3.1.5 Hydrology and Water Quality

This section of the Program Environmental Impact Report (PEIR) describes hydrology and water quality, including the existing surface water and groundwater quality, groundwater resources, hydrology and drainage patterns, inundation hazards, and water planning, in the county and any changes to the physical environment that could occur as a result of implementation of the Integrated Vector Management Program (IVMP or Proposed Project). This section is based on a literature review performed by HELIX Environmental Planning, Inc., the *County of San Diego Guidelines for Determining Significance – Hydrology and Water Quality* (County 2021c), the *County of San Diego Guidelines for Determining Significance – Groundwater Resources* (County 2007f), and Appendix G of the California Environmental Quality Act (CEQA) Guidelines.

3.1.5.1 *Existing Conditions*

General surface water hydrology and water quality conditions of the Service Area[1] discussed below is based on a review of the *Water Quality Control Plan for the San Diego Basin* (*Basin Plan*) (RWQCB 1994), the *San Diego County General Plan EIR*, and available online information.

Surface Water Hydrology

San Diego County's surface waters are characterized by estuaries, lagoons, bays, lakes, reservoirs, rivers, and creeks. These water bodies capture the flow of the region's surface water runoff and become a blend of natural runoff and imported water. Many support natural habitat and recreational areas in addition to acting as storage reservoirs for the region's water supply. Figure 3.1.5-1, *Surface Waters and Floodplains*, shows the location of surface water including streams, rivers, lakes, and reservoirs within the region. An inventory of these surface water resources is provided below.

The Laguna Mountains divide San Diego County into two hydrologic regions that can be used to further evaluate surface water characteristics. These include the (1) Colorado Hydrologic Region and (2) San Diego Hydrologic Region (SDHR). The Colorado Hydrologic Region has small portions of five hydrologic units (HU) within the eastern part of the county. These units are collectively referred to as Desert units and contained within the Salton Sea Transboundary Watershed Management Area (WMA), discussed further below. The SDHR contains 11 HUs within the county. These include San Juan, Santa Margarita, San Luis Rey, Carlsbad, San Dieguito, Peñasquitos, San Diego, Pueblo San Diego, Sweetwater, Otay, and Tijuana. Figure 3.1.5-2, *Hydrologic Units*, shows the boundaries of the HUs within the county.

For the purpose of this analysis, the HUs in the region will be discussed in terms of WMAs. A watershed is an area of land that drains to a common waterway, such as a stream, lake, estuary, wetland, aquifer or ocean. WMAs are grouped according to HUs and have been developed to implement federal and State statutes for the management of water quality in the region. There are ten WMAs within the region. All WMAs within the region, with two exceptions, include only one HU and are named accordingly. One exception includes the San Diego Bay WMA, which includes the Pueblo San Diego HU, Sweetwater HU, and Otay HU. The other exception is the

[1] Service Area is synonymous with Assessment Area, which is defined in the *Engineer's Report* (County 2022a) as the area in which an annual levy provides funding for essential vector control services, including those properties that may request and/or receive direct and more frequent service and are located within the scope of the vector surveillance area. As such, Native American reservation land, as a Sovereign Nation, is excluded from the Service Area along with federally owned lands that receive minimal to no services.

Salton Sea Transboundary WMA, which includes five HUs in portions of San Diego and Imperial Counties. The WMAs are discussed below.

San Juan Watershed Management Area

The San Juan WMA covers 317,440 acres in San Diego, Orange, and Riverside Counties. Approximately 96,000 acres of this area is in northwestern San Diego County, almost entirely within the Camp Pendleton military base. There is one HU (San Juan) and five hydrologic areas (HAs) in this WMA. The San Onofre and San Mateo HAs are the only HAs within San Diego County. Major stream systems from these two HAs include San Mateo Creek, San Onofre Creek, and Las Flores Creek. The mouth of San Mateo Creek forms a saltwater tidal marsh that is entirely within the Camp Pendleton Marine Corps Base. In addition, there is a State beach along the Interstate 5 corridor near the northern boundary of Camp Pendleton (County 2011b).

Santa Margarita River Watershed Management Area

The Santa Margarita River WMA is the second largest in the SDHR. It covers over 494,396 acres, with about three-quarters of the watershed in Riverside County and about one-quarter in San Diego County. Included in it are portions of Camp Pendleton and the unincorporated communities of Fallbrook, Palomar/North Mountain, Pala-Pauma, Pendleton/De Luz, and Rainbow. The watershed includes one HU (Santa Margarita) and nine HAs including Ysidora, De Luz, Murrieta, Auld, Pechanga, Wilson, Cave Rocks, Aguanga, and Oak Grove. The Ysidora HA is entirely within the County of San Diego, while the De Luz HA, Pechanga HA, Aguanga HA, and Oak Grove HA cover portions of both San Diego and Riverside Counties. The remainder of the HAs within the Santa Margarita WMA are entirely within Riverside County. The WMA contains the Santa Margarita River, Temecula Creek, Murrieta Creek, Rainbow Creek, De Luz Creek, Sandia Creek, Santa Margarita Lagoon, Vail Lake, Skinner Reservoir, and Diamond Valley Lake Reservoir. There are nine dams in the watershed with 92% of the river miles categorized as free flowing (County 2017).

San Luis Rey River Watershed Management Area

The San Luis Rey River WMA, at 358,927 acres, is the third largest of the watersheds within the SDHR. It is along the northern border of the county and includes the unincorporated areas of Bonsall, Desert, Fallbrook, North County Metro, Palomar/North Mountain, Pala-Pauma, Pendleton/De Luz, Rainbow, and Valley Center. In addition, there are several Native American reservations in the WMA. This WMA consists of one HU (San Luis Rey) and three HAs including Lower San Luis Rey, Monserate, and Warner Valley. The watershed contains two major water bodies. Lake Henshaw is the main reservoir for the San Luis Rey WMA and is the third largest in San Diego County. The San Luis Rey River is the major stream system (County 2017).

Carlsbad Watershed Management Area

The Carlsbad WMA encompasses 135,345 acres and extends from Lake Wohlford on the east to the Pacific Ocean on the west and from the cities of Vista and Oceanside on the north to Cardiff-by-the-Sea on the south. The Carlsbad WMA is primarily within the jurisdictional boundaries of incorporated cities including the Cities of Oceanside, Carlsbad, Encinitas, Solana Beach, San Marcos, Vista, and Escondido. However, approximately 31% of the WMA is in unincorporated areas under the jurisdiction of the County including the North County Metro, Valley Center, and San Dieguito Community Planning Areas. It includes one HU (Carlsbad) and six HAs (Loma Alta, Buena Vista Creek, Agua Hedionda, Encinas, San Marcos, and Escondido Creek). The

watershed contains five coastal lagoons including Loma Alta Slough, Buena Vista Lagoon, Agua Hedionda Lagoon, Batiquitos Lagoon, and San Elijo Lagoon. The WMA also includes two small reservoirs, Dixon Lake and Lake Wohlford. The San Marcos Dam controls approximately 53% of the San Marcos HA. The area is drained by Buena Vista, Agua Hedionda, San Marcos, and Escondido Creeks (County 2017).

San Dieguito River Watershed Management Area

The San Dieguito River WMA covers 221,320 acres and includes portions of the Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach, as well as the unincorporated communities of Julian, North County Metro, North Mountain, Pala-Pauma, Ramona, San Dieguito, and Valley Center. The WMA consists of one HU (San Dieguito) and five HAs including Solana Beach, Hodges, San Pasqual, Santa Maria Valley, and Santa Ysabel. The watershed contains the San Dieguito River and its tributaries, along with Santa Ysabel and Santa Maria Creeks. It also contains the following reservoirs: Lake Hodges, Lake Ramona, Lake Poway, Sutherland Reservoir, Olivenhain Reservoir, and the San Dieguito Reservoir (County 2017).

