3.1.5 Hydrology and Water Quality

The following section describes the existing conditions related to hydrology, drainage, groundwater, and water quality within the Project site and vicinity, and provides a discussion of existing conditions, applicable policies and regulations, and an analysis of Project effects. This discussion is based on the following reports prepared for the Project: Drainage Study (Chang Consultants 2021a; Appendix O); Stormwater Quality Management Plan (SWQMP; Chang Consultants 2021b; Appendix P); Groundwater Use Analysis (EnviroMINE 2021d; Appendix Q); Groundwater Investigation Report (Geo-Logic Associates 2021a; Appendix R); Sediment Load Analysis (Geo-Logic Associates 2021b; Appendix S); and Water Quality Evaluation Report (Geo-Logic Associates 2021c; Appendix T). Existing hydraulic conditions at the Project site are based on a Letter of Map Revision (LOMR) prepared by Rick Engineering Company that was approved by the County and Federal Emergency Management Agency (FEMA).

3.1.5.1 *Existing Conditions*

Regional Drainage and Climate

A watershed is defined as an area of land that drains to a common outlet. The Project site is located within the Sweetwater Hydrologic Unit (HU), which is one of 11 major watershed areas identified in the San Diego Regional Water Quality Control Board (RWQCB) Water Quality Control Plan for the San Diego Basin for Region 9 (Basin Plan, 1994 as amended; RWQCB 2016). The Sweetwater HU is an elongated area of about 230 square miles including the Sweetwater River, and is the largest of three watersheds that drain into San Diego Bay. The Sweetwater HU includes urbanized parts of the cities of Chula Vista, Lemon Grove, National City, and the unincorporated communities of Spring Valley and Rancho San Diego. Land uses throughout the Sweetwater HU include mostly undeveloped and open space lands (about 60 percent; Project Clean Water 2020). Major water bodies within the Sweetwater HU include the Sweetwater River, the Sweetwater Reservoir, and the Loveland Reservoir. Annual precipitation within the Sweetwater HU varies between 11 inches at the coast and 35 inches inland (RWQCB 2016). Figure 3.1.5-1, *Project Site Watershed*, shows the Proposed Project site in relation to the boundaries of the Sweetwater HU.

Local Drainage

The Sweetwater HU is divided into three distinct hydrologic areas (HAs) based on local drainage characteristics, consisting of the Lower Sweetwater, Middle Sweetwater, and Upper Sweetwater HAs. The Project Site is within the Middle Sweetwater HA, which contains primarily undeveloped and vacant land, as well as residential, open spaces/preserves, and transportation land uses (SDIRWMP 2019). The Project Site's direct receiving water body is the Sweetwater River which flows through the site. The Sweetwater Reservoir is located approximately 2.8 miles downstream and southwest of the Project Site; the Loveland Reservoir is located approximately 10 miles upstream and northeast of the Project site; and the San Diego Bay is located about 13 miles west of the Project Site.

Downstream of Loveland Reservoir, including within the Project site, the Sweetwater River is dry the majority of the year but collects storm water runoff from the surrounding watershed during

large storm events. The 100-year storm flow volume of the Sweetwater River at the Project site is estimated at 29,500 cubic feet per second (cfs) (Chang Consultants 2021a).

Water Transfers

Loveland Reservoir and Sweetwater Reservoir are both owned and operated by the Sweetwater Authority for municipal use and irrigation and are connected via the Sweetwater River. Both Loveland Reservoir and Sweetwater Reservoir are a vital part of the San Diego region's drinking water supply. The Authority has senior water rights along the Sweetwater River. These water rights were acquired by the Authority through its predecessors and allow the Authority to transfer water from Loveland Reservoir to Sweetwater Reservoir along the Sweetwater River channel.

Most of the water stored in Loveland Reservoir is collected from natural runoff and is transferred downstream to the Sweetwater Reservoir where it is treated prior to distribution for consumption by municipal water customers. The Loveland Reservoir has an uncontrolled spillway and overtopping events occur when the water level exceeds the spillway crest. The most recent overtopping event at the Loveland Reservoir occurred in 2011 (Sweetwater Authority 2021a). Water transfers from the Loveland Reservoir to the Sweetwater Reservoir via the Sweetwater River channel can occur at rates of up to 358 cfs (about two to four feet in depth within the river channel) and take place generally during the winter months or early spring when water loss due to infiltration is at its lowest point (Chang Consultants 2021a). The most recent transfers occurred during the winters of 2021, 2019, 2017, and 2013 (Times of San Diego 2021 and San Diego Union-Tribune 2019). Under current conditions, the transferred water flows in a naturally lined, trapezoidal channel constructed within the golf course. The channel transitions to a broader riparian channel near the downstream portion of the site.

Surface Water Quality

In 2018, the portion of the Sweetwater River above Sweetwater Reservoir was evaluated as impaired on the Clean Water Act Section 303(d) list associated with aluminum, benthic macroinvertebrates bioassessments, selenium, total nitrogen, and indicator bacteria. Probable sources contributing to the impairment include impacts from hydrostructure flow regulation/modification, non-point sources, subsurface (hardrock) mining, urban runoff/ stormwater sewer, and other unknown sources (USEPA 2018a). The Sweetwater Reservoir, which is downstream of the Project site, is listed as impaired associated with dissolved oxygen (USEPA 2018b).

Surface waters are assigned beneficial uses by the RWQCB. Beneficial uses are defined as the uses of water necessary for the survival or well-being of people, plants, and wildlife. The portion of the Sweetwater River in the vicinity of the Project site and Sweetwater Reservoir have the following existing beneficial uses, per the Basin Plan (RWQCB 2016): Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Service Supply (IND), Industrial Process Supply (PROC), Contract Water Recreation (REC1), Non-contact Water Recreation (REC2), Warm Freshwater Habitat (WARM), and Wildlife Habitat (WILD). The RWQCB also establishes water quality objectives for various water bodies. The objectives for the Middle Sweetwater HA are listed in Table 3.1.5-1, *Water Quality Objectives for Project Receiving Waters.*

Review of available records conducted for the Project's Water Quality Evaluation Report (Geo-Logic 2021c) indicated few recent surface water samples have been collected within the Project area. A study in 1990 evaluated groundwater and surface water quality within the Middle Sweetwater River area between 1979 and 1990, finding slightly elevated total dissolved solids (TDS) downstream. Nitrate concentrations reported were generally within acceptable limits in the Sweetwater River valley.

Surface water samples were collected from the Sweetwater River upstream of the Project site, mid-site, and downstream during a week of heavy rain in April 2020 that generated sufficient flow within the Sweetwater River. The upstream and downstream surface water monitoring locations were noted as having laminar flow with clear water, while the midstream monitoring location was noted as having turbid flow with brown water. The difference in stream observations at the midstream location compared to upstream and downstream locations is the product of several factors:

- The upstream location and midstream samples were collected on the same day (April 10, 2020) during heavy precipitation. During the event, drainage from Mexican Canyon was flowing turbidly into Sweetwater River approximately 2,000 feet upgradient from the midstream monitoring location. Mexican Canyon drains residential areas and the Steele Canyon Golf Club golf course to the south. This would have only affected the midstream sampling location because the upstream location is upgradient of where Mexican Canyon discharges into Sweetwater River and the downstream sampling location was sampled on a different day (April 14, 2020) when there was no inflow from Mexican Canyon.

- The upstream sampling location is downgradient of a heavily vegetated portion of Sweetwater River. This setting is expected to provide a filtering effect on surface water flows. Between the upstream and midstream monitoring locations there is little to no vegetation within the Sweetwater River; therefore, fast-moving water is likely to put solids into suspension between the upstream and midstream monitoring points. Between the midstream and downstream monitoring locations, Sweetwater River widens and energy within the stream is reduced, allowing solids to settle.

