Uses), November 10, 2011.

- *Water Contact Recreation:* Waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and use of natural hot springs.

- *Non-Contact Water Recreation:* Waters are used 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, or aesthetic enjoyment in conjunction with the above activities.

- *Warm Water Habitat:* Waters support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

- *Cold Water Habitat:* Waters support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

- *Spawning:* Waters support high quality aquatic habitats necessary for reproduction and early development of fish and wildlife.

- *Wildlife Habitat:* Waters 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.

- *Protection of Rare, Threatened, or Endangered Species:* Waters support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under State or Federal law as rare, threatened, or endangered.

Regional Groundwater Quality

Groundwater quality within the San Gabriel Groundwater Basin has continued to degrade from background levels. Much of this quality reduction is the result of ground disposal of volatile organic compounds (VOCs) used primarily as solvents in industrial and commercial activities dating back to World War II.[5] Agricultural uses introduce pesticides and fertilizers into the groundwater system and commercial/industrial uses often rely on underground storage tanks that often leak over time, releasing petroleum fuels, solvents, and various hazardous materials.

The seriousness of San Gabriel Groundwater Basin's degraded regional groundwater quality was revealed in 1979, when high concentrations of VOCs were discovered in the City. Besides VOCs, key constituents of concern in the San Gabriel Basin include: TDS, nitrate, perchlorate and Nitrosodimethylamine (NDMA). Nitrate is also an issue for the San Gabriel Basin, as concentrations exceed the nitrate maximum contaminant level (MCL) in western portion of the basin west of Alhambra Wash, in the eastern portion of basin east of Little Dalton Wash, and in the

[5] San Gabriel Basin Water Quality Authority, *San Gabriel Basin Groundwater Quality Management and Remediation Plan "§406 Plan,"* page 14, February 21, 2018.

vicinity of the mouth of Puente Valley.[6] Water contaminated with nitrates is either blended with other sources or not used. In addition to VOCs and nitrate, perchlorate and NDMA have been detected in concentrations above applicable notification levels in wells from the Main San Gabriel Basin. In January 2002, 22 wells were removed from service due to unacceptable levels of perchlorate. Perchlorate treatment facilities are currently online. During 1998, eight local wells were found to contain levels of NDMA above the action level of 2 parts per thousand (ppt). Three facilities are currently in operation to treat NDMA.

As of this writing, there is no established Groundwater Sustainability Agency or Groundwater Sustainability Plan for the San Gabriel Groundwater Basin. Refer to Section 5.6.2, *Regulatory Setting*, for a discussion concerning the Sustainable Groundwater Management Act.

Existing On-Site Stormwater Quality

As discussed in Section 3.0, *Project Description*, the Site is currently developed as a private golf course. According to the *Phase I Environmental Site Assessment* (EEI Engineering Solutions, June 2017), no previous assessments on the project site have indicated contaminants of concern in soil, soil gas, and groundwater beneath the site are at concentrations greater than California MCLs; refer to Appendix 11.7, *Phase I Environmental Site Assessment*. The Site is not identified as a contributor to regional groundwater conditions and is not designated a Responsible Party to Superfund actions. Thus, the Site is not currently considered a source of pollution.

The San Gabriel River and San Pedro Bay are classified as impaired water bodies and have been placed on the 303(d) list of impaired waters for the following pollutants: copper, dioxin, nickel, dissolved oxygen, coliform bacterial, pH, cyanide, lead, indicator bacteria, chlordane, DTT, PCBs, and sediment toxicity. Since the Site is a tributary to the San Gabriel River, the Site is a contributor of pollutants to the impairments within the San Gabriel River and Estuary, as well as the San Pedro Bay. Table 5.6-2, *Existing Impaired Watershed Reaches*, describes existing impaired watershed reaches and identified pollutants/stressors.

Table 5.6-2
Existing Impaired Watershed Reaches

Reach	Pollutant/Stressor
San Gabriel Estuary	Copper, Dioxin, Nickel, and Dissolved Oxygen
San Gabriel River Reach 1 (Estuary to Firestone)	Coliform Bacteria, pH
San Gabriel River Reach 2 (Estuary to Firestone)	Coliform Bacteria, Cyanide, Lead
San Gabriel River Reach 3 (Firestone to Whittier Narrows Dam)	Indicator Bacteria
San Pedro Bay Near/Off-shore Zones	Chlordane, DTT, PCBs, and Sediment Toxicity

Source: State Water Resources Control Board, *Category 5 2012 California 303(d) List of Water Quality Limited Segments*, https://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/category5_report.shtml, accessed August 8, 2018.

[6] Main San Gabriel Basin Watermaster, *Salt and Nutrient Management Plan for the San Gabriel Valley Groundwater Basin*, page 36, February 2016.

5.6.2 REGULATORY SETTING

FEDERAL LEVEL

Clean Water Act

The principal law governing pollution of the nation's surface waters is the Federal Water Pollution Control Act (Clean Water Act [CWA]). Originally enacted in 1948, it was amended in 1972 and has remained substantially the same since. The CWA consists of two major parts: provisions that authorize Federal financial assistance for municipal sewage treatment plant construction and regulatory requirements that apply to industrial and municipal dischargers. The CWA authorizes the establishment of effluent standards on an industry basis. The CWA also requires states to adopt water quality standards that "consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses."