Los Peñasquitos Creek Watershed Management Area

The Los Peñasquitos Creek WMA includes 60,424 acres of land that extends easterly to Iron Mountain and westerly to Los Peñasquitos Lagoon. This WMA includes portions of the Cities of Del Mar, Poway, and San Diego, as well as the unincorporated areas of Lakeside, Ramona, and Miramar County Island. This WMA contains the Peñasquitos HU, Miramar Reservoir HA, Poway HA, Scripps HA, Miramar HA, and Tecolote HA. The major receiving waters for the Los Peñasquitos Creek WMA are the Los Peñasquitos Lagoon and Mission Bay. Los Peñasquitos Creek WMA is drained by Los Peñasquitos Creek, which flows into Los Peñasquitos Lagoon near the northern border of the City of San Diego within the Torrey Pines State Reserve. Los Peñasquitos Lagoon also receives inputs from Carroll Canyon, just south of Los Peñasquitos Creek, and McGonigle Canyon to the north. This lagoon is a 630-acre wetland that lies near the mouth of the Los Peñasquitos Creek and provides coastal wetland habitat. Rose Creek and Tecolote Creek are the main tributaries to Mission Bay. Mission Bay is the largest human-made aquatic park in the country, consisting of 4,235 acres, approximately 46% land and 54% water. Mission Bay was converted from a coastal marshland in the 1940s after the completion of a large dredging project. There are no major streams in this WMA although it is drained by numerous creeks (County 2017).

San Diego River Watershed Management Area

The San Diego River WMA covers 277,554 acres and includes portions of the Cities of El Cajon, La Mesa, Poway, San Diego, and Santee. The watershed also covers portions of the unincorporated areas of Alpine, Central Mountain, Crest/Dehesa, Harbison Canyon/Granite Hills, Julian, Lakeside/Pepper Drive-Bostonia, North Mountain, Ramona, and Valle de Oro and the Barona Indian Reservation. The watershed contains the San Diego River, Boulder Creek, El Capitan Reservoir, San Vicente Reservoir, Lake Jennings, Lake Cuyamaca, and Lake Murray. Much of the impounded water in the reservoirs is used to serve major population centers within the county. The watershed is drained by the San Diego River, which discharges into the Pacific Ocean between Mission Beach and Ocean Beach in the City of San Diego (County 2017).

San Diego Bay Watershed Management Area

The San Diego Bay WMA covers 282,584 acres and consists of three major watersheds: Pueblo San Diego, Sweetwater, and Otay (County 2017).

Pueblo San Diego Watershed

The Pueblo San Diego Watershed covers nearly 38,000 acres (Project Clean Water 2021). It is composed of one HU (Pueblo) and three HAs including Point Loma, San Diego Mesa, and National City. Major water bodies in the watershed include Chollas Creek, Paleta Creek, and San Diego Bay.

Sweetwater Watershed

The Sweetwater Watershed encompasses over 145,000 acres and includes one HU (Sweetwater) and three HAs including Lower Sweetwater, Middle Sweetwater, and Upper Sweetwater (Project Clean Water 2021). Major water bodies include the Sweetwater River, Sweetwater Reservoir, Loveland Reservoir, and San Diego Bay.

Otay Watershed

The Otay Watershed is nearly 98,500 acres in size and consists of the Otay HU and three HAs including Coronado, Otay Valley, and Dulzura (Project Clean Water 2021). Major water bodies include the Upper and Lower Otay Reservoirs, Otay River, and San Diego Bay. The two major reservoirs in the watershed supply water, important wildlife habitat, and recreational opportunities. The Lower Otay Reservoir lies at the end of the San Diego Aqueduct.

Tijuana River Watershed Management Area

The Tijuana River WMA is the largest of the San Diego watersheds and covers over 1.1 million acres. The Tijuana River is formed by two drainage networks that merge in the City of Tijuana, then flow across the U.S./Mexico international border into the Tijuana River Estuary in Imperial Beach, and ultimately flow to the Pacific Ocean. The watershed is divided by the U.S.-Mexico international border with just over 27% lying within the San Diego region. The watershed is composed of the Tijuana HU and the following HAs: Tijuana Valley, Potrero, Barrett Lake, Monument, Morena, Cottonwood, Cameron, and Campo. Major water bodies in this WMA include the Tijuana River, Cottonwood Creek, and Tijuana River Estuary. The Tijuana River Estuary is a National Estuarine Sanctuary.

Salton Sea Transboundary Watershed Management Area

The Salton Sea Transboundary WMA includes HUs located in the Colorado Hydrologic Region. The Salton Sea Transboundary WMA contains parts of five HUs in the eastern desert portion of the county. These include the Anza-Borrego, Clark, Whitewater, West Salton, and Imperial Watersheds. The Anza-Borrego Watershed is the largest hydrologic unit, covering about 80% of the desert portion of San Diego County and extending into Imperial and Riverside Counties. Portions of the Clark, Whitewater, and West Salton Watersheds are at the extreme northeast corner of the county. The Imperial Watershed is at the southeast edge of San Diego County and extends into Imperial County. Water is limited in all of these areas. The surface water that intermittently exists flows toward the Salton Sea and the Colorado River. Runoff occurs from winter precipitation especially in the higher elevations and from summer thunderstorms.

Groundwater Hydrology

San Diego County overlies a complex groundwater resource that varies greatly throughout the region. All major watersheds in the San Diego region contain groundwater basins. The county includes three general categories of aquifers that include fractured crystalline rock, alluvial, and desert basin aquifers; however, alluvial groundwater aquifers have the potential to create suitable conditions for mosquito-breeding habitat as discharges to the surface become overland flow that can become localized in stagnant, shallow pools of water. Alluvial groundwater aquifers are typically found in river and stream valleys, around lagoons, near the coastline, and in the intermountain valleys. Figure 3.1.5-3, *Alluvial Groundwater Aquifers*, depicts the major alluvial aquifers in San Diego County.

Water Quality

This section defines common water quality contaminants that have been identified in surface and groundwater resources, as well as surface water quality issues, within the county's WMAs.

Water Quality Contaminants

Common contaminants in surface waters include metals, nutrients (phosphorous and nitrogen), petroleum products, pathogens, pesticides and herbicides, radioactive elements, sediments, and total dissolved solids (TDS). Surface water quality, including beneficial uses, water quality objectives, implementation strategies, plans and policies, and surveillance, monitoring and assessment information, for each WMA is contained in the *Basin Plan*, prepared in 1994 and last amended in May 2016.

Metals

Metals can impact surface water quality by accumulating in sediments and fish tissues. This poses risks of toxicity such as lowering the reproductive rates and life spans of aquatic animals and animals up the food chain. Metals can also alter photosynthesis in aquatic plants and form deposits in pipes. Metals in urban runoff can result from automobile use, industrial activities, water supply infrastructure corrosion, mining, or pesticide application. Atmospheric deposition can also contribute metals to water bodies. Groundwater can be contaminated from metals from improper disposal of waste generated from small businesses such as automobile repair shops or metal parts cleaning operations. Once groundwater is contaminated with metals it can be extremely difficult, costly, or impossible to remove them.

Nutrients (Phosphorous and Nitrogen)

High levels of nitrogen and phosphorus in surface waters can produce harmful algal blooms. In turn, these blooms can produce "dead zones" in water bodies where dissolved oxygen levels are so low that most aquatic life cannot survive. Typical sources of nutrients in surface waters are improper fertilizer usage (both agricultural and residential), discharges from failing or improperly maintained septic systems, and accidental sanitary sewer overflows. Nitrate, which is composed of nitrogen and oxygen, occurs naturally in soil and water. Nitrate is an important constituent in fertilizers used for agricultural purposes and is present in human and animal wastes. Typical sources of elevated nitrates in groundwater are failing septic tanks, feed lots, or farming operations. Infants, young livestock, and pets are extremely susceptible to potential health effects from drinking water with nitrates above regulated levels and could become seriously ill. If untreated, the condition can be fatal.