- Flow rates for the Sweetwater River were high during sampling of the upstream and midstream monitoring locations, as sampling was conducted during a storm event (April 10, 2020). Flow rates in the Sweetwater River were lower during sampling of the downstream monitoring location, as sampling was performed after the storm event had occurred (April 14, 2020).

Surface water sampling indicated that water chemistry between the upstream and downstream monitoring points is generally consistent, while several results were elevated for the midstream monitoring point. Elevated monitoring parameters at the midstream monitoring location are associated with the aforementioned points regarding stream conditions during sampling. For example, turbidity was relatively low at the upstream and downstream monitoring locations (6 to 20 Nephelometric Turbidity Units [NTU]), while it was out of range (>800 NTU) for the midstream monitoring location. Similarly, total suspended solid (TSS) concentrations were relatively low and ranged from 8.2 to 14 milligrams per liter (mg/L) in upstream and downstream samples, but these concentrations were significantly elevated (2,400 mg/L) at the midstream

monitoring location. Elevated metals concentrations at the midstream monitoring location (typically elevated by an order of magnitude compared to the other surface water samples) reflect elevated sediment loads in the midstream sample. Nutrients were also typically slightly elevated in the midstream sample relative to upstream and downstream samples. The results obtained generally characterize surface water chemistry for two scenarios: (1) surface water chemistry of laminar flow within Sweetwater River and (2) surface water chemistry of turbulent flow within Sweetwater River, including influences from Mexican Canyon, which flows across the Project site prior to discharging into Sweetwater River. Regardless of flow scenarios listed above, surface water chemistry in samples collected from the Sweetwater River within the project area is characterized as follows:

- High concentrations of coliform (all samples measured at maximum reporting limit), including E. coli.
    - E. coli elevated at the upstream monitoring location (>2.5 times higher) compared to midstream and downstream monitoring locations.
- Absence of several anthropogenic and/or organic compounds, including chlorinated herbicides, organochlorine pesticides, polychlorinated biphenyls (PCBs), semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs).
- Metal concentrations that are typically below maximum contaminant levels (MCLs) and water quality objectives (WQOs), except for:
    - Iron results elevated above the State secondary MCL (SMCL) and WQO at upstream and midstream monitoring locations.
    - Lead results elevated above the primary State and federal MCL.
    - Manganese results elevated above the State SMCL and WQO at upstream and midstream monitoring locations.
- General chemistry concentrations that are typically below MCLs and WQOs, except for:
    - Phosphorous results elevated above WQO at upstream and midstream monitoring locations.
    - Ratios of nitrogen to phosphorous ranging from approximately 5:1 to 14:1.

Flooding

With a semi-arid climate and highly variable seasonal precipitation, flooding events are infrequent but can be substantial. Flooding in southern California most frequently occurs during winter storm events, between the months of November and April. Flooding occurs occasionally during the summer when tropical storms reach the region. Infrequent large bursts of rain can rush down steep canyons and flood areas quickly and unexpectedly. National Weather Service records of flooding and heavy rainfall events demonstrate that just one-to-two inches of rain over a few days can cause

localized flooding, while events that bring three or more inches of precipitation will induce more severe flooding, including flash floods, mudflows, and landslides.

Most of the Project site is within the 100-year floodplain, as shown in Figure 3.1.5-2, *100-year Floodplain*. Stormwater within the Project site sheet-flows to the Sweetwater River. Stormwater originating upstream from the Project site passes through the site via the Sweetwater River channel. During above-average storm events, the 25,400 acre-feet storage capacity of the Loveland Reservoir is usually exceeded and results in discharge to the Sweetwater River. One of the greatest discharges from the Loveland Reservoir occurred in February 1980 at a volume of about 34,616 acre-feet and rate of about 600 cubic feet per second per day (USGS 2004). This demonstrates that in above average rainfall years, substantial flows within the Sweetwater River channel can occur through the Project site.

Mudflows are considered a form of flooding and can occur frequently in San Diego County (County 2011c, pg. 2.8-22). A mudflow occurs naturally as a result of heavy rainfall on a slope that contains loose soil or debris. Human activity, such as saturation of soil from a broken water pipe or incorrect diversion of runoff from developed areas, can also cause mudflow. The loss of vegetation from natural disturbances like forest fires or human activities can result in destabilization of surface soil and an increase in velocity of surface water runoff, increasing the potential for mudflows.

Mudflows predominately occur in mountainous areas underlain by geologic formulations that contain sandy soils (County 2011c, pg. 2.8-22). Soils with large amounts of clay that shrink and expand with exposure to water also have a high potential for instability and sliding. Mudflows can occur on slopes with an angle as low as 15 degrees but are more frequently found on steeper slopes. The path of a mudflow is determined by local topography and typically follows existing drainage patterns. The fluidity and depth of the water/soil/debris mixture and the steepness of a channel are all variables that can influence the rate of movement of a mudflow; mudflows can be capable of destroying buildings and roadways (County 2011c, pg. 2.8-22).

Dam Failure

Failure of a major dam during an earthquake could cause serious loss of life and property damage. The Project site is located within a dam inundation zone for the Loveland Reservoir, which is located upstream approximately 6.5 miles northeast of the Project site. The Loveland Reservoir was constructed in 1945 and has a maximum capacity of 25,400 acre-feet (Sweetwater Authority 2021b). Inundation due to dam failure is considered unlikely because of state requirements that large dams receive seismic upgrades and routine inspections for safety. In California, the supervision, regulation, and inspection of all large dams that are not federally owned is the responsibility of the Division of Safety of Dams (DSOD). They conduct periodic inspections of dams to identify deficiencies.

Groundwater

Groundwater is produced from eight existing wells placed at various locations on the Project site. Three of the wells are located on the Lakes Course, west of Steele Canyon Road, and the other five are east of Steele Canyon Road. Groundwater is pumped from the wells to a series of golf

course ponds. Water from the ponds is then fed directly into the irrigation lines or pumped to an approximately 3-million-gallon storage reservoir during the day. During nighttime and early morning hours, the stored water in the reservoir and water from wells is used to irrigate golf course vegetation. The storage reservoir is located on a parcel north of Willow Glen Drive that is not part of the Proposed Project.

The County Department of Environmental Health (DEH) identified 114 permitted groundwater wells within one mile of the Project site boundaries. A review of the well location map indicates that most of the wells are in two areas within large-lot, residential parcels on the southern side of the Project site (EnviroMINE 2021d). These two areas, Steele Canyon Estates and the properties near Par 4 Drive, began development in the 1980s and continued into the early 2000s.

Sweetwater Authority has monitored groundwater levels from two monitoring wells on the Property since 2007. One of the monitored wells is located next to the property line on the southwestern end of the Project site (APN 519-010-1500) and the second well is located next to the property line on the northeastern end of the Project site (APN 518-030-1500).

The wells on the golf course are not metered, so estimates were made of groundwater use. Estimation techniques include a golf course superintendent's estimate based on his experience managing the site's irrigation system and evapotranspiration methods (including evaporation from the existing golf course ponds). The estimated groundwater use based on these techniques was approximately 803.6 to 840 acre-feet per year (EnviroMINE 2021d). In order to conservatively compare existing conditions to the net change in groundwater use associated with the Project, the lower amount of 803.6 acre-feet per year is used throughout this analysis.