The CWA forms the basic national framework for the management of water quality and the control of pollution discharges; it provides the legal framework for several water quality regulations, including the NPDES, effluent limitations, water quality standards, pretreatment standards, antidegradation policy, nonpoint-source discharge programs, and wetlands protection. The EPA has delegated the responsibility for administration of portions of the CWA to State and regional agencies.

Impaired Water Bodies

CWA Section 303(d) and California's Porter-Cologne Water Quality Control Act (described below) require that the State establish the beneficial uses of its State waters and to adopt water quality standards to protect those beneficial uses. Section 303(d) establishes a TMDL, which is the maximum quantity of a contaminant that a water body can maintain without experiencing adverse effects, to guide the application of State water quality standards. Section 303(d) also requires the State to identify "impaired" streams (water bodies affected by the presence of pollutants or contaminants) and to establish the TMDL for each stream.

National Pollutant Discharge Elimination System

To achieve its objectives, the CWA is based on the concept that all discharges into the nation's waters are unlawful, unless specifically authorized by a permit. The NPDES is the permitting program for discharge of pollutants into surface waters of the United States under CWA Section 402. Thus, industrial and municipal dischargers (point source discharges) must obtain NPDES permits from the appropriate RWQCB (i.e., the Los Angeles region). The existing NPDES (Phase I) stormwater program requires municipalities serving more than 1,000,000 persons to obtain a NPDES stormwater permit for any construction project larger than five acres. Proposed NPDES stormwater regulations (Phase II) expand this existing national program to smaller municipalities with populations of 10,000 persons or more and construction sites that disturb more than one acre. For other dischargers, such as those affecting groundwater or from non-point sources, a Report of Waste Discharge must be filed with the RWQCB. For specified situations, some permits may be waived and some discharge activities may be handled through being included in an existing General Permit.

National Flood Insurance Program

Congress passed the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. These Acts are intended to reduce the need for large publicly funded flood control structures and disaster relief by restricting development on floodplains.

The National Flood Insurance Program (NFIP) provides a means for property owners to financially protect themselves from flood damage. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the program. Participating communities agree to adopt and enforce ordinances that meet or exceed Federal Emergency Management Agency (FEMA) requirements to reduce the risk of flooding. The County of Los Angeles and City of Azusa are participants and must adhere to the NFIP.[7]

Through its Flood Hazard Mapping Program, FEMA identifies flood hazards, assesses flood risks and partners with states and communities to provide accurate flood hazard and risk data. Flood Hazard Mapping is an important part of the NFIP, as it is the basis of the NFIP regulations and flood insurance requirements. FEMA maintains and updates data through FIRMs and risk assessments. A FIRM is an official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community.

A Special Flood Hazard Area (SFHA) is an area within a floodplain having a one percent or greater chance of flood occurrence within any given year (commonly referred to as the 100-year flood zone). SFHAs are delineated on flood hazard boundary maps issued by FEMA. The Flood Disaster Protection Act of 1973 and the National Flood Insurance Reform Act of 1994 make flood insurance mandatory for most properties in SFHAs.

STATE LEVEL

California Toxics Rule

The California Toxics Rule is a Federal regulation issued by the EPA providing water quality criteria for potentially toxic constituents in receiving waters with human health or aquatic life designated uses in the State of California. California Toxics Rule criteria are applicable to the receiving water body and therefore must be calculated based upon the probable hardness values of the receiving waters for evaluation of acute (and chronic) toxicity criteria. At higher hardness values for the receiving water, 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.

Porter-Cologne Water Quality Control Act

The CWA places the primary responsibility for the control of surface water pollution and for planning the development and use of water resources with the states, although it establishes certain guidelines for the states to follow in developing their programs and allows the EPA to withdraw control from states with inadequate implementation mechanisms.

[7] Federal Emergency Management Act, *Community Status Book Report: California Communities Participating in the National Flood Program*, https://www.fema.gov/cis/CA.html, accessed August 7, 2018.

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act (Water Code Sections 13000, et seq.). The Porter-Cologne Act grants the State Water Resources Control Board (SWRCB) and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface 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, or oil or petroleum product.

Each RWQCB must formulate and adopt a water quality control 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 a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

State Water Resources Control Board

The SWRCB administers water rights, water pollution control, and water quality functions throughout the State, while the RWQCBs conduct planning, permitting, and enforcement activities. For the proposed Project, the NPDES permit is divided into two parts: construction; and post-construction. Construction permitting is administered by the SWRCB, while post-construction permitting is administered by the RWQCB. In California, NPDES permits are also referred to as waste discharge requirements that regulate discharges to waters of the United States.

CONSTRUCTION GENERAL PERMIT ORDER 2009-0009-DWQ

On November 16, 1990, the EPA published final regulations that established stormwater permit application requirements for specified categories of industries. The regulations provide that discharges of stormwater to waters of the United States from construction projects are effectively prohibited unless the discharge complies with an NPDES Permit. On August 19, 1999, the State Water Board reissued the General Construction Stormwater Permit (Water Quality Order 99-08-DWQ). On December 8, 1999, the State Water Board amended Order 99-08-DWQ to apply to sites as small as one acre.