Petroleum Products (Gasoline, Diesel, Oil, and Grease)

Gasoline, diesel, oil, and grease are characterized as high molecular weight organic compounds. Primary sources of gasoline, diesel, oil and grease contaminants are motor products from leaking vehicles and underground storage facilities and tanks. Petroleum hydrocarbon products commonly found in gasoline, including benzene, toluene, ethylbenzene, xylene, and Methyl tertiary butyl ether, are considered common petroleum contaminants to surface water and groundwater. Benzene is used as a gasoline additive, industrial solvent and in the production of drugs, plastics, rubber, and dyes. Toluene is widely used as an industrial feedstock and as a solvent. Ethylbenzene is used in the production of plastic while xylene is used as a solvent in the printing, rubber, and leather industries. Methyl tertiary butyl ether is a gasoline additive that has historically caused groundwater contamination from spills or leaks at gas stations. Introduction of petroleum pollutants to water bodies is typical due to the widespread use and application of these products in municipal, residential, commercial, industrial, and construction areas. Over 2,000 leaking underground fuel tanks, typically storing petroleum products, exist throughout the county. Petroleum products are common contaminants in county groundwater.

Additional sources of oil and grease include esters, oils, fats, waxes, and high molecular weight fatty acids. Introduction of these pollutants to water bodies is typical due to the widespread use and application of these products in municipal, residential, commercial, industrial, and construction areas. Elevated oil and grease content can decrease the aesthetic value of a water body, as well as its water quality.

Pathogens (Bacteria and Viruses)

Water contaminated with pathogens such as bacteria and viruses can introduce diseases to humans and animals. This can have significant public health implications, particularly related to water used for drinking and recreational uses such as swimming, surfing, and shellfish harvesting. Common sources of pathogens in surface water include wild and domesticated animals, urban and agricultural activities, and accidental sanitary sewer overflows. Elevated bacteria in groundwater occur primarily from human and animal wastes. Sources of bacteriological contamination include septic tanks, natural soil/plant bacteria, feed lots, pastures, and other land areas where animal wastes are deposited. Old wells with large openings, including hand dug wells and wells with inadequate seals, are most susceptible to bacteriological contamination from insects, rodents, or animals entering the well.

Pesticides and Herbicides

As defined by the California Department of Pesticide Regulation (CDPR), a pesticide is any substance intended to control, destroy, repel, or attract a pest. Any living organism that causes damage, economic loss, and/or transmits or produces disease may be the target pest. Some common categories of pesticides include insecticides, herbicides, rodenticides, fungicides, repellents, and disinfectants. The Proposed Project does not propose to use herbicides. While pesticides have the potential to enter surface water, this is predominantly due to agricultural and urban sources. Typical impacts may include accumulation in sediments and bioaccumulation in the food chain. Pesticides and herbicides have the potential to be toxic to both aquatic life and humans, depending on their constituents, concentration, and application method. However, pesticides must pass a stringent regulatory review by the U.S. Environmental Protection Agency (USEPA) prior to sale and use in the United States. When pesticide usage is necessary for the County Department of Environmental Health and Quality, Vector Control Program (VCP), they are applied by vector control technicians certified by the California Department of Public Health

(CDPH) in a manner that minimizes risk to human and ecological health and in accordance with the legal application rates, label instructions, and federal and State guidelines. Additionally, some pesticides are classified as “minimum risk pesticides” by the USEPA if they are determined to pose little to no risk to human health or the environment. Pesticides that are classified as “minimum risk pesticides” would still be applied according to label instructions if used by the VCP.

Radioactive Elements

Naturally occurring radioactive elements are present to some extent in nearly all rocks and soil throughout the world and leach into groundwater from natural mineral deposits. Radioactivity in groundwater is not a new phenomenon, having been present in some form since the earth was formed. Elevated levels of naturally occurring radioactive elements including uranium have been detected in groundwater in various areas throughout San Diego County. Several community water systems have had ongoing problems with radioactive elements and have relatively expensive treatment systems to reduce levels of various contaminants to levels below regulatory limits. Potential health effects of various radioactive elements include an increased risk of various cancers and kidney toxicity.

Sediments

Increased sedimentation, over and above the amount that enters the water system by natural erosion, can cause many adverse impacts on aquatic organisms, water supply, and wetlands. Sedimentation can decrease transmission of light, which affects plant production and leads to loss of food and cover for aquatic organisms. It can change behavioral activities (nesting, feeding, mating), and adversely affect respiration, digestion, and reproduction. Contaminants and toxic substances can also be transported in sediments. Sediments can damage water treatment equipment, increasing treatment costs. They can reduce reservoir volume and flood storage and increase peak discharges.

Total Dissolved Solids

TDS refer to the total concentration of all minerals, salts, metals, cations, or anions that are dissolved in water. TDS is composed of inorganic salts (principally calcium, magnesium, potassium, sodium, bicarbonate, carbonate, chloride and sulfate), and some small amounts of organic matter that are dissolved in water. The primary source of TDS in groundwater is the natural dissolution of rocks and minerals, but septic tanks, agricultural runoff, and stormwater runoff also contribute. Increased salts in regional freshwater resources from mining, urban runoff, and construction can create stressful environments and even destroy habitat and food sources for wetland animals in aquatic and wetland habitats, as well as favoring salt tolerant species; reduce the quality of drinking water; and may cause skin or eye irritations in people. In deep desert basins like those found underlying Borrego Valley, groundwater in the deeper portions of the basin typically contains older water than the shallower zones. This older water may contain high concentrations of salt and other dissolved minerals making it unsuitable for human consumption. Pumping shallow wells may draw deeper poor quality water into the wells. An elevated TDS concentration is not a health hazard; however, it can cause the water to have a salty or brackish taste, it can cause the water to be corrosive and results in scale formation on pipes, pumps, and water heaters. Because of the seasonal nature of precipitation within the San Diego region, surfacing groundwater and runoff from applied water (agricultural and urban) represent the primary contributors to dry season stream flows. The interchange between surface water and groundwater, and the extreme seasonal variability of flow, evaporation, and water quality in San

Diego County all contribute to a wide range of TDS in our surface waters. Much of the water that is imported to the San Diego region is relatively high in TDS content.

Surface Water Quality

The following discussion identifies surface water quality issues facing WMAs within the unincorporated county. Table 3.1.5-1, *Impaired Water Bodies in San Diego County*, lists the water bodies and their associated pollutants/stressors that are listed as impaired under the Clean Water Act. Additional information, including beneficial uses, water quality objectives, implementation strategies, plans and policies, and surveillance, monitoring, and assessment information for each WMA discussed below, can be found by accessing the *Basin Plan* on the State Water Resources Control Board (SWRCB) website: http://www.swrcb.ca.gov/.

San Juan Watershed Management Area

Water quality concerns for this WMA include surface and groundwater quality degradation, habitat loss, channel bed erosion, and invasive species. Constituents of concern that have been identified include coliform bacteria, nutrients, TDS, solvents, trace metals, and petroleum. Six water bodies within the San Juan WMA have been identified as having indicator bacteria and are listed on the Clean Water Act (CWA 303[d]) List of Impaired Water Bodies. Table 3.1.5-1 identifies the water bodies included on this list within the San Juan WMA.

Santa Margarita River Watershed Management Area

Major impacts affecting this watershed include surface water and groundwater quality degradation, habitat loss, invasive species, and channel bed erosion. There are eight water bodies in the Santa Margarita River WMA that have been placed on the CWA 303(d) list (see Table 3.1.5-1) from pollutant/stressors, including aluminum, ammonia (unionized), chlorpyrifos, copper, eutrophic conditions (from sedimentation), iron, manganese, nitrogen, phosphorus, selenium, silver, sulfates, TDS, and toxicity.

San Luis Rey River Watershed Management Area

Major impacts to the San Luis Rey River WMA include surface water quality degradation, habitat loss, invasive species, and channel bed erosion. Three water bodies in the San Luis Rey WMA have been placed on the CWA 303(d) list (see Table 3.1.5-1). Constituents of concern for the WMA include benthic community effects, bifenthrin, chloride, indicator bacteria, nitrogen, phosphorus, TDS, and toxicity at the San Luis Rey River (west of I-15), indicator bacteria, phosphorus, and total nitrogen along the San Luis Rey River (east of I-15), and eutrophic conditions within Guajome Lake. Potential sources of these contaminants are varied and include both anthropogenic and natural sources.