3.1.5.2 *Regulatory Setting*

Federal

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA), under the Department of Homeland Security, provides a single point of accountability for all federal emergency preparedness and mitigation and response activities. This includes flood hazards. They are responsible for programs that act before a disaster, in order to identify risks and reduce injuries, loss of property, and recovery time. The agency has major analysis programs for floods, hurricanes and tropical storms, dams, and earthquakes. FEMA also works to enforce no-build zones in known floodplains and relocate or elevate some at-risk structures. California is located in FEMA Region IX.

As part of its planning efforts, FEMA provides Letters of Map Revision, in which they formally evaluate modification to flow patterns and either approve proposed actions or require project redesign. A Conditional Letter of Map Revision (CLOMR) is FEMA's comment on a proposed project that would, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective Base Flood Elevations (BFEs), or the Special Flood Hazard Area (SFHA). It is conditional because it sets forth requirements that must be implemented in order to revise the floodplain and/or floodway following construction.

National Flood Insurance Act

The National Flood Insurance Act of 1968 established the National Flood Insurance Program (NFIP), which provided flood insurance for structures within communities that adopted and enforced floodplain management standards and programs to minimize future flood impacts. The act also required the identification of high and low flood hazard areas within the U.S. and the establishment of flood insurance rates within those areas.

Clean Water Act/National Pollutant Discharge Elimination System Requirements

The Clean Water Act (CWA) was enacted by Congress in 1972 and is the primary federal law regulating water quality in the United States. The National Pollutant Discharge Elimination System (NPDES) was created in Section 402 of the CWA to regulate discharges of pollutants from point sources into the nation's waters. The CWA forms the basis for several state and local laws throughout the country. Its objective is to reduce or eliminate water pollution in the nation's rivers, streams, lakes, and coastal waters. The CWA prescribed the basic federal laws for regulating discharges of pollutants and set minimum water quality standards for all waters of the U.S. Several mechanisms are used to control domestic, industrial, and agricultural pollution under the CWA. At the federal level, the CWA is administered by the United States Environmental Protection Agency (USEPA). At the state and regional level, the USEPA has delegated administration and enforcement of the CWA in California to the State Water Resources Control Board (SWRCB) and the Regional Water Resources Control Boards (RWQCBs). The State of California has developed several water quality laws, rules, and regulations, in part to assist in the implementation of the CWA and related federally mandated water quality requirements. In many cases, the federal requirements set minimum standards and policies, and the laws, rules, and regulations adopted by the SWRCB and RWQCBs exceed the federal requirements. Impacts to Waters of the State and Waters of the U.S. are subject to the requirements of the CWA Sections 401 and 404, as administered by the United States Army Corps of Engineers (USACE) and RWQCBs.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act established the principal legal and regulatory framework for water quality control in California. This Act is embodied in the California Water Code, which authorizes the SWRCB to implement the provisions of the federal CWA as previously described.

The State of California is divided into nine regions governed by RWQCBs, which implement and enforce provisions of the California Water Code and the CWA under the oversight of the SWRCB. The County is located within the purview of the San Diego RWQCB (Region 9). The Porter-Cologne Act also provides for the development and periodic review of basin plans that designate beneficial uses for surface waters, groundwater basins, and coastal waters, and establish water quality objectives such as those listed for the Middle Sweetwater HA.

State Industrial General Permit

The Industrial General Permit is intended to regulate "…discharges of industrial storm water to waters of the United States." Mining and reclamation activities are subject to requirements under this permit. The principal requirements for conformance with the Industrial General Permit include: (1) identification and elimination of unauthorized non-storm water discharges; (2) development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), including minimum best management practices (BMPs) and measures to reduce or prevent industrial pollutants in storm water discharges pursuant to best available technology economically achievable (BAT) treatment levels for toxic and non-conventional pollutants, and best conventional pollutant control technology (BCT) treatment levels for conventional pollutants (as well as other appropriate water quality standards); (3) use of technology-based numeric action levels (NALs) and numeric effluent limitations (NELs) for applicable projects; (4) performance of appropriate exceedance response actions (ERAs) when NALs are exceeded; (5) implementation of appropriate monitoring/reporting for storm water discharges; and (6) use of appropriately trained personnel, including Qualified Industrial Storm Water Practitioners (QISPs).

State Construction General Permit

Projects that involve land disturbance of one acre or more (or that are part of a larger plan of development that would disturb one or more acres) are subject to pertinent requirements under the Construction General Permit. Specific conformance requirements include implementing a SWPPP, an associated Construction Site Monitoring Program (CSMP), employee training, and minimum BMPs, as well as a Rain Event Action Plan (REAP) for applicable projects (e.g., those in Risk Categories 2 or 3, as described below).

Under the Construction General Permit, project sites are designated as Risk Level 1 through 3 based on site-specific criteria (e.g., sediment erosion and receiving water risk), with Risk Level 3 sites requiring the most stringent controls. Based on the site-specific risk level designation, the SWPPP and related plans/efforts identify detailed measures to prevent and control the discharge of pollutants in storm water runoff. Depending on the risk level, these may include efforts such as minimizing/stabilizing disturbed areas, mandatory use of technology-based action levels, effluent and receiving water monitoring/reporting, and advanced treatment systems. Specific pollution control measures require the use of BAT and/or BCT levels of treatment, with these requirements implemented through applicable BMPs.

While site-specific measures vary with conditions such as risk level, proposed grading, and slope/soil characteristics, detailed guidance for construction-related BMPs is provided in the permit and related County standards (as outlined below), as well as additional sources including the USEPA *National Menu of Best Management Practices for Stormwater* (USEPA 2020), and the *Construction Storm Water Best Management Practices Handbook* (California Stormwater Quality Association [CASQA] 2015). Specific requirements for the Project under this permit would be determined during SWPPP development, after completion of project plans and application submittal to the SWRCB.

Cobey-Alquist Flood Plain Management Act

The Cobey-Alquist Flood Plain Management Act was established in 1965 to protect people and property from flooding hazards by providing state level legislation and guidance to local governments for planning, adopting, and enforcing land use regulations for floodplain management.

Local

County of San Diego Watershed Protection, Stormwater Management and Discharge Control Ordinance

The most current Watershed Protection Ordinance (WPO) and associated Stormwater Standards Manual (SSM) were adopted in January 2016 with the purpose of protecting the health, safety, and general welfare of the County residents, to protect water resources and to improve water quality, to cause the use of management practices by the County and its citizens that will reduce the adverse effects of polluted runoff discharges on water of the state, to secure benefits from the use of stormwater as a resource, and to ensure the County is compliant with applicable state and federal law. The WPO contains discharge prohibitions and requirements that vary depending on the type of land use activity and location.

The SSM is Appendix A of the WPO and sets out in more detail, by project category, what dischargers must do to comply with the WPO and to receive permits for projects and activities that are subject to the WPO. The WPO and SSM define the requirements that are legally enforceable by the County in the unincorporated area of San Diego County. In addition, the County has adopted its BMP Design Manual (DM) for Land Development and Public Improvement Projects (County 2016). The BMP-DM is focused on project design requirements and related post-construction requirements for land development and capital improvement projects, and addresses WPO requirements for these project types.

San Diego Municipal Separate Storm Sewer System Permit

Per federal regulations, the State of California issues a Municipal Stormwater permit (also known as a NPDES permit) to municipalities that must be renewed every five years. Under this permit, each municipality must develop a stormwater management program designed to control the discharge of pollutants into and from the municipal separate storm sewer systems (MS4) (or from being discharged directly into the MS4). The purpose is to protect local water bodies since storm drains typically discharge their water into streams, bays, and/or the ocean without treatment. Order R9-2013-0001 was adopted by the RWQCB San Diego Region on May 8, 2013 and established waste discharge requirements for discharge of urban runoff from the MS4 of the County of San Diego, the 18 incorporated cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority. Order R9-2015-0001 was adopted on February 11, 2015, amending the Regional MS4 Permit to extend coverage to the Orange County Co-permittees. Order R9-2015-0100 was adopted on November 18, 2015, amending the Regional MS4 Permit to extend coverage to the Riverside County Co-permittees (RWQCB 2015).