Dischargers whose projects disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Discharges of Stormwater Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore a facility's original line, grade, or capacity.

To obtain coverage under the Construction General Permit, Permit Registration Documents (PRDs), including a Notice of Intent (NOI), Risk Assessment, Site Map, and Storm Water Pollution Prevention Plan (SWPPP), among others, must be filed with the SWRCB prior to the commencement of construction activity. The NOI would notify the SWRCB of the applicant's intent to comply with the Construction General Permit. The SWPPP, which must be prepared by a certified Qualified SWPPP Developer (QSD), would include a list of Best Management Practices

(BMPs)[8] the discharger would use to protect stormwater run-off and the placement of those BMPs. Additionally, the project's SWPPP must contain a visual monitoring program and a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs.

Groundwater Management Act

In 1992, the State Legislature provided for more formal groundwater management with the passage of Assembly Bill (AB) 3030, the Groundwater Management Act (Water Code Section 10750, et seq.). Groundwater management, as defined in DWR's Bulletin 118 Update 2003, is the planned and coordinated monitoring, operation, and administration of a groundwater basin, or portion of a basin, with the goal of long-term groundwater resource sustainability. Groundwater management needs are generally identified and addressed at the local level in the form of Groundwater Management Plans (GMP). The Act provides local water agencies with procedures to develop a GMP to enable those agencies to manage their groundwater resources efficiently and safely while protecting the quality of supplies. Under the Act, development of a GMP by a local water agency is voluntary.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) established a framework for sustainable, local groundwater management. SGMA requires groundwater-dependent regions to halt overdraft and bring basins into balanced levels of pumping and recharge. With passage of the SGMA, the Department of Water Resources launched the Sustainable Groundwater Management (SGM) Program to implement the law and provide ongoing support to local agencies around the state. The SGMA:

- Establishes a definition of "sustainable groundwater management";
- Requires that a Groundwater Sustainability Plan be adopted for the most important groundwater basins in California;
- Establishes a timetable for adoption of Groundwater Sustainability Plans;
- Empowers local agencies to manage basins sustainably;
- Establishes basic requirements for Groundwater Sustainability Plans; and
- Provides for a limited state role.

REGIONAL LEVEL

Los Angeles Regional Water Quality Control Board

The Los Angeles RWQCB develops and enforces water quality objectives and implementation plans that safeguard the quality of water resources in its region. Its duties include developing "basic

[8] The EPA defines BMPs as "a practice or combination of practices that are determined to be the most effective and practicable (including technological, economic, and institutional considerations) means of controlling point and nonpoint source pollutants at levels compatible with environmental quality goals." BMPs involve programs and policies, including structural controls that are implemented to control the discharge of pollutants. (U.S. Environmental Protection Agency Website, *Clean Watersheds Needs Survey 2000 Report to Congress, Glossary*, https://www.epa.gov/sites/production/files/2015-06/documents/2003_8_28_mtb_cwns_2000rtc_cwns2000-glossary.pdf, accessed August 7, 2018).

plans" for its hydrologic area, issuing waste discharge requirements, taking enforcement action against violators, and monitoring water quality.

The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the U.S., as authorized by the CWA. Point sources are discrete conveyances such as pipes or man-made ditches. Industrial, municipal, and other similar facilities must obtain permits if their discharges go directly to surface waters. The NPDES permit program is administered by the RWQCB. Polluted stormwater run-off is commonly transported through Municipal Separate Storm Sewer Systems (MS4s). This run-off is often untreated and discharged into local water bodies. The proposed Project is considered a "Designated Project" as it disturbs more than one acre of area and adds more than 10,000 square feet of impervious surface area. It also falls under this description as it meets the requirements of a "Redevelopment Project" and is thus subject to the Los Angeles NPDES Permit requirements (Permit No. CAS004001, Order No. R4-2012-0175-A01, as amended by WQ 2015-0075). The Los Angeles NPDES Permit requires development of a stormwater management program. Phase I of the stormwater management program requires medium and large cities, or certain counties with populations of 100,000 or more to obtain NPDES permit coverage for their stormwater discharges. Phase II requires regulated small MS4s in urbanized areas, as well as small MS4s outside the urbanized areas that are designated by the permitting authority, to obtain NPDES permit coverage for their stormwater discharges. Generally, Phase I MS4s are covered by individual permits and Phase II MS4s are covered by a general permit. Each regulated MS4 is required to develop and implement a stormwater management program (SWMP) to reduce the contamination of stormwater run-off and prohibit illicit discharges.

Non-Point Source Pollution Control Program

The purpose of the Non-Point Source Pollution Control Program is to improve the State's ability to effectively manage non-point source pollution and conform to the requirements of the CWA and the Federal Coastal Zone Act Reauthorization Amendments of 1990. These documents were developed by staff of the SWRCB's Division of Water Quality and the California Coastal Commission, in coordination with the RWQCBs and staff from over 20 other State agencies.

LOCAL LEVEL

City of Azusa General Plan

City policies pertaining to hydrology and water quality are contained in the Built Environment Element of the General Plan. These goals and policies include, but are not limited to, the following:

GOALS AND POLICIES

Water

Goal 2 – Provide a water supply system that is able to meet the projected water demands; upgrade and expand water treatment, supply, and distribution facilities; and pursue funding sources to reduce the cost of water provision for the City.