Carlsbad Watershed Management Area

Major impacts to the watershed include surface water quality degradation, sewage spills, beach closures, sedimentation, habitat degradation and loss, invasive species, and eutrophication. Nine water bodies in the Carlsbad WMA have been placed on the CWA 303(d) list (see Table 3.1.5-1). Pollutant conditions in the WMA include ammonia as nitrogen, benthic community effects, bifenthrin, chlorpyrifos, copper, cypermethrin, indicator bacteria, eutrophic conditions, nutrients, sedimentation/siltation, sulfates, nitrates, and phosphates. Three of the five lagoons within the Carlsbad WMA (Loma Alta Slough, Buena Vista Lagoon, and Agua Hedionda Lagoon) are on the

CWA 303(d) list. The sources of these pollutants are varied and include urban runoff, agricultural runoff, sewage spills, livestock/domestic animals, and other natural sources.

San Dieguito River Watershed Management Area

Major impacts affecting the San Dieguito River WMA include surface water quality degradation, beach closures, sedimentation, habitat degradation and loss, invasive species, and eutrophication. Seven water bodies within this watershed have been placed on the CWA 303(d) list (see Table 3.1.5-1). Pollutants of concern for the WMA include aluminum, bacterial indicators, benthic community effects, bifenthrin, chloride, color, iron, manganese, mercury, nitrogen, pentachlorophenol (PCP), phosphorus, sulfates, total nitrogen as N, TDS, Trichloroethylene/TCE, turbidity, and pH. Land use activities, including urban runoff, agricultural runoff, and domestic animals, as well as other natural sources, are the primary sources of water quality impacts in the WMA.

Los Peñasquitos Creek Watershed Management Area

Major impacts to the Los Peñasquitos Creek watershed include surface water quality degradation, beach closures, sedimentation, habitat degradation and loss, invasive species, and eutrophication. Table 3.1.5-1 presents two water bodies in this WMA that have been placed on the CWA 303(d) list. Constituents of concern that have led to these water bodies being placed on the CWA 303(d) list are benthic community effects, bifenthrin, chlorpyrifos, indicator bacteria, nitrogen, phosphate, TDS, and toxicity within the Los Peñasquitos WMA.

San Diego River Watershed Management Area

Major impacts to the San Diego River WMA include surface water quality degradation, habitat degradation and loss, sediment, invasive species, eutrophication, and flooding. Table 3.1.5-1 presents the six water bodies in the San Diego River WMA that have been placed on the CWA 303(d) list. Constituents that resulted in water bodies being placed on the CWA 303(d) list include bacterial indicators, benthic community effects, cadmium, chloride, color, eutrophic conditions, nitrogen, oxygen (dissolved), pH, phosphorus, sulfates, TDS, and toxicity. Factors that may be impairing water quality in the WMA include urban runoff, agricultural runoff, mining operations, sewage spills, sand mining, and other natural sources.

San Diego Bay Watershed Management Area

The San Diego Bay WMA contains the Pueblo San Diego Watershed, the Sweetwater River Watershed and the Otay River Watershed. There are 24 water bodies within the San Diego Bay WMA that are listed on the CWA 303(d) list (see Table 3.1.5-1). Pollutants of concern include benthic community effects, bifenthrin, chlordane, copper, cypermethrin, diazinon, indicator bacteria, lead, malathion, nitrogen, polycyclic aromatic hydrocarbon (PAHs), Polychlorinated biphenyls (PCBs), phosphorus, sediment toxicity, trash, and zinc. Sewer overflows, stormwater runoff, and habitat degradation are all factors that may be impairing water quality within the San Diego Bay WMA.

Tijuana River Watershed Management Area

Major impacts to the watershed include surface water quality degradation, trash, sedimentation, eutrophication, habitat degradation and loss, flooding, erosion, and invasive species. The Tijuana River Watershed has a variety of water quality issues, many of which stem from runoff that enters

the watershed from Mexico and is outside the County's jurisdiction. Five water bodies within the Tijuana River WMA have been placed on the CWA 303(d) list (see Table 3.1.5-1). Constituents of concern in the watershed include ammonia as nitrogen, benthic community effects, cadmium, chlorpyrifos, diazinon, eutrophic, indicator bacteria, low dissolved oxygen, malathion, pesticides, phosphorus, sedimentation/siltation, selenium, solids, surfactants, synthetic organics, total nitrogen as N, toxicity, trace elements, and trash. The sources of the pollutants are varied and include urban runoff, sewage spills, industrial discharges, agricultural/orchards, livestock/domestic animals, natural sources, and septic systems.

Salton Sea Transboundary Watershed Management Area

Constituents of concern to the Salton Sea Transboundary WMA include high concentrations of salt, TDS and elevated levels of selenium. Replenishment of the watershed is predominantly from farm drainage and seepage and occasional storm runoff from the Coachella Valley, Imperial Valley, Anza-Borrego, and the Mexicali Valley in Mexico. No Salton Sea Transboundary WMA waterbodies within San Diego County are listed on the CWA 303(d) list.

Groundwater Quality

Traditionally, groundwater supplies within the county have produced high-quality drinking water. However, naturally occurring and more recently anthropogenic sources of contamination have caused the quality of groundwater to be adversely affected in localized areas. The most common anthropogenic sources of groundwater contamination include leaking underground fuel tanks, sewer and septic systems, agricultural applications, and facilities producing animal wastes. The most common contaminants in groundwater within San Diego County include elevated nitrate, naturally occurring radionuclides, TDS, bacteria, and petroleum products. Other groundwater contaminants of concern, which may occur in localized areas, include herbicides, pesticides and other complex organics, and metals. Each of these constituents is described below.

Nitrates

Potable water, whether from local or imported supplies, does not contain significant amounts of nitrates. Nitrate impacts in the county are most common from small lots and/or areas of shallow groundwater on septic systems, excess nitrate used in agricultural applications, and feed lots. Nitrate impacts are most common in more urbanized areas. This includes portions of the unincorporated communities of Rainbow, Valley Center, Ramona, Crest, and Jamul. The nitrate impacts can largely be attributed to agricultural uses and/or imported water being brought into these basins causing septic system failures. The imported water, which allows for dense development, results in artificial recharge through septic systems along with irrigation return flows, which cause shallow groundwater conditions and septic system failures. Additional mapped nitrate problem areas within the unincorporated county include areas of the Mountain Empire Subregion, including Morena Village and the Cameron Corners area of Campo, and a small portion of the Alpine Community Plan Area (CPA) along Interstate 8. There are no data available over a vast portion of the unincorporated county; therefore, there are likely additional areas with nitrate problems that are unmapped.

Naturally Occurring Radionuclides

Naturally occurring radionuclides are present to some extent in nearly all rocks and soil throughout the world and leach into groundwater from natural mineral deposits. As referenced in the County's General Plan Update EIR, known radiochemical problem areas include portions of the Campo,

Lake Morena, and Potrero areas in the Mountain Empire Subregion, Jamul/Dulzura Subregion, Guatay (Central Mountain Subregion), Julian CPA, Cuyamaca (Central Mountain Subregion), Lake Wohlford area (Valley Center CPA), State Route 78 area east of the Ramona CPA, Warner Springs (Desert Subregion), and State Route 79 area near the Riverside County border. No data is available over a vast portion of the county; therefore, there are likely additional areas with potential radionuclide problems that are unmapped.

Total Dissolved Solids

TDS originate naturally from the dissolution of rocks and minerals and can also enter groundwater from septic systems, agricultural runoff, and stormwater runoff. The most common groundwater areas with elevated concentrations of TDS in the county include coastal sedimentary formations and deeper water found in desert basins.

Coliform Bacteria

Elevated bacteria levels in groundwater occur primarily from human and animal wastes. Old wells with large openings and wells with inadequate seals are most susceptible to bacteriological contamination from insects, rodents, or animals entering the well.

Petroleum Products

Petroleum products enter groundwater primarily from leaking vehicles and widespread use and application in municipal, residential, commercial, industrial, and construction areas. Areas of potential localized contamination of groundwater from leaking underground fuel tanks include sites in the Cameron Corners area of Campo (Mountain Empire Subregion), Julian CPA, Guatay (Central Mountain Subregion), Pine Valley (Central Mountain Subregion), Santa Ysabel (Julian CPA), and several other areas. In a few cases, water supply wells were inactivated due to the possibility of inducing flow of contaminated groundwater from the leaking underground storage tanks.