San Diego County General Plan

The General Plan (2011b) contains a series of policies in the Conservation and Open Space Element and Safety Element relevant to hydrology and water quality. The reader is referred to Section 3.1.6 of this EIR for a detailed evaluation of Project consistency with the applicable General Plan goals and policies.

County of San Diego Flood Damage Prevention Ordinance

This ordinance was established to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas throughout the County. Pursuant to this ordinance, Special Flood Hazard Areas (SFHA) in the County are identified as areas having a special flood or flood-related erosion/sedimentation hazard and shown on a Flood Insurance Rate Map (FIRM), on a County floodplain map as within a 100-year floodplain, or on an alluvial fan map within an alluvial fan area. This ordinance defines methods to accomplish the goals of reducing flood losses, including: restricting uses which are dangerous to health, safety and property due to erosion or water hazards; requiring uses vulnerable to floods to be protected against flood damage at the time of construction; controlling the alteration of natural floodplains; controlling filling, grading, or dredging which may increase flood damage; and preventing construction of flood barriers which will divert flood waters or increase flood hazards in other areas. This ordinance also provides for provisions for standards of construction and standards for subdivisions in areas of special flood hazards. By complying with the requirements of the Flood Damage Prevention Ordinance, projects are considered to be in compliance with FEMA regulations.

County of San Diego Resource Protection Ordinance

Pursuant to Section 86.605 of the RPO, mineral resource extraction is permitted in a floodway, with an approved MUP and Reclamation Plan, provided that mitigation measures are required that produce a net gain in the functional wetlands and riparian habitat. Modifications to the floodway must meet design criteria, and concrete or rip rap flood control channels are allowed only when specific findings are made.

San Diego County Groundwater Ordinance

The County currently manages anticipated future groundwater demand through the County Groundwater Ordinance, which became effective in 2004. This Ordinance does not limit the number of wells or the amount of groundwater extraction of existing landowners. However, the Ordinance does require analysis of potential groundwater impacts for projects requiring specified discretionary permits. Existing land uses are not subject to the Ordinance unless a listed discretionary permit is required and the use of groundwater is proposed.

Board of Supervisors Policy I-45: Definition of Watercourses in the County of San Diego Subject to Flood Control

The purpose of this policy is to define those watercourses in the County that are subject to flood control so that appropriate responsibility can be determined. Watercourses subject to flood control are defined as those that serve one square mile or more of watershed shown on the map on file

with the Clerk of the Board as Document #468904. The policy was developed because consideration of flood control methods is essential in the land use decision-making process and the failure of flood control systems may result in property damage and loss of life. The policy provides for maps that specifically designate the watercourses subject to flood control, thus eliminating the uncertainty and providing a clear and easily accessible record of the flood control district's area of concern.

Board of Supervisors Policy I-68: Proposed Projects in Flood Plains with Defined Floodways

This policy was developed to identify procedures to be used when proposed projects impact floodways as defined on County floodplain maps. The policy defines procedures to be implemented for the following types of proposals: major construction that would change the floodplain or floodway; relocation of a floodway; partial filling of the floodplain fringe; erosion and sedimentation in a floodplain; increased flood flows; and concrete or rip rap facilities.

3.1.5.3 *Analysis of Project Effects and Determination as to Significance*

Water Quality

Guideline for the Determination of Significance

A significant impact related to water quality would occur if the Proposed Project would:

1. Consist of a development project listed in County of San Diego, Code of Regulatory Ordinances (Regulatory Ordinances), Section 67.804(g), as amended and does not comply with the standards set forth in the County BMP Design Manual (County 2016), Regulatory Ordinances 67.813, as amended, or the Additional Requirements for Land Disturbance Activities set forth in Regulatory Ordinances, Section 67.

2. Drain to a tributary of an impaired water body listed on the Clean Water Act Section 303(d) list, and contribute substantial additional pollutants for which the receiving water body is already impaired.

3. Contribute pollution in excess of that allowed by applicable State or local water quality objectives or cause or contribute to the degradation of beneficial uses.

4. Fail to conform to applicable Federal, State or local “Clean Water” statutes or regulations including, but not limited to, the Federal Water Pollution Control Act (Clean Water Act) California Porter-Cologne Water Quality Control Act and the County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance.

Guidelines Source

Guideline Nos. 1 through 4 are derived from Section 4.0 of the County Guidelines for Determining Significance – Surface Water Quality (County 2007i).

Analysis

As described above in Section 3.1.5.1, the Project site's direct receiving water body (Sweetwater River) and downstream receiving water body (Sweetwater Reservoir) are impaired for various pollutants. Both receiving water bodies also have beneficial uses and WQOs established by the RWQCB. Impacts to water quality from mining operations and reclamation activities could create new or exacerbate existing effects to the water quality of the receiving water bodies. The Project's site development, material extraction, and reclamation activities would involve ground disturbance, movement of earth material, and use of heavy equipment. Sediments from disturbed ground (specifically roadways and manufactured slopes), particulates from extracted material, and chemicals (e.g., diesel fuel and lubricants) associated with mining equipment could be discharged into receiving waters, which would have the potential to degrade water quality, impair beneficial uses, and conflict with WQOs set forth in the Basin Plan; however, such potential effects would be minimized through compliance with current federal, State, and local regulations.

A SWPPP would be prepared and submitted to the SWRCB prior to construction in accordance with the Industrial General Permit Order 2014-0057-DWQ, effective July 1, 2015. The Industrial General Permit would require stormwater analyses of pH, TSS, oil and grease, and nitrate/nitrite. The SWPPP and erosion control plan would define BMPs to prevent erosion and the discharge of sediment to surface waters. If needed during mining, small desiltation basins may be temporarily constructed to capture runoff from existing culverts within Willow Glen Drive and to prevent sediment from leaving the site while allowing water to pass through to existing drainage features. Runoff would be directed from the disturbed mining and reclamation areas towards the basins, as necessary, to allow for de-siltation and infiltration. Typical soil stabilization BMPs include preservation of existing vegetation, mulch, hydroseeding, soil binders, geotextiles, lining of drainage ditches, and/or velocity control structures. At a minimum, erosion and sedimentation control measures would be designed for the 20-year, 1-hour storm event in accordance with SMARA guidelines. Silt fences would be installed five feet from the outer edge of each side of the existing Sweetwater River channel and may be installed in other areas as needed. Other erosion control measures would include monitoring soil movement, arresting gullies or rills using straw mulch and hay bales, compacting soils with equipment, and re-grading as necessary. Vehicle track out and dust-related BMPs may include paved or stabilized roadway surfaces, tire washes, use of grates at vehicle entrances and/or exits, soil stabilizers, and water spray. Temporary erosion control measures would be retained until vegetation becomes sufficiently established to serve as an effective erosion control measure. Recommended erosion and sedimentation control measures would be described in detail in the Project SWPPP. With implementation of the Project SWPPP and compliance with Industrial General Permit requirements, impacts to water quality during the Project's site development, mining operations, and reclamation activities would be less than significant.

Upon completion of mining operations, the Project site would be restored to an end use of open space, recreational trails, and land suitable for uses allowed by the General Plan and existing zoning classifications. The reclamation plan for the riparian corridor is intended to stabilize the post-extraction landform and establish a productive native vegetative cover. For the areas outside the riparian corridor, the revegetation plan is intended to stabilize the surface and control erosion. Based on these factors, the reclaimed site would not have significant effects on water quality.