Policy 2.7: Continue the City's water conservation efforts; review programs periodically and modify and/or expand them as appropriate and feasible.

Policy 2.10: Require the use of reclaimed water for landscaped irrigation, grading, and other non-contact uses in new developments, where available or expected to be available.

Storm Drainage

Goal 2 – Provide a flood control system that is able to support the permitted land uses while preserving the public safety; upgrade existing deficient systems; and pursue funding sources to reduce the costs of flood control provision in the City.

Policy 4.1: Maintain existing public storm drains and flood control facilities, upgrade and expand storm drain and flood control facilities.

Policy 4.4: Monitor the demands and manage development to mitigate impacts and/or facilitate improvements to the storm drainage system.

Policy 4.7: Require improvements to the existing storm drain and flood control facilities necessitated by new development to be borne by the new development benefiting from the improvements, either through the payment of fees, or the actual cost of construction, or both in accordance with State Nexus legislation.

Policy 4.8: Require new developments to employ the most efficient drainage technology to increase ground percolation, control drainage, and minimize damage to environmentally sensitive areas.

Policy 4.10: Encourage using construction methods and technologies that will reduce the size or decrease the number of impervious surfaces in both new development and the retro-fit of existing development.

City of Azusa Municipal and Development Code

Municipal Code Chapter 60, *Stormwater and Urban Runoff Pollution Prevention*, of the Municipal Code is intended to protect the health and safety of the residents of the city and county by protecting the beneficial uses, marine and river habitats, and ecosystems of receiving waters within the city from pollutants carried by stormwater and non-stormwater discharges. Municipal Code Chapter 60 is intended to enhance and protect the water quality of the receiving waters of the city and the United States, consistent with the Clean Water Act. The Project would add more than 5,000 square feet of impervious surface to the Site and is thus identified as a "regulated redevelopment project" by the Municipal Code.

Chapter 60-13, Regulated development or redevelopment projects.

(a) Prior to the construction of a regulated development or redevelopment project, such project shall be reviewed by the city for its potential to discharge pollutants to the municipal storm drain system. Such review shall be conducted in accordance with development planning requirements established by the regional board or its executive officer, pursuant to the municipal NPDES permit.

(b) Once a regulated development or redevelopment project has been reviewed for its potential to discharge pollutants to the municipal storm drain system, the city shall require appropriate BMPs to be implemented during construction and following project completion. The prescription of BMPs shall be in keeping with the Standard Urban Storm Water Mitigation Plan requirements established by the regional board or its executive director, pursuant to the municipal NPDES permit.

5.6.3 IMPACT THRESHOLDS AND SIGNIFICANCE CRITERIA

Appendix G of the *CEQA Guidelines* contains the Environmental Checklist form that was used during the preparation of this EIR. Accordingly, a project may create a significant adverse environmental impact if it would:

a) Violate any water quality standards or waste discharge requirements (refer to Impact Statements HWQ-1 and HWQ-2);

b) Substantially deplete groundwater supplies or substantially interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted) (refer to Impact Statement HWQ-3);

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site (refer to Impact Statement HWQ-1 and HWQ-2);

d) 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 run-off in a manner that would result in flooding on- or off-site (refer to Impact Statement HWQ-2);

e) Create or contribute to run-off water that would exceed the capacity of existing or planned stormwater drainage systems or provision of substantial additional sources of polluted run-off (refer to Impact Statement HWQ-2);

f) Otherwise substantially degrade water quality (refer to Impact Statements HWQ-1 and HWQ-2);

g) 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 (refer to Section 8.0);

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows (refer to Section 8.0);

i) 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 (refer to Impact Statement HWQ-4); and/or

j) Result in inundation by seiche, tsunami, or mudflow (refer to Section 8.0).

Based on these standards/criteria, the effects of the Project have been categorized as either a "less than significant impact" or a "potentially significant impact." If a potentially significant impact cannot be reduced to a less than significant level through the application of goals, policies, standards, or mitigation, it is categorized as a significant and unavoidable impact. The standards used to evaluate the significance of impacts are often qualitative rather than quantitative because appropriate quantitative standards are either not available for many types of impacts or are not applicable for some types of projects.

5.6.4 IMPACTS AND MITIGATION MEASURES

SHORT-TERM IMPACTS

HWQ-1 Would the Project's construction violate water quality standards or waste discharge requirements?

Impact Analysis: Project construction could result in short-term impacts to water quality associated with the handling, storage, and disposal of construction materials; maintenance and operation of construction equipment; and earthmoving activities. These activities, if not controlled, could result in on- and off-site soil erosion due to storm run-off or operation of mechanical equipment. Poorly maintained vehicles and heavy equipment leaking fuel, oil, antifreeze, or other vehicle-related fluids on the Site are also common sources of stormwater pollution and soil contamination. As discussed, the Site is tributary to the San Gabriel River watershed, which is included on the 303(d) list of impaired waters for copper, dioxin, nickel, dissolved oxygen, coliform bacterial, pH, cyanide, lead, indicator bacteria, chlordane, DTT, PCBs, and sediment toxicity; refer to Table 5.6-2.