Borrego Valley

In general, water quality has historically been good within the Borrego Valley Aquifer, as reported by Borrego Water District. Wells from the aquifer show TDS at concentrations of less than 500 milligrams per liter; however, historical nitrate impacts have been noted from wells taken out of production. High salinity and poor quality water is thought to occur in deeper formational materials of the Borrego Valley Aquifer and shallow groundwater in the vicinity of the Borrego Sink in the southern portion of Borrego Valley (County 2011b).

Stormwater Drainage Systems

A stormwater conveyance system, as defined by the County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance (WPO), means “private and public drainage facilities other than sanitary sewers within the unincorporated areas of San Diego County by which urban runoff may be conveyed to receiving waters, and includes, but is not limited to, roads, streets, constructed channels, aqueducts, storm drains, pipes, street gutters, inlets to storm drains or pipes, and catch basins.” The stormwater conveyance system is designed to prevent flooding by transporting water away from developed areas. A vast amount of the unincorporated area is rural land that does not support or require stormwater drainage facilities.

In contrast, most urban areas within the incorporated areas of San Diego County have a range of stormwater drainage facilities.

Unfiltered and untreated stormwater can contain a number of pollutants that may eventually flow to surface waters. The chief cause of urban stormwater pollution is the discharge of inadequately treated waste or pollutants into the natural water system. Discharge may occur naturally or as a result of human activities. Over recent decades, rapid growth and urbanization have placed increased pressure on water resources and resulted in local impacts to water quality, especially in the densely developed western part of the County. In general, increased urbanization increases the amount of pollutants generated by human activities within a watershed and increases the amount of impervious (paved) surfaces, thus reducing the amount of water that would normally infiltrate into the soil and be filtered naturally. Pollutants, such as fertilizers and pesticides, motor oil, antifreeze, sediment, heavy metals, bacteria, and viruses, that accumulate on impervious surfaces are easily picked up by rainfall runoff and flow downstream via the stormwater conveyance system to surface waters. The stormwater conveyance system is not connected with the sanitary sewer system; therefore, urban runoff is not filtered to remove trash, cleaned, or otherwise treated before it is discharged to surface waters. The typical result is that pollutants are carried directly into surface water by runoff. Stormwater discharges that enter the natural receiving waters can be polluted by either point sources or non-point sources.

Point Source Discharge

Point source pollution refers to pollutants discharged to surface water through any discernable, confined, and discrete conveyance. In other words, the boundaries of the source of pollution can be easily defined and identified from a single point. Point sources generally discharge predictable concentrations and volumes of pollutants. Examples of point source pollution are sewage treatment plants, landfills, and industrial facilities, all of which may release effluent and sewage or other liquid waste directly into a body of water.

Non-Point Source Discharge

Non-point source pollution refers to diffuse, widespread cumulative sources of pollution and is the primary source of surface water and groundwater contamination. Non-point source pollution cannot be traced back to a single point or source. Non-point sources may be large or small but are generally numerous throughout a watershed. Non-point source water pollution is often a by-product of poor land use practices, which do not incorporate adequate best management practices (BMPs), and the collective effects of individual behaviors. These may include pollution caused by rainfall and over-irrigation that washes pollutants into storm drains, streams, rivers, lakes, and oceans. Common sources of non-point pollution include, but are not limited to, runoff from urban, agricultural, or industrial areas, landscaping, roads, highways, improperly managed construction sites, septic system failures, recreational boating, timber harvesting, mining, and livestock. Non-point source discharges can also result from physical changes to stream channels and habitat degradation. Typical non-point source contaminants include trash, sediments, pesticides, fertilizers, petroleum-based hydrocarbons, metals, and pathogens. Non-point sources of pollution can occur year round and during any time that rainfall, snowmelt, irrigation, or any other source of water runs over land picks up pollutants and deposits them into surface or groundwater.

Flood Hazards

Flooding is a general or temporary condition of partial or complete inundation of normally dry land areas near water. Flooding is commonly associated with the overflow of natural rivers or streams but can also occur near stormwater diversion facilities or dams or in low-lying areas not designed to carry water. Several rivers and streams flow through the county, as shown on Figure 3.1.5-1. Flooding can be induced by precipitation or as a result of increased rates and amounts of runoff and altered drainage patterns. The Federal Emergency Management Agency Flood Insurance Rate Maps identify flood zones and areas that are susceptible to 100- and 500-year floods. Typically, flood zones are used to require protection of development within the 100-year flood zone; however, in the case of mosquitoes, flood zones are ideal breeding grounds. Many flood zones in San Diego County are choked with invasive plant species that prohibit the natural flow of water, thereby creating shallow pools that are ideal for mosquito reproduction.

Flooding inundation could also occur in areas identified within flood, tsunami, or seiche zones. The potential for flooding in the County of San Diego is high. The climate is semi-arid and the seasonal precipitation is highly variable in frequency, magnitude and location. Infrequent large bursts of rain can rush down steep canyons and flood areas unexpectedly. Flooding in San Diego and the rest of Southern California most frequently occurs during winter storm events between the months of November and April and occasionally during the summer when a tropical storm makes landfall in the region. Most flooding events occur over several days, but can also develop within a matter of hours, particularly in narrow valleys, or in desert alluvial fans that are prone to sheet flow. Seiches or tsunamis can result from abrupt movements of large volumes of water due to earthquakes, landslides, volcanic eruptions, meteoric impacts, or onshore slope failure.

3.1.5.2 *Regulatory Setting*

Federal

Clean Water Act

Increasing public awareness and concern for controlling water pollution led to enactment of the Federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the CWA (33 USC 1251 et seq.). The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The CWA established basic guidelines for regulating discharges of pollutants into waters of the U.S. The CWA requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the CWA. The California Legislature has assigned the primary responsibility to administer and enforce statutes for the protection and enhancement of water quality to the SWRCB and its nine RWQCBs. The SWRCB provides State-level coordination of the water quality control program by establishing Statewide policies and plans for the implementation of State and federal regulations. The nine RWQCBs throughout California adopt and implement Water Quality Control Plans that recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems. The RWQCB adopts and implements a Basin Plan that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan (California Water Code, Sections 13240–13247).

The CWA was amended in 1972 to provide that the discharge of pollutants to waters of the U.S. from any point source is unlawful unless the discharge is in compliance with a National Pollutant

Discharge Elimination System (NPDES) Permit. The 1987 amendments to the CWA added Section 402(p), which establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES Program. In November 1990, the USEPA published final regulations that also establish stormwater permit application requirements for discharges of stormwater to waters of the U.S. from construction projects that encompass 5 or more acres of soil disturbance. Regulations (Phase II Rule) that became final on December 8, 1999, expanded the existing NPDES Program to address stormwater discharges from construction sites that disturb land equal to or greater than one acre and less than 5 acres (small construction activity). The regulations also require that stormwater discharges from small municipal separate storm sewer systems (MS4s) be regulated by an NPDES Permit.

National Flood Insurance Program

The National Flood Insurance Program is administered by the Federal Emergency Management Agency, a component of the U.S. Department of Homeland Security. The National Flood Insurance Program is a federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. In support of the National Flood Insurance Program, the Federal Emergency Management Agency identifies flood hazard areas throughout the United States and its territories by producing flood hazard boundary maps, Flood Insurance Rate Maps, and flood boundary and floodway maps.

Executive Order 11988, Floodplain Management

Executive Order (EO) 11988 directs all federal agencies to avoid the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practical alternative.

Executive Order 11990, Protection of Wetlands

EO 11990 directs all federal agencies to avoid to the maximum extent possible the long-term and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practical alternative.