As detailed in the SWQMP prepared for the Project (Chang Consultants 2021b) to address the increase in impervious surfaces associated with the Willow Glen Drive improvements, stormwater runoff from the improved roadway area would be directed along the southerly curb of Willow Glen Drive. A proposed spillway would be installed along the westerly end of the road improvements to convey the runoff into tree wells just south of the roadway, thus restricting discharge of polluted runoff into receiving waters. Two tree wells with a 25-foot mature tree canopy diameter would be installed to satisfy the required treatment volume.

In summary, compliance with applicable federal, State, and local water quality related regulations would minimize impacts to the water quality of surrounding receiving waters during the Project's site development, mining, and reclamation activities. As such, the Project would comply with County standards related to water quality, would not contribute pollutants to an impaired water body, would not contribute pollution in excess of that allowed by State or local objectives, and would conform to applicable federal, State, and local "Clean Water" statutes and regulations. **Impacts related to water quality would be less than significant.**

Groundwater Storage/Well Interference

Guideline for the Determination of Significance

A significant impact related to groundwater storage or well interference would occur if the Proposed Project would:

5. Result in a 50 percent reduction of groundwater in storage (Water Balance Analysis) for proposed projects in fractured rock basins, a soil moisture balance, or equivalent analysis, conducted using a minimum of 30 years of precipitation data, including drought periods, concludes that at any time groundwater in storage is reduced to a level of 50 percent or less as a result of groundwater extraction.

6. Result in a decrease in water level of 5 feet or more in off-site wells as indicated by results of a five-year projection of drawdown. If site-specific data indicates alluvium or sedimentary rocks exist which substantiate a saturated thickness greater than 100 feet in off-site wells, a decrease in saturated thickness of 5 percent or more in the off-site wells would be considered a significant impact.

Guideline Source

Guidelines No. 5 and 6 are derived from Section 4.0 of the County Guidelines for Determining Significance – Groundwater Resources (County 2007j).

Analysis

Project Water Use

Consumption of groundwater associated with the Project would include use of water for mining activities (referred to as consumed process water), evaporation from temporary excavation pits, and irrigation of landscaping and revegetation areas during reclamation. Once revegetated areas

have met performance standards approved by the County, no groundwater consumption is anticipated for the post-reclamation period.

Consumed Process Water

Sand quarries use water to move material on-site as a slurry, wash the material for use off-site and water roads. The total amount of water used in the mining and processing is "handled water." The majority of this water is re-used on site, with water that is lost from the site during the mining and processing referred to as "consumed water."

Consumed water is the total consumptive groundwater usage for the proposed mining operation. A study conducted to quantify consumed water use at sand and gravel mines (Golder 2006) identified three primary pathways for water loss from a quarry site:

1. Retained moisture on aggregate product that is shipped from the site;

2. Water that is applied directly on haul roads and stockpiles for dust control, which typically evaporates before being able to infiltrate into the ground; and

3. Wash water evaporation from stockpiled materials.

Based on that study, the consumptive use for these pathways equals 25.9 gallons/ton (Golder 2006). Using this consumptive use for the Project at a production of 570,000 tons/year, the consumptive use would equal 45.3 acre-feet per year. This figure was adjusted upwards to reflect localized evaporation and precipitation rates as well as tonnage differences. This resulted in an estimate of 64.0 acre-feet per year from the above-noted pathways, consisting of 23.4 acre-feet per year of water taken off site within exported mining materials, 20.3 acre-feet per year for dust control, and 20.3 acre-feet per year from evaporation from stockpiles (EnviroMINE 2021d). A water truck would water material stockpiles and unpaved areas periodically throughout the day for dust suppression purposes. Other water requirements include surface watering of outgoing loads, dust suppression for the processing equipment, material washing, and irrigation. The frequency of watering for dust control would be based on the performance measures identified in the Fugitive Dust Control Plan (refer to Appendix I of this EIR). Such measures include providing a sufficient watering frequency such that there are no visible emissions eight feet above haul roads and watering at two-hour intervals during any time the project is in operation unless the road surface appears wet. The Project SWPPP would further define the BMPs to which mining operations must adhere to in order to comply with applicable regulations for transport of soil by wind.

Excavation Pit Evaporation

Three excavation pit areas where groundwater may be encountered are planned for the Proposed Project. The first pit would be excavated during Phase 1 on the northern side of the river channel and south of Willow Glen Drive (subphase 1C area on Figure 1-4). This pit would be progressively backfilled as the excavation continues. Exposure of groundwater as a free water surface would be limited to approximately five acres in size over an 18-month period or less. This pit would be completely backfilled prior to the completion of this phase. No pond or free water surface would remain.

The second pit would start to be excavated in the eastern half of the Phase 2 area (subphase 2C area on Figure 1-4) and would continue in a northeasterly direction toward the Phase 3 area (subphase 3C area on Figure 1-4). This pit would be located south of the existing channel and east of Steele Canyon Road. The pit would not connect with the channel. As with the first pit, this second pit would be progressively backfilled as it proceeds to the northeast and would be limited in size to approximately five acres or less of exposed groundwater at any time. It is expected that this entire pit would be excavated over a two-year time frame. This pit would also be completely backfilled during subphase 3C.

The third pit would be completed in the northeastern corner of the Project site during Phase 3 (subphase 3A area on Figure 1-4) and would be similar to the first two pits in size. It would also be limited to five acres in size if groundwater is encountered. This final pit would be completely backfilled prior to the end of Phase 3.

Evaporation from the pit ponds is calculated to be 20.3 acre-feet per year (EnviroMINE 2021d).

Irrigation

Irrigation would be used on the revegetated areas for two years after seeding and planting to establish vegetation, encourage growth, and help ensure survival. Irrigation would be discontinued in an area after the second year. The timing and frequency of irrigation would be based on the Project Biologist's recommendations, the water needs of various seed palettes used for the Project and weather conditions during the year. For example, during the rainy season when rains are more frequent and heavier, irrigation would occur between storms and would be off during, and shortly after, rain events. Weather-based automatic controllers (or rain sensors) capable of turning the system on and off would be used on the irrigation system for this purpose. During the drier months of the year after initial establishment, the irrigation schedule may be modified to a lower frequency and longer cycle. Over the two-year period, the number of days per week watering, the cycles per day and run times would be incrementally reduced to eliminate dependency of the vegetation on irrigation.

Irrigation would also be used for landscaping and plantings of vegetation for the purpose of screening the operation. Areas identified for these purposes would be irrigated throughout the year and over the lifespan of the project.

Irrigation water consumption was calculated using the County of San Diego Planning and Development Services Water Efficient Landscape Worksheet (Form PDS-405). The total estimated water use for irrigation is 55.6 acre-feet per year (EnviroMINE 2021d).

Summary

The total estimated Project water usage is 139.9 acre-feet per year, which is a reduction of approximately 663.7 acre-feet per year relative to current golf course consumption estimated at 803.6 acre-feet per year. Thus, the Project would utilize approximately 17 percent of the annual water used historically by the existing golf course operation.

Reduction in Groundwater Storage

The net reduction in groundwater removed from storage as a result of Project implementation is approximately 664 acre-feet per year during the Project's mining operations, as presented above. This reduction in groundwater use would result in a substantial improvement in the amount of groundwater in storage. Following full reclamation of the site (i.e., after plants have become established), groundwater use, including for artificial irrigation, would not be required; however, because the post-mining conditions would include groundwater-dependent native plants, some groundwater would be lost through the plants via evapotranspiration. This ongoing loss of groundwater was calculated for vegetation communities currently on site that are to remain and for vegetation communities that would be established during the Project's reclamation activities. Based on the depth to groundwater, plant species, plant density, microclimate, and evapotranspiration rate for the site, the total loss of groundwater from on-site plant evapotranspiration is calculated to be 337 acre-feet per year (Geo-Logic Associates 2021a). Thus, the overall net reduction in groundwater use is calculated to be approximately 467 acre-feet per year less than the existing use for the golf course at the conclusion of the Project, resulting in approximately 58 percent more groundwater in storage compared to the prior golf course demand.