To reduce short-term water quality impacts, the Project would be required to prepare and submit a Notice of Intent and a SWPPP to the SWRCB demonstrating compliance with the NPDES Construction General Permit. The Construction General Permit requires that non-stormwater discharges from construction sites be eliminated or reduced to the maximum extent practicable, that a SWPPP be developed governing Project construction activities for, and that routine inspections be performed of all stormwater pollution prevention measures and control practices being used at the Site, including inspections before and after storm events. As outlined in the SWPPP, the Project would be required to implement all construction BMPs to protect downstream properties and ensure compliance with the Construction General Permit. Upon construction completion, the Applicant would be required to submit a Notice of Termination to the SWRCB to indicate that construction has been completed.

Pursuant to Municipal Code Chapter 60-13, *Regulated development or redevelopment projects*, the City would review the Project for its potential to discharge pollutants to the storm drain system prior to construction. Once the Project is reviewed for its potential to discharge pollutants into the storm drain system, appropriate BMPs would be prescribed for implementation during Project construction. To further minimize the potential for accidental release during construction, the routine transport, use, and disposal of construction materials would be required to adhere to applicable State and local standards and regulations for handling, storage, and disposal of hazardous substances; refer to Section 5.7, *Hazards and Hazardous Materials*. Compliance with such measures

would prevent such substances from entering downstream water bodies via stormwater runoff and adversely affect existing water quality. Following conformance with the Construction General Permit, preparation of a SWPPP, and implementation of construction BMPs, the Project's short-term impacts to water quality and waste discharge requirements would be less than significant.

Standard Conditions of Approval: No standard conditions of approval are applicable.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

LONG-TERM OPERATIONAL IMPACTS

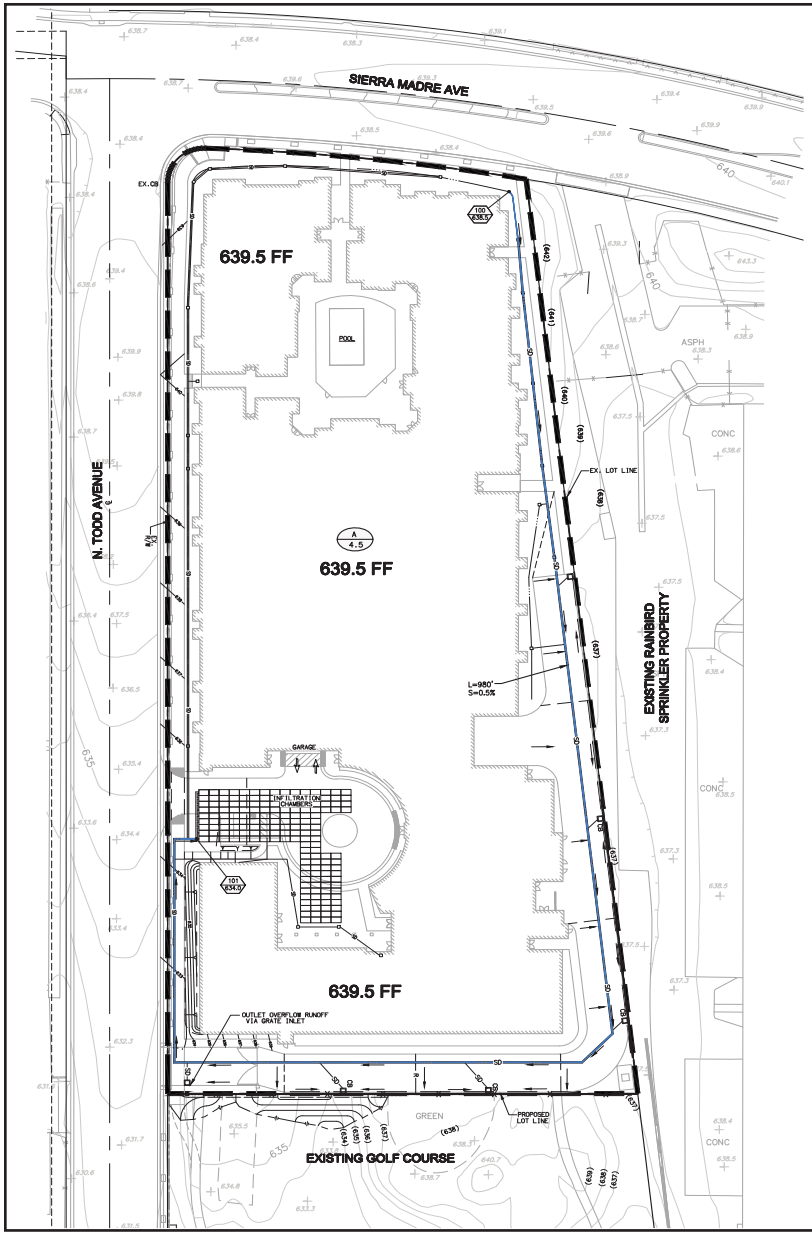
HWQ-2 Would Project operations result in increased run-off amounts and degraded water quality?