U.S. Environmental Protection Agency

The USEPA Office of Pesticide Programs conducts human health risk assessments related to pesticide use and evaluates the safety of pesticides to people. The USEPA requires that pesticide manufacturers conduct tests that demonstrate how a particular pesticide moves readily across land into surface or groundwater and whether it will persist. These tests demonstrate the duration it takes for a pesticide to break down in water, how quickly microbes and sunlight degrade a pesticide, how readily the pesticide binds to certain types of soil, and how readily the pesticide dissolves in water.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne) (codified in the California Water Code, Section 13000 et seq.) is the basic water quality control law for California. As mentioned above, it is implemented by the SWRCB and the nine RWQCBs. The SWRCB establishes

Statewide policy for water quality control and provides oversight of the RWQCBs' operations. In addition to other regulatory responsibilities, the RWQCBs have the authority to conduct, order, and oversee investigation and cleanup where discharges or threatened discharges of waste to waters of the State could cause pollution or nuisance, including impacts to public health and the environment. Evident from the preceding regulatory discussion, Porter-Cologne and the CWA overlap in many respects, as the entities established by Porter-Cologne are, in many cases, enforcing and implementing federal laws and policies.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) was signed into law in September 2014 and is intended to achieve sustainable management of groundwater resources for long-term reliability for multiple benefits while avoiding undesirable results. The SGMA directed the California Department of Water Resources to assign priority ratings to groundwater basins throughout the State. All counties and cities that draw water from basins identified as "high" or "medium" priority must comply with the SGMA. The SGMA identifies two compliance options for "high" or "medium" priority basins: form a groundwater sustainability agency and adopt a groundwater sustainability plan or submit a groundwater sustainability plan alternative if basin conditions demonstrate that the basin has operated under sustainable yield for the past 10 years.

In San Diego County, the State of California has designated 19 groundwater basins that vary in priority including very low, low, medium, and high. Of the 19 groundwater basins, three basins, Borrego Valley, San Luis Rey Valley, and San Pasqual Valley, are identified as medium priority and subject to the SGMA. The SGMA includes deadlines for action and required the adoption of Groundwater Sustainability Plans by January 31, 2022, followed by a 20-year implementation period. According to the California Department of Water Resources SGMA Portal, Groundwater Sustainability Plans were prepared and finalized for Borrego Valley dated August 2019, San Pasqual Valley dated September 2021, and San Luis Rey Valley dated January 2022.

California Department of Transportation National Pollutant Discharge Elimination System Permit

Under the California Department of Transportation (Caltrans) Statewide NPDES Permit (Order 2012-0011-DWQ), Caltrans is required to regulate non-point-source discharges from its properties, facilities, and activities, such as the following:

- Stormwater discharges from all Caltrans-owned MS4s
- Stormwater discharges from Caltrans' vehicle maintenance, equipment cleaning, and operations facilities and any other nonindustrial facilities with activities that have the potential to generate significant quantities of pollutants
- Certain categories of non-stormwater discharges, as listed under Provision B in Order 2012-0011-DWQ

Order 2012-0011-DWQ does not regulate stormwater discharges from Caltrans-owned batch plants or any other industrial facilities. Caltrans must obtain coverage for stormwater discharges associated with industrial activities under the Statewide Industrial General Permit for these discharges and must comply with the applicable requirements. Although Order 2012-0011-DWQ does not regulate stormwater discharges associated with industrial activities, it does impose contractor requirements for certain industrial facilities.

Order 2012-0011-DWQ also does not regulate discharges from Caltrans construction activities, including dewatering effluent discharges from construction projects. Instead, Caltrans must obtain coverage for stormwater discharges associated with construction activities under Order 2009-0009-DWQ (as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ), the General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit [CGP]) (SWRCB 2009).

Construction General Permit

On November 18, 2015, the SWRCB issued an amendment to the NPDES General Permit for Stormwater Associated with Construction Activities (NPDES No. CAS010266, SWRCB Order No. R9-2013-0001, as amended by Order Nos. R9-2015-001 and R9-2015-0100) that became effective on January 7, 2016. For stormwater discharges associated with construction activity in the State of California, the SWRCB has adopted the General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (i.e., CGP) to avoid and minimize water quality impacts attributable to such activities. The CGP applies to all projects where construction activity disturbs one or more acres of soil. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling and excavation. The CGP requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which would include and specify BMPs designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving off site into receiving waters. Routine inspection of all BMPs is required under the provisions of the CGP. In addition, the SWPPP must contain a visual monitoring program, a chemical monitoring program for non-visible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the CWA Section 303(d) list for sediment.

Statewide General National Pollutant Discharge Elimination System Permit for Biological and Residual Pesticides

The SWRCB maintains a general permit that allows vector control districts to conduct pesticide applications at, near, or over waters of the U.S. that would result in discharges of pollutants: *Statewide NPDES Permit for Biological and Residual Pesticide Discharges to Waters of the U.S. from Vector Control Applications (State Water Quality Order No. 2016-0039-DWQ, General Permit No. 990004)*. The SWRCB originally authorized the NPDES Permit in 2011, and it expires every 5 years. Most recently, the SWRCB renewed the NPDES Permit on March 1, 2016.

The VCP initially enrolled in this Statewide permit in 2011 when it became available, and the VCP has continued to enroll under the permit and has been operating in compliance with the SWQCB's requirements since that time (Enrollee No. 937AP00009). Specifically, the NPDES Permit allows the point source discharge of biological and residual pesticides that are currently registered in California resulting from applications for vector control. Dischargers may use larvicides and adulticides that are currently registered by the CDPR and new larvicides and adulticides that will be registered by the CDPR using the same active ingredients listed above for vector control applications. In addition, dischargers may use minimum risk pesticide products for vector control applications. This order covers the discharge of residuals from larvicides and adulticides that are currently registered in California and minimum risk pesticide products and is still in effect.

Local

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

The County WPO was adopted in March 2008 and revised in February 2016. The purpose of the WPO is to protect water resources and improve water quality by controlling the non-stormwater discharges to the stormwater conveyance system and receiving waters, cause the use of management practices by the County and its citizens that would reduce the adverse effects of polluted runoff discharges on waters of the State, secure benefits from the use of stormwater as a resource, and ensure that the County is compliant with State and federal law. The WPO establishes standards and requirements that are legally enforceable by the County within the County's jurisdiction. Projects that require a permit (e.g., administrative permit, major use permit, grading permit) are required to demonstrate compliance with the WPO. Section 67.804, for example, specifically addresses waste discharge and prohibits the discharge of pollutants to the stormwater system unless they are permitted through the NPDES Program. Section 67.806 identifies minimum required construction and post-construction water quality BMPs applicable to all dischargers.

San Diego Regional Water Quality Control Board

As described above, Porter-Cologne requires that the RWQCBs adopt Water Quality Control Plans (Basin Plans) for watersheds within their jurisdiction. These plans establish water quality standards for particular surface water bodies and groundwater resources.

The San Diego RWQCB (Region 9) is responsible for the *Basin Plan* for the San Diego Basin. The RWQCB implements management plans to modify and adopt standards under provisions set forth in Section 303(c) of the CWA and California Water Code (Division 7, Section 13240). In addition to *Basin Plan* requirements, the RWQCB issues water quality certifications under CWA Section 401. The RWQCB also regulates discharges to, and the quality of, groundwater resources through the issuance of Waste Discharge Requirements. Waste Discharge Requirements are issued for discharges that specify limitations relative to the *Basin Plan* (RWQCB 1994).

Water Quality Control Plan for the San Diego Basin

The *Basin Plan* (RWQCB 1994) establishes water quality objectives for constituents that could potentially cause an adverse effect or impact on the beneficial uses of water. Specifically, the *Basin Plan*:

1. Designates beneficial uses for surface and ground waters

2. Sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to California's anti-degradation policy

3. Describes implementation programs to protect beneficial uses of all waters in the region

4. Describes surveillance and monitoring activities to evaluate the effectiveness of the *Basin Plan*

5. Incorporates by reference all applicable State and Regional Board plans and policies

San Diego Regional Municipal Stormwater Permit

The San Diego Regional Municipal Stormwater Permit (Order R9-2013-0001 [as amended by Order No. R9-2015-0001]) (Municipal Permit) regulates the conditions under which stormwater and non-stormwater discharges into and from MS4s are prohibited or limited. The 18 cities, County of San Diego government, County of San Diego Regional Airport Authority, and San Diego Unified Port District each owns or operates an MS4 through which it discharges stormwater and non-stormwater into waters of the U.S. within the San Diego region. These entities are the County of San Diego Copermittees (Copermittees), which along with the applicable Orange County and Riverside County Copermittees, are subject to the requirements of the permit. The Caltrans stormwater system is regulated separately under the Caltrans NPDES Permit as described previously.