For further analysis of groundwater in storage, maps showing the distribution of the potable water supply provided by the County Water Authority agencies on the Project site and in the vicinity of the Project site were reviewed. A tributary watershed was delineated to include the Project site and extending within the Sweetwater River watershed up to the Sycuan Indian Reservation to identify the drainage area upgradient of the Project site. The purpose of this evaluation was to identify areas within the watershed that were outside of a County Water Authority agency service area at full build out under the County General Plan, and thus would be solely reliant on groundwater for water supply. Review of the delineated area with County Water Authority agency coverage indicated that the majority of the area is served by Otay Water District with limited areas being served by Padre Dam Municipal Water District and Helix Water District. Therefore, there are no areas within the drainage area that would be reliant solely on groundwater at full build out under the County's General Plan.

Under the anticipated Project water demand requirements, and based on the above analysis of groundwater in storage, **the proposed Project would have a less than significant impact to groundwater storage.**

Well Interference

To evaluate impacts from pumping for the Project, a five-year projection of drawdown at the nearest off-site wells and at groundwater dependent habitat and a demonstration that the wells have the capacity to be able to produce the groundwater required for the Project were performed.

Although the Project may use any or all of its eight wells on site for its water supply, to provide a conservative well interference analysis, assumptions were made to evaluate drawdown to the nearest off-site well. Based on the location of the processing area near the middle of the property and northeast of the Steele Canyon bridge, the process water may be provided by the Ivanhoe #8 well and/or Ivanhoe #1 well for the majority of the Project operations, before the operations move into that area of the site. It was assumed that the entire annual volume of the Project's process

water (84.3 acre-feet per year) would be obtained from the Ivanhoe #8 well, a well that is closer to some of the off-site wells, and that it would be pumping continuously at that rate for five years. Reclamation would begin on the southern end of the property, in the Phase 1 area, which is closer to off-site wells. Groundwater for irrigation may be provided by the Lakes #11 well, supplemented by the Lakes #15a and/or #15b wells in the first year before they are abandoned in the second year, or groundwater could be pumped from one or more of the Ivanhoe wells to the north of the Phase 1 area. Subhases 1B (26.5 acres) and 1C (30.4 acres) were identified as being the two largest areas to be reclaimed, and also located in close proximity to off-site well users. Although each area would be irrigated sequentially for two years, with only one year of overlap, it was assumed that all 56.9 acres within these two subphases would be irrigated for two full years using the Lakes #11 well alone. Using irrigation water consumption factors for this acreage, an upper estimated 62.5 afy of groundwater was calculated and assumed to be pumped continuously for two years.
It was calculated that the maximum drawdown at the nearest off-site well located 1,375 feet away from the Ivanhoe #8 well, pumping at a rate of 84.3 acre-feet per year (52 gpm) for the Project's process water, is less than 3 feet after two years. Additional pumping from the Ivanhoe #8 well for five years is calculated to be less than 4 feet at the nearest off-site well, located 1,375 feet away. Drawdown at the nearest off-site well located 1,600 feet from the Lakes #11 well, pumping at a rate of 62.5 acre-feet per year (39 gpm) to irrigate reclaimed subhase 1B and 1C areas, is 2 feet after two years of groundwater extraction. Based on these calculations, the 5-foot threshold value established by the County for off-site well interference would not be exceeded over a five-year period with the proposed Project pumping rates or under this more conservative two well pumping scenario. Well interference from groundwater production would not result in a significant decrease in water levels (5 feet or more) in off-site wells after a five-year projection of drawdown, and **impacts associated with well interference would be less than significant.**

Alteration of Existing Drainage Patterns

Guideline for the Determination of Significance

A significant impact related to drainage patterns would occur if the Proposed Project would:

7. 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 which would result in substantial erosion, siltation, or flooding on- or off-site.

Guideline Source

Guideline No. 7 is based on the County Guidelines for Determining the Significance – Hydrology (County 2007k).

Analysis

A Drainage Study was prepared for the Proposed Project (Chang Consultants 2021a), which evaluated the hydraulic effects of the Proposed Project on existing drainage patterns within the Sweetwater River floodplain. The Project would affect the drainage pattern of the site through mining activities, addition of impervious surfaces, installation of a conveyor belt, and revegetation. The hydraulic models and analyses compared existing and proposed conditions to evaluate the

effects of the proposed mining and restoration activities on flood conveyance through the Project site.

A sizeable portion of the Sweetwater River floodplain would be altered within the Project site boundaries. The bottom of the trapezoidal channel would, however, be undisturbed in order to minimize impacts to jurisdictional resources and allow Sweetwater Authority water transfers to continue along their current path. The maximum transfer flow rate of 358 cfs can be conveyed within the trapezoidal channel footprint at a depth of approximately two to four feet. To ensure that excavation activities would not substantially affect Sweetwater Authority water transfers between the Loveland and Sweetwater reservoirs, mining activities proposed during the rainy season (November through March) would be located away from the river channel, to the extent feasible. If mining would occur within 10 feet of the low-flow channel, berms approximately five feet in height would be constructed to separate the operations areas from the channel, as needed. The berm locations can be adjusted as mining progresses and would be set back from mining activities. Berms may also be incorporated upon final reclamation, where needed, to reduce potential loss of water during scheduled transfers.

All extractive activities would take place within areas lying adjacent to the existing channel and extend outwards to the Project limits. Excavation in these areas would average approximately 20 feet bgs across the site and some areas would be excavated to a maximum depth of 40 feet bgs. The result of the extractive activities would be to lower upland areas that currently lie adjacent to the channel, increasing the capacity for stream flows within the defined floodway.

While mining projects are exempt from hydromodification BMPs specified in the County WPO, BMPs to control stormwater discharge from the Project site would be required. Mining activities would require coverage under the Industrial General Permit, involving the preparation of a SWPPP that includes erosion and sediment control BMPs to minimize erosion and sedimentation from occurring on site. To minimize effects related to erosion, the Project may utilize small, temporary desiltation basins to prevent sediment from leaving the site while allowing water to pass through to existing drainage features. Permanent erosion control structures would include a drop structure at the eastern end of the site where the Sweetwater River enters the property, a riprap structure on the west side of the Steele Canyon Road bridge, and appropriate slopes, terraces, ditches, and down drains where needed (refer to Figures 1-5a and 1-5b). The drop structure would prevent head cutting of the channel during infrequent, high flow events. It would be the width of the modified river channel (610 feet) on the slope face, extend approximately 20 feet below the slope face, and be constructed of grouted riprap. Mining and reclamation grading would direct runoff from the disturbed areas towards the basins. The existing Sweetwater River channel would be avoided and silt fences would be installed five feet from the outer edge of each side of the channel. Operations would implement erosion control measures in accordance with set criteria to reduce on- and off-site erosion. These measures include monitoring soil movement, arresting gullies or rills using straw mulch and hay bales, and installing silt fencing, compacting soils with equipment, and re-grading as necessary. Rip-rap also would be installed on some of the excavation area slopes to protect against upstream headcutting. Pursuant to Section 87.703 of the County Grading Ordinance, grading and excavation for the Proposed Project would be in accordance with an approved MUP Plot Plan and Reclamation Plan. The County review of these documents prior to issuance of permits would ensure drainage is appropriately accommodated during mining activities.