Impact Analysis:

PROPOSED LAND USE

The Project would replace an approximately 4.48-acre portion of the existing Azusa Greens Country Club with the proposed Senior Village. According to the Hydrology Study, Specific Plan implementation would add more than 10,000 square feet of new hardscapes within the Specific Plan Area, resulting in a 78 percent increase in impervious surfaces. At construction completion, the Specific Plan Area would consist of one drainage area that would drain to North Todd Avenue; refer to Exhibit 5.6-2, *Proposed Drainage Conditions*. To accomplish this, a series of parkway culverts would be constructed along the eastern, southern, and western limits of the proposed Senior Village to divert stormwater flows to underground stormwater storage units that allow for natural infiltration (i.e., Stormtech Infiltration Units) located beneath the Specific Plan Area's main entry/circular drop-off area. The underground stormwater storage units would be designed to completely store and infiltrate the 85th percentile storm event. When the underground stormwater storage units are completely full (i.e., any storm flows in excess of the 85th percentile storm event), excess flows would outlet to North Todd Avenue right-of-way for collection and conveyance southerly via the street curb and gutter. Flows would continue south towards 10th Street and then divert easterly into the railroad right-of-way. Ultimate flows would discharge into the San Gabriel River located southwest of the Site.

Improvements to the Golf Course Reconfiguration Area would not involve a substantial increase in impervious surfaces that would alter the existing drainage patterns or rate of drainage. Runoff would continue to sheet flow towards North Todd Avenue for collection and conveyance southerly via the street curb and gutter. Flows would continue south towards 10th Street and then divert easterly into the railroad right-of-way. Ultimate flows would discharge into the San Gabriel River located southwest of the Site.



PROPOSED HYDROLOGY SUMMARY

Subarea	Area (ac)	Flow Length (ft)	Flow Path Slope	50-yr isohyet (in)	% Imp	Soil Type	Q 25 (cfs)	Q 50 (cfs)
A	4.5	980	0.005	7.6	78	8	11.1	13.3

WATERSHED BOUNDARY
DRAINAGE COURSE
FLOW DIRECTION AREA
A / 1.0 — DRAINAGE AREA / ACREAGE
101 / 785.5 — NODE / ELEVATION

Source: PROACTIVE Engineering Consultants, *California Grand Villages Azusa Greens Preliminary Hydrology Study*, May 2017.

NOT TO SCALE

Michael Baker INTERNATIONAL

11/18 | JN 162172

ENVIRONMENTAL IMPACT REPORT
CALIFORNIA GRAND VILLAGE PROJECT

Proposed Drainage Conditions

Exhibit 5.6-2

STORMWATER DRAINAGE

In accordance with the County's Low Impact Development requirements, a 25-year and 50-year hydrology analysis has been conducted for the Specific Plan Area under its proposed condition. As a result of the increase of site imperviousness, the total runoff volume of the Specific Plan Area would increase but the peak discharge rates would not. As indicated in the Hydrology Study, the 25-year, 24-hour runoff volume would increase from 43,136 cubic feet to 85,251 cubic feet and the 50-year, 24-hour runoff volume would increase from 54,798 cubic feet to 98,360 cubic feet. However, Specific Plan implementation would result in a decrease in 25-year storm flow rates from: 8.6 cfs in Drainage Area A-1; 3.6 cfs in Drainage Area A-2; 1.1 cfs in Drainage Area B; and 0.3 cfs in Drainage Area C to 11.1 cfs overall; refer to Table 5.6-3, *Proposed Drainage Conditions*. 50-year storm flows experienced at the Project site would also decrease from: 10.5 cfs in Drainage Area A-1; 4.5 cfs in Drainage Area A-2; 1.2 cfs in Drainage Area B; and 0.4 cfs in Drainage Area C to 13.3 cfs overall; refer to Table 5.6-3.

Table 5.6-3
Proposed Drainage Conditions

Drainage Area[1]	Area (acres)	Description	25-Year Runoff Peak Flow[2]	50-Year Runoff Peak Flow[2]
Drainage Area A	4.5	Drainage Area A includes the entire Specific Plan Area and outlets to the surrounding street curb and gutter as it does in the existing conditions.	11.1	13.3

Notes:
1. Refer to Exhibit 5.6-2, *Proposed Drainage Conditions*, for a mapping of proposed drainage areas/locations.
2. Peak flow shown in cubic feet per second (cfs).

Source: Proactive Engineering Consultants, *California Grand Villages Azusa Greens Preliminary Hydrology Study*, May 2017.

This decrease in flow rate would be attributed to the proposed decrease in ground slope within the Specific Plan Area from approximately 1.5 percent to 0.5 percent, which would offset any increases in runoff resulting from the addition of impervious areas. Because the peak runoff rate would not increase, Specific Plan implementation would not result in an increase in runoff flow velocity. Further, according to the Hydrology Study, it is not likely that the Specific Plan Area's increase in 24-hour runoff volume would have any measurable impact on the downstream conveyance systems.

As indicated above, improvements to the Golf Course Reconfiguration Area would not involve a substantial increase in impervious surfaces that would alter the existing drainage patterns or rate of drainage. The Project's operational impacts to long-term stormwater drainage would be less than significant in this regard.