Under Phase I of its stormwater program, the USEPA published NPDES Permit application requirements for municipal stormwater discharges for municipalities that own and operate separate storm drain systems serving populations of 100,000 or more or that contribute significant pollutants to waters of the U.S. Under Phase II, small MS4s that are not permitted under the municipal Phase I regulations are regulated under the Phase II Small MS4 Permit (Order 2013-0001-DWQ).

The Municipal Permit establishes prohibitions and limitations with the goal of protecting water quality and designated beneficial uses of waters of the State from adverse impacts caused by or contributed to by MS4 discharges. The Municipal Permit requires that each jurisdiction covered under the permit implement a Jurisdictional Urban Runoff Management Program to control the contribution of pollutants to and the discharges from the MS4. The goal of the Jurisdictional Urban Runoff Management Programs is to implement water quality improvement strategies and runoff management programs that effectively prohibit non-stormwater discharges into the Copermittees' MS4s and reduce pollutants in stormwater discharges from the Copermittees' MS4s to the maximum extent practicable.

The Municipal Permit requires that the Copermittees develop a Water Quality Improvement Plan for each of the ten WMAs in the San Diego region. These plans will identify the highest priority water quality conditions within each watershed and specific goals, strategies, and schedules to address those priorities, including numeric goals and action levels, and requirements for water quality monitoring and assessment. The Copermittees will implement strategies through their jurisdictional runoff management programs to achieve the goals of the Water Quality Improvement Plans.

Under the Municipal Permit, Copermittees are required to implement stormwater management requirements and controls, which include requirements for stormwater BMPs during construction and post-construction, including implementing low impact development BMPs for development and significant redevelopment to reduce pollutants in stormwater runoff from sites through more natural processes such as infiltration and biofiltration.

County of San Diego Best Management Plan Design Manual

Updated in September 2020, the County's *BMP Design Manual* guides land development and public improvement projects in the unincorporated area to reach compliance with the Regional MS4 Permit and reduce the discharge of pollutants in stormwater to the maximum extent practicable. It is focused on project design requirements and related post-construction requirements and provides guidance on which stormwater management requirements apply to a

given project; defines the performance standards for source control and site design BMPs, stormwater pollution control BMPs, and hydromodification management BMPs based on the Regional MS4 Permit; outlines the required steps to the comprehensive stormwater management design process; contains the source control and site design requirements applicable to all development; outlines the process of determining which category of on-site pollution control BMP or combination of BMPs is most appropriate for a given project and how those BMPs should be designed; provides guidance for meeting the performance standards for the two components of hydromodification management: protection of critical coarse sediment yield areas and flow control for post-project runoff; and describes the long-term maintenance requirements for structural BMPs.

The *BMP Design Manual* established the minimum BMP requirements applicable to all development projects regardless of size or type. These measures include general BMP siting, source control BMPs, and site design BMPs. The County's 2013 MS4 Permit (as amended by R92015-0001 and R92015-0100) requires Copermittees to impose additional requirements on those projects considered Priority Development Projects, which are required to comply with structural BMP performance requirements specified in the *BMP Design Manual*. These additional requirements focus on retention of the 85th percentile storm event. If on-site retention is not feasible, other alternatives are available, including partial retention and biofiltration. Priority Development Projects are also required to comply with hydromodification management BMP requirements, as specified in the *BMP Design Manual*, which address flow duration impacts and critical sediment yield areas. All projects must meet the following general requirements:

- On-site BMPs must be located so as to remove pollutants from runoff prior to its discharge to any receiving waters and as close to the source as possible.
- Structural BMPs must not be constructed within waters of the U.S.
- On-site BMPs must be designed and implemented with measures to avoid the creation of nuisance or pollution associated with vectors (e.g., mosquitoes, rodents, or flies).

Integrated Vector Management Program Best Management Practices

The IVMP follows BMPs described in State guidance documents, such as the *Best Management Practices for Mosquito Control in California* (CDPH 2012), *Best Management Practices for Mosquito Control on California State Properties* (CDPH 2008a), and *California Mosquito-Borne Virus Surveillance and Response Plan* (CDPH 2021), which detail best integrated vector management practices for vector control and vector-borne disease prevention. Additionally, as shown in Table 1-2, *Integrated Vector Management Program Best Management Practices*, the Proposed Project includes BMPs intended to minimize impacts associated with IVMP activities. The following BMPs have been developed by the VCP in combination with the above-referenced sources and are applicable to hydrology and water quality:

- A2: The VCP has cooperative, collaborative relationships with federal, State, and local agencies. The VCP regularly communicates with resource agencies, including the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife, and abides by all applicable permits and agreements regarding planned vector activities in sensitive habitats. Access, timing, and methods of surveillance and control are discussed. Methods to minimize impacts to special status species, habitat, and wildlife are agreed upon prior to entering protected and sensitive habitats. The VCP will continue to foster these relationships, communication, and collaboration.

- A6: Chemical controls applied within waterbodies defined by federal and State regulations as wetland and/or non-wetland waters of the U.S. and/or State must be used in accordance with the Statewide NPDES Permit for Biological and Residual Pesticide Discharges to Waters of the U.S. from Vector Control Applications (Order No. 2016-0039-DWQ, General Permit No. CA990004).

- B12: Any staging of equipment or materials will occur in developed/disturbed areas outside existing wetlands, non-wetland waters, and native or rare upland areas.

- B13: The changing of oil, refueling, and other actions that could result in a release of a hazardous substance will be restricted to designated service areas, such as maintenance yards and gas stations, or when necessary, areas that are a minimum of 100 feet from any documented special status plant populations, sensitive habitats, or drainages. Equipment will be checked for leaks prior to operation and repaired as necessary. Fueling areas will be installed in the field, as applicable, by berms, sandbags, or other artificial barriers designed to prevent accidental spills.

- B14: Where heavy equipment or machinery is necessary, measures will be taken, such as reducing turns by track-type vehicles, taking a minimum number of passes with equipment, identifying multiple points of entry, driving vehicles at low speed, and avoiding or minimizing operating on open mud and other soft areas.

- B16: Pesticides will be applied at the lowest effective concentration for a specific, targeted set of vectors and site conditions. Application rates will never exceed the USEPA and CDPH-approved maximum label application rate. All pesticide application equipment is currently and will continue to be calibrated and inspected annually as required by regulating agencies, such as the CDPH and County Department of Agriculture, Weights and Measures.

- B17: VCP staff will modify, postpone, or cease pesticide application when weather parameters exceed product label specifications, such as when wind speeds exceed the velocity stated on the product label or may result in drift or when a high chance of rain is predicted and rain is a determining factor on the label of the material to be applied.

- B19: Caution will be exercised to prevent spillage of pesticides during storage, transportation, mixing, or application of pesticides. All pesticide spills and cleanups (excepting cases where dry materials may be returned to the container or application equipment) will be reported to appropriate staff and any regulatory agencies as required. Application equipment will be checked for proper operation prior to use.

- B20: A pesticide spill cleanup kit and proper protective equipment will be maintained at the VCP's service yard and in each vehicle for pesticide application and transport.

- B21: In the event of spilled pesticides, the site will be managed to prevent entry by unauthorized personnel while the spill is contained, controlled, and cleaned up by stopping it from leaking or spreading to surrounding areas. Dry spills will be covered with a polyethylene or plastic tarpaulin if they cannot be cleaned up immediately. Any liquid hazardous material spill will be contained with appropriate absorbent materials.

- B22: Staff will properly recover any spilled material, label the container or bag with the pesticide name, and coordinate with a VCP supervisor for disposal.

- B23: Staff will be trained annually on petroleum-based or other chemical-based storage and disposal regulations and procedures including spill management protocols.

- B24: Field-based mixing and loading operations will occur in such a manner as to minimize the risk of accidental spill or release of pesticides.