Given the nature of the Project, minimal impervious surfaces would be added. Widening of Willow Glen Drive between Steele Canyon Road and the Project egress driveway would also occur and would result in the increase of impervious surfaces. Stormwater runoff from the new impervious surfaces on Willow Glen Drive would be directed along the southerly curb of Willow Glen Drive and conveyed into tree wells just south of the roadway, thus limiting potential for erosion and siltation. The proposed conveyor system would be primarily aligned in the direction of flow and have a profile that causes minimal flow blockage. Additionally, it would be anchored or removed prior to a significant rain or during scheduled water transfers. Therefore, it would have a minimal impact with regard to the site's drainage pattern or water surface elevations. Two adjacent SDG&E transmission towers exist on site just upstream of Steele Canyon Road. The towers and ground supporting the towers would remain and not be disturbed by mining activities. A ramp would be provided from the extraction area to the towers for access. The ramp and slopes surrounding the towers would be lined, as needed, for access and to prevent erosion.

Following the completion of extractive activities, revegetation would occur. Dense riparian vegetation would reduce the velocity of water flow through the Project site relative to the current grass-lined swale; however, the increased width of the flood channel would allow the flows to extend outward from the existing channel, balancing the effects of the increased roughness with the carrying capacity of the channel. The revegetation would minimize long-term erosion and sedimentation from the site.

The Drainage Study prepared for the Project determined that the 100-year flow of the Sweetwater River where it exits the Project site would be the same under existing and proposed conditions (Chang Consultants 2021a). Model results indicate that the Proposed Project would not increase 100-year water surface elevations at the majority of cross-section locations. At the cross-sections where a rise would occur, the floodplain would remain within the Project site. The proposed water surface elevations would match the existing condition exactly at the up-stream study limits. Therefore, the Project would meet the County and FEMA's floodway regulations. As a result, the Proposed Project would not create adverse flooding impacts within the Sweetwater River, consistent with the goals of the FEMA floodway regulations. Additionally, the 100-year flow velocities within the Project site would generally be low and are considered non-erosive (Chang Consultants 2021a).

Impacts related to the alteration of drainage patterns, erosion, sedimentation, or flooding on site or off site would be **less than significant**.

Increase in Discharge Rates

Guideline for the Determination of Significance

A significant impact related to discharge rates would occur if the Proposed Project would:

8. Result in increased velocities and peak flow rates exiting the Project site that would cause flooding.

Guideline Source

Guideline No. 8 is based on the County Guidelines for Determining the Significance – Hydrology (County 2007k).

Analysis

Stormwater runoff that flows into the Project site drains into the Sweetwater River under existing conditions. As noted above, the Project would result in minimal increases in impervious surfaces. Stormwater runoff from the new impervious surfaces on Willow Glen Drive would be directed along the southerly curb of Willow Glen Drive and conveyed into tree wells just south of the roadway. As a result, the Drainage Study (Chang Consultants 2021a) concludes that the Project would not increase off-site flow rates. Rather, extraction would provide detention and retention benefits that would reduce off-site flow rates during mining. Flows generated on site would be contained by stormwater control measures such as berms and riprap and BMPs described above. Further, a MUP Plot Plan and Reclamation Plan would be approved prior to grading and excavation and would document and prescribe how flows would be contained. Lastly, the widening of the river channel would improve the channel's ability to accommodate natural flows and would dissipate water energy during large storm events. Therefore, the Proposed Project would not result in increased velocities and peak flow rates exiting the Project site and would not cause downstream flooding. Impacts would be **less than significant**.

Housing and Structures in a Flood Zone

Guideline for the Determination of Significance

A significant impact related to flooding would occur if the Proposed Project would:

9. Place housing, habitable structures, or unanchored impediments in a 100-year floodplain area or other special flood hazard area, as shown on a Flood Insurance Rate Map (FIRM), a County Flood Plain Map or County Alluvial Fan Map, which would subsequently endanger health, safety, and property due to flooding (including mudflows or debris flows).

Guidelines Source

Guideline No. 9 is from Section 4.0 of the County Guidelines for Determining Significance – Hydrology (County 2007k).

Analysis

The Project would remove existing development within the floodplain (i.e., golf course clubhouse, maintenance facility, and restrooms) and replace it with limited facilities associated with the processing plant, as well as soil stockpiles. The proposed processing plant facilities would be located outside of the floodway. The proposed conveyor system within the floodplain would either be anchored to prevent displacement by flowing water or removed at least 24 hours prior to forecast of substantial rainfall of at least one-half inch. The conveyor system would be primarily aligned in the direction of flow and would have a profile that causes minimal flow blockage. Some soil stockpiles at the upper edges of extraction areas would be located within the floodway and/or

floodplain. Stockpiles in the floodway would generally be aligned in the direction of flow and would not substantially impede flows. The stockpiles would be temporary and would not represent a singular structure that could become displaced and endanger health, safety, and property.

Further, flow velocities of the 100-year flood event would decrease with mining operations as the excavation area would increase the conveyance area and would act as an energy dissipater. Lastly, a MUP is part of the Proposed Project, which is necessary to allow sand mining operations involving the placement of mining equipment within a designated floodplain. Therefore, with approval of a MUP, including supporting hydraulic analysis of the floodplain, the Proposed Project would comply with Section 5506 of the Zoning Ordinance and not result in flooding hazards associated with having unanchored impediments in the Sweetwater River. Impacts would be **less than significant**.

3.1.5.4 *Cumulative Impact Analysis*

Water Quality

The geographic context for the cumulative analysis of water quality is the Sweetwater HU. Construction and development of cumulative projects, such as those listed in Table 1-14, could contribute source pollutants to downstream receiving waters potentially resulting in violations of water quality standards and waste discharge requirements; however, construction and development proposed as part of these cumulative projects would be subject to regulations that require the inclusion of project design features that would ensure compliance with applicable water quality standards, such as the CEQA, NPDES, and local regulations and policies. Because the Project would have a less than significant impact on water quality standards and waste discharge requirement violations, when combined with cumulative projects, impacts would not be cumulatively considerable.

Groundwater Storage/Well Interference

The geographic context for the cumulative analysis of groundwater storage/well interference is the Sweetwater HU. Cumulative projects would have the potential to utilize groundwater during construction and/or operations; however, each cumulative project would be subject to environmental review to analyze project-specific impacts to groundwater supplies and would be required to comply with all local regulations that ensure sufficient groundwater supplies exist to serve the project, if necessary.

As discussed above, the Project would result in a benefit to the groundwater basin as the amount of water used for the Project would be substantially less than the amount of water used for the existing golf course operations. Because the Project would decrease the demand for groundwater, it would not contribute to a cumulative impact related to groundwater storage or well interference.

Alteration of Existing Drainage Patterns

Construction of the cumulative projects identified in Table 1-11 involves various developments that could alter existing drainage patterns leading to substantial erosion, siltation, or on- or off-site flooding. Some of these cumulative projects could occur simultaneously, which could compound impacts. Further, the cumulative projects listed in Table 1-11 would increase impervious surfaces

within the area. However, each project would be required to comply with all local regulations and policies aimed at reducing discharge of pollutants, erosion, and siltation during and after construction. Additionally, each project would be required to maintain pre-development discharge rates and volume of stormwater runoff.

With implementation of the other elements including the Reclamation and Restoration Plans, the Proposed Project would include drainage control measures that are protective of hydrologic resources in accordance with federal, state, and local requirements. Further, the Proposed Project would not alter existing drainage patterns outside of the floodplain and would not create adverse flood impacts within the Sweetwater River, which is consistent with the goals of FEMA floodway regulations. The excavation area itself would serve as an energy dissipater and natural filtration basin for stormwater flows. Therefore, with regard to substantial alteration of drainage patterns, the Proposed Project would not have a cumulatively considerable effect.