STORMWATER QUALITY

Based on the Specific Plan Area's proposed use (senior housing), potential pollutants anticipated to be generated from Project operations would likely include pesticides, oil and grease, trash and debris, and other pollutants of concern common to residential development. The proposed Golf Course Reconfiguration would not involve a change in use that would exacerbate water quality impacts over the long-term compared to existing conditions. As discussed, the Site is tributary to the San Gabriel

River watershed, which has placed on the 303(d) list of impaired waters for sediment toxicity, among other pollutants/stressors.

To prevent potential pollutants from affecting stormwater quality, the Project must obtain a NPDES permit (Permit No. CAS004001, Order No. R4-2012-0175-A01, as amended by WQ 2015-0075) and develop a stormwater management program, which specifies BMPs to reduce the discharge of pollutants in stormwater to the maximum extent practicable.

A WQMP has been prepared for the Specific Plan Area in compliance with the requirements of the NPDES permit; refer to Appendix 11.6. While sediment from the Specific Plan Area is not anticipated to increase, the WQMP and Specific Plan Section 7.3, *Storm Drainage*, include preliminary Project-specific BMPs to minimize stormwater pollutants of concern, including the installation of underground stormwater storage units within the Specific Plan Area that allow for natural infiltration (i.e., Stormtech Infiltration Units); refer to Exhibit 5.6-2. Stormtech Infiltration Units are characterized by a perforated arch shaped plastic chamber with an open bottom to allow for natural infiltration while enhancing total suspended solids removal. According to the WQMP, the proposed underground stormwater storage units would be fitted with a diversion manhole to ensure the silt, debris, and trash associated with "first flush" flows go into a single row of chambers. As a result, Project operations would not impact beneficial uses for the San Gabriel River.

It is the City's policy to require new developments to employ the most efficient drainage technology to increase ground percolation, control drainage, and minimize damage to environmentally sensitive areas (General Plan Storm Drainage Policy 4.8). Following construction of the proposed underground stormwater storage units and implementation of the required BMPs detailed in the WQMP and Specific Plan Section 7.3, the Project's operational impacts to stormwater quality would be less than significant.

Standard Conditions of Approval: No standard conditions of approval are applicable.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

GROUNDWATER SUPPLIES AND GROUNDWATER RECHARGE

HWQ-3 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)?

Impact Analysis: The Site overlies the San Gabriel Groundwater Basin and is currently developed as the Azusa Greens Country Club. As discussed, Specific Plan implementation would add more than 10,000 square feet of impervious surfaces within the Specific Plan Area, resulting in a 78 percent increase in impervious surfaces. Based on the Project's WQMP, stormwater flows would be diverted to underground stormwater storage units that allow for natural infiltration (i.e., Stormtech Infiltration Units) located beneath the Specific Plan Area's main entry/circular drop-off

area. Improvements to the Golf Course Reconfiguration Area would not involve a substantial increase in impervious surfaces that would result in the depletion of groundwater supplies. The Site is not located within a local groundwater recharge area and no groundwater extraction would occur as part of the Project. Thus, Project implementation would not result in any groundwater extraction or the depletion of groundwater supplies. Impacts would be less than significant in this regard.

Standard Conditions of Approval: No standard conditions of approval are applicable.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

FLOODING

HWQ-4 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?

Impact Analysis: The Site is located approximately 3.5 miles southwest of the Morris Dam and approximately 7 miles south of the San Gabriel Dam. According to the General Plan EIR, the Site is located within the San Gabriel and Morris Dam failure inundation zone. The San Gabriel and Morris Dams are owned by the Metropolitan Water District (MWD) and Los Angeles County Department of Public Works (LACDPW) Flood Control Division. These dams, as well as others in California, are continually monitored by various governmental agencies (such as the State of California Division of Safety of Dams and the U.S. Army Corps of Engineers) to guard against the threat of failure. Current design and construction practices and ongoing programs of review, modification, or total reconstruction of existing dams are intended to ensure that all dams are capable of withstanding the maximum credible earthquake (MCE). Therefore, the risk of exposure of persons or structures to loss, injury, or death as a result of dam failure would be less than significant.

Standard Conditions of Approval: No standard conditions of approval are applicable.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

5.6.5 CUMULATIVE IMPACTS

CEQA Guidelines Section 15355 requires an analysis of cumulative impacts, which are defined as, "two or more individual effects which, when considered together, are considerable, or which compound or increase other environmental impacts." As outlined in Table 4-1, *Cumulative Projects List*, and illustrated on Exhibit 4-1, *Cumulative Projects Map*, cumulative projects are located on both developed and undeveloped sites.

SHORT-TERM IMPACTS

- **Would construction-related activities associated with the Project and other related cumulative projects cause a cumulatively considerable violation of water quality standards or waste discharge requirements.**

Impact Analysis: Cumulative development identified in Table 4-1 would have the potential to affect water quality during the construction phase. Related cumulative development that disturbs one or more acre of soil would be required to obtain coverage under the NPDES General Construction Permit and would avoid and/or reduce construction-related impacts to water quality through preparation of a site-specific SWPPP, which identifies applicable BMPs. Each project would be required to comply with existing water quality standards at the time of development review and implement BMPs, as necessary. Thus, related development would not result in cumulatively considerable construction-related hydrology and water quality impacts.