Increase in Discharge Rates

Impermeable surfaces, constructed with development of the cumulative projects listed in Table 1-11, could contribute substantial quantities of stormwater runoff to downstream receiving waters or surrounding local stormwater drainage systems, where capacities could be exceeded. However, these cumulative projects would be subject to CEQA review to analyze project impacts related to downstream flooding or stormwater drainage systems. Further, the cumulative projects would be required to comply with local regulations that require development to construct storm water drainage and retention systems so that they would not cause flooding.

As discussed above, flows occurring on the Project site during mining operation and reclamation activities would not exceed the capacity of the existing Sweetwater River channel. The restoration and revegetation of the mining footprint area following mining activities would enable the slopes to more efficiently absorb runoff prior to discharge into the channel, which would further reduce the potential for flooding. Therefore, the Proposed Project would not result in increased velocities and peak flow rates exiting the Project site and would not cause downstream flooding. Thus, the Project would not contribute to an increase in discharge rates that would cause downstream flooding.

Housing and Structures in a Flood Zone

Cumulative projects, such as those listed in Table 1-11, would be required to comply with applicable regulations that would prevent the construction of structures in floodways and floodplains. Therefore, through regulation, a cumulative impact would not occur.

While the Proposed Project would include the presence of construction and mining equipment within the Sweetwater River floodplain, the Proposed Project's supporting hydraulic analysis demonstrates it would not result in flooding hazards associated with placing mining equipment or stockpiles in the Sweetwater River floodplain. Thus, the project in combination with cumulative projects, impacts associated with housing or structures in a flood zone would not be considered cumulatively considerable.

3.1.5.5 *Significance of Impacts Prior to Mitigation*

As discussed above, no significant impacts related to hydrology and water quality would result from the Proposed Project and no mitigation is required.

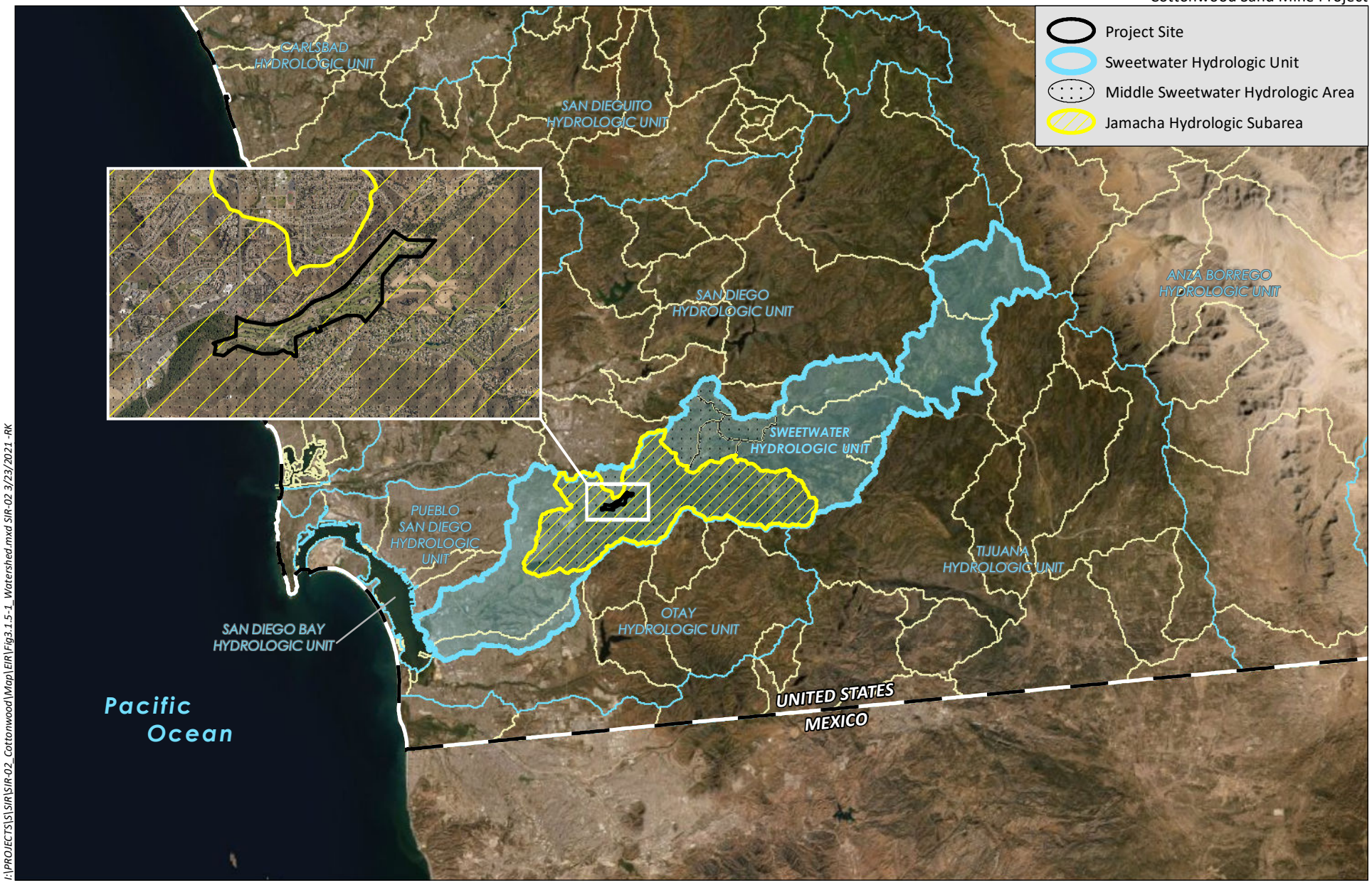
3.1.5.6 *Conclusion*

Based on the analysis provided above, no significant Project-specific or cumulative impacts related to hydrology and water quality would result from implementation of the Project.

Table 3.1.5.1
WATER QUALITY OBJECTIVES FOR PROJECT RECEIVING WATERS

Constituent (mg/L or as noted)	
Total Dissolved Solids (TDS)	500
Chloride (CI)	250
Sulfate (SO_4)	250
Percent Sodium (%NA)	60
Nitrogen and Phosphorous (N&P)	a
Iron (Fe)	0.3
Manganese (Mn)	0.05
Methylene Blue-Activated Substances (MBAS)	0.5
Boron (B)	0.75
Odor	none
Natural Turbidity (NTU)	20
Color Units	20
Fluoride (F)	1.0

Source: RWQCB 2016



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Source: Aerial Photo (Esri 2016); NWI (U.S. Fish and Wildlife Service 2018); Hydrologic Units (California Interagency Watershed Mapping Committee 2004)

0 8 Miles

HELIX Environmental Planning

Project Site Watershed

Figure 3.1.5-1

Cottonwood Sand Mine Project

Project Site
Sweetwater River
Existing FEMA 100-year Floodplain
2ft Contours

Jamacha Way
Seca Street
Sonett Street
Wind River Road
Brabham Street
Hilton Head Road
Willow Glen Drive
Via Rancho San Diego
Jamacha Road
Sweetwater River
Heatherwood Drive
Steele Canyon Road
Par Four Drive
Ivanhoe Ranch Road
Cottonwood Springs Lane
Indian Mills Lane
Jamul Drive
Greystone Drive

0 700 Feet

Source: Contours (SanGIS, 2014)

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HELIX Environmental Planning

100-year Floodplain

Figure 3.1.5-2