As concluded above, Project construction could violate water quality standards or waste discharge requirements in the Site vicinity. The Project would disturb more than one acre of soil and, thus, would be required to obtain coverage under the NPDES General Construction Permit. Pursuant to General Construction Permit requirements, a site-specific SWPPP would be required to control construction-related pollutants from leaving the Site and affecting receiving waters. The SWPPP would include a list of BMPs that would be implemented to minimize environmental impacts and ensure that discharges during construction would not cause or contribute to any exceedance of water quality standards in the receiving waters. Thus, the Project would not result in significant cumulatively considerable construction-related hydrology and water quality impacts.

Standard Conditions of Approval: No standard conditions of approval are applicable.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

LONG -TERM OPERATIONAL IMPACTS

- **Would implementation of the Project and other related cumulative projects result in a cumulatively considerable increase in run-off amounts and degraded water quality?**

Impact Analysis: Project implementation, combined with related cumulative projects, would incrementally change regional drainage patterns and would increase potential for stormwater pollution. Cumulative projects involve both vacant and developed sites and therefore would involve both new development and redevelopment. Implementation of the cumulative projects identified in Table 4-1 and Exhibit 4-1 would result in changes to drainage patterns and amounts of impervious surfaces on each respective development site.

Cumulative development subject to NPDES Permit No. CAS004001, Order No. R4-2012-0175-A01, as amended by WQ 2015-0075, would be required to develop a stormwater management program that specifies BMPs to reduce the discharge of pollutants in stormwater to the maximum extent practicable. Cumulative development would be required to indicate how peak flows generated from each related project would be accommodated by existing and/or proposed storm

drainage facilities and would be required to identify measures to ensure that each project does not adversely affect the rate or quantity of runoff leaving each site or degrade water quality. Therefore, cumulative operational hydrology and water quality impacts would not be cumulatively considerable.

As concluded above, Specific Plan implementation could potentially result in increased run-off amounts and degraded water quality in the Site vicinity. However, the Specific Plan Area's proposed grading would improve existing storm flow rates. Underground stormwater storage units would be installed within the Specific Plan Area that allow for natural infiltration while enhancing total suspended solids removal. Installation of the underground stormwater storage units, as well as the Specific Plan Area's proposed grading, would ensure the additional hardscapes introduced through Project implementation would not result in significant impacts to stormwater drainage facilities. In conformance with NPDES requirements, the Project's impacts to stormwater quality would be reduced to the maximum extent feasible through implementation of Site-specific BMPs, as detailed in the Project's WQMP. Following conformance with NPDES permit requirements and implementation of all BMPs identified in the Project's WQMP, the Project would not result in significant cumulatively considerable operational hydrology and water quality impacts.

Standard Conditions of Approval: No standard conditions of approval are applicable.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

GROUNDWATER SUPPLIES AND GROUNDWATER RECHARGE

- **Would implementation of the Project and other related cumulative projects result in a cumulatively considerable impact to 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)?**

Impact Analysis: Cumulative development could result in changes to the amounts of impervious surfaces on each respective development site. Because approximately 84 percent of Basin is identified as urban, and the majority of the projects identified in Table 4-1 and Exhibit 4-1 are considered infill development, it is not anticipated that their implementation would substantially impact recharge of the San Gabriel Groundwater Basin.[9] Individual development projects would be required to mitigate drainage conditions through conformance with applicable local, State, and Federal regulatory requirements, as well as project-specific mitigation. Therefore, related development would not result in cumulatively considerable impacts to groundwater supplies and groundwater recharge.

Implementation of the Project, in conjunction with related cumulative projects, would result in changes to the amounts of impervious surfaces within the San Gabriel Groundwater Basin area. However, the Site is not located within a groundwater recharge area and no groundwater extraction

[9] Main San Gabriel Basin Watermaster, *Salt and Nutrient Management Plan for the San Gabriel Valley Groundwater Basin*, page 15, February 2016.

would occur as part of the Project. Therefore, the Project would not result in significant cumulatively considerable impacts to groundwater supplies and groundwater recharge.

Standard Conditions of Approval: No standard conditions of approval are applicable.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

FLOODING

- **Would implementation of the Project and other related cumulative projects result in a cumulatively considerable impact involving flooding?**

Impact Analysis: Although no new dams or reservoirs are included in Table 4-1 and Exhibit 4-1, encroaching land uses into identified flood hazard areas would incrementally increase the exposure of people, structures, and property to flooding as a result of dam failure. In addition, the placement of structures within flood hazard areas could contribute to the impediment or redirection of flood flow, which could also expose people, structures, and property to flooding. Cumulative development would be subject to conformance with all applicable local, State, and Federal regulatory requirements in place for flood risk management. As a result, related development would not result in cumulatively considerable impacts involving flooding.

No new dams or reservoirs are proposed as part of the Project. As concluded above, the risk of exposure of persons or structures to loss, injury, or death as a result of dam failure would be less than significant. Therefore, the Project would not result in significant cumulatively considerable impacts involving flooding.

Standard Conditions of Approval: No standard conditions of approval are applicable.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

5.6.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts related to hydrology and water quality have been identified.