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

The *County of San Diego Guidelines for Determining Significance – Hydrology*, *Surface Water Quality*, and *Groundwater Resources* were adopted in 2007 and intended to address the hydrology and water quality questions posed in Appendix G of the CEQA Guidelines. Updated guidelines were provided in the *County of San Diego Guidelines for Determining Significance – Hydrology and Water Quality* in 2021. In December 2018, the Appendix G questions were updated and several of the questions pertaining to hydrology and water quality previously listed in Appendix G were revised, deleted, or modified. Accordingly, the PEIR does not rely on the County's significance guidelines from 2021 and 2007 and instead analyzes Proposed Project impacts using the updated CEQA Guidelines Appendix G thresholds, which state that the Proposed Project would result in a significant impact if it would:

1. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

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

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

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

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

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

   iv) impede or redirect flood flows.

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

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

Water Quality Standards and Requirements

Guidelines for the Determination of Significance

The Proposed Project would have a significant impact if it would violate any water quality standards or waste discharge requirements or otherwise degrade surface or groundwater quality.

Impact Analysis

The following section evaluates the potential for the Proposed Project to violate water quality standards or otherwise degrade water quality by examining potential surface water and groundwater quality issues in San Diego County. Implementation of the IVMP would involve two key activities that have the potential to impact hydrology and water quality: source reduction and source treatment. Surveillance and monitoring would involve trapping and testing activities that would not involve chemical applications to water or soil and would involve little interaction with waterbodies to collect samples. Bait stations for rodents would be located above the water line in storm drains and small animals may be trapped using traps baited with food in terrestrial settings only and would not involve the introduction of water quality contaminants to surface water or groundwater resources. Therefore, the following analysis analyzes potential impacts to hydrology and water quality resulting from source reduction and source treatment activities.

Surface Water Quality

The reduction of vector-breeding sources would primarily involve source reduction techniques to control vector populations by reducing vector-breeding habitat and other areas of harborage. Anticipated actions associated with source reduction techniques associated with the Proposed Project would generally involve eliminating or reducing standing water by conducting grading activities, managing vegetation (including vegetation removal), trapping, and water controls. Source reduction techniques involving grading and vegetation removal may involve the use of various types of construction equipment such as dozers, scrapers, and graders that could have short-term impacts on surface water quality associated with sedimentation. Other pollutants associated with these construction activities that could substantially degrade surface water quality include soils, debris, and fuels and other fluids associated with construction equipment.

Pollutants associated with grading and vegetation management associated with source reduction techniques would degrade surface water quality if the pollutants are carried by stormwater or other runoff into surface waters. However, it should be noted that pesticides entering surface water primarily occurs due to agricultural and urban sources. There are three categories of pollutants that will be addressed here: sediment, hydrocarbons, and trash. Sediment is often the most common pollutant associated with grading or earthmoving activities where soil is exposed, including vegetation removal. Sediment that is washed off site can result in turbidity in surface waters, which can impact aquatic species. In addition, when sediment is deposited into a receiving water, it can smother species, alter the substate and habitat, and alter the drainage course. Because of this, multiple waterbodies in San Diego County have been identified as being “impaired,” which is defined by CWA Section 303(d) as waters that do not meet established water quality standards. As shown in Table 3.1.5-1, surface water body impairments related to sedimentation/siltation in San Diego County include the Buena Vista Lagoon, Los Peñasquitos Lagoon, several areas along the San Diego Bay, and Tijuana River. Hydrocarbons such as fuels, oils, and hazardous materials, discharged from grading sites could also potentially impact aquatic plants and animals downstream if not protected. Debris and trash could potentially be washed into existing storm drainage channels to downstream surface waters and could impact wildlife as

well as aesthetic quality if not addressed. Surface water body impairments related to trash include Chollas Creek, the Pacific Ocean Shoreline at the Imperial Beach Pier, the Tijuana River, and the Tijuana River Estuary (see Table 3.1.5-1).

Regarding the protection of surface water quality, existing regulatory processes in place to protect surface water quality include the NPDES CGP program for disturbances that exceed one acre and the County's WPO Section 67.806 and local watershed protection requirements for incorporated cities for disturbances of less than 1 acre. For disturbances exceeding 1 acre, a SWPPP must be prepared that identifies BMPs that minimize disturbance, protect slopes, reduce erosion, and limit or prevent various pollutants from entering surface water runoff. For disturbances of less than 1 acre, minimum BMPs such as silt fencing, desilting basins, sediment traps and check dams, street sweeping, stormwater inlet protection, sandbag barriers, straw bale barriers, gravel bag berms, and fiber rolls would be required to reduce the discharge of pollutants associated with smaller sites. Also, the Proposed Project includes the identification and implementation of several BMPs that would further reduce potential impacts on surface water quality resulting from source reduction activities. Specifically, any staging of equipment or materials associated with source reduction activities would occur in developed or disturbed areas outside existing wetlands and non-wetland waters (BMP B12); the changing of oil, refueling, or other service and maintenance activities would occur at least 100 feet from documented drainages and would be supported by the installation of barriers to prevent accidental spills (BMP B13); and the use of heavy equipment and machinery would be minimized (BMP B14).

Source treatment techniques associated with the Proposed Project to control vector populations would involve biological and chemical controls. Biological controls would involve the application of mosquito fish (biological control) within contained sources such as ornamental ponds, rain barrels, horse troughs, neglected swimming pools, and spas. Therefore, the application of mosquito fish would not result in an impact to surface water quality.

Chemical controls would involve the application of pesticides, including both larvicides and adulticides, applied through on-ground techniques by foot with backpack applicators, truck-mounted equipment, or watercraft by qualified certified technicians or by aircraft (including piloted and drones[2]). As shown on Table 3.1.5-1, existing surface water body impairments related to pesticides include numerous water bodies throughout San Diego County (according to the SWRCB CWA 303[d] database for 2022).

However, the VCP does not use any of the pesticide pollutants identified in Table 3.1.5-1. Therefore, the IVMP would not exacerbate any of the impacted water bodies due to pesticides. In addition, the Proposed Project would not use pesticides in a manner that would have the potential to serve as pollutants to water bodies. The IVMP would only use pesticides that are USEPA/California Environmental Protection Agency registered, and would adhere to the storage, usage, and transportation guidelines provided by each pesticide's manufacturer and, as such, have been determined by the USEPA/California Environmental Protection Agency to be safe for environmental application as specified on the label. The Proposed Project would also comply with the Statewide NPDES Permit for Biological and Residual Pesticide Discharges to Waters of the United States from Vector Control Applications (SWRCB Water Quality Order No. 2016-0039-DWQ; NPDES No. CAG 990004; Vector Control Permit), which is regulated by the SWRCB.

[2] For the purposes of this PEIR, "drone" is intended to generically mean a remotely piloted or unpiloted aircraft. As of this writing, the Federal Aviation Administration's official terminology is Unmanned Aircraft Systems; however, Federal Aviation Administration is transitioning toward gender-neutral terminology such as drone operator, certificated remote pilot, model aircraft flyer, and advanced air mobility operator.

Pesticides would only be applied by Certified Vector Control Technicians, who are approved personnel that have been trained and maintain certification through continuing education on how to use, store, and dispose of such substances. Pesticides would be stored according to their label, in either the original container and packaging or another properly labeled container within a secured pesticide storage room, in accordance with the CDPR. The storage room would remain locked at all times, and access to the pesticides would be restricted to authorized personnel only. VCP staff would be granted badge access to the pesticide storage room if necessary to performing their designated job duties per their job classification. Pesticides would be checked in and out with each use using sign out sheets located in the storage room. The inventory of pesticides would be monitored by a shop technician. The technicians would report how much product has been used after each application.

The majority of the pesticide products typically used by the VCP are products that come in solid form. Solid pesticides lessen the potential for off-target application from aerial drift and facilitate their penetration of dense vegetation to water where mosquitoes can breed. Pesticides with a low potential for aerial drift have a low potential of entering unintended areas, including non-target water bodies. While products applied in liquid form have a higher potential of aerial drift compared to solid form, only 0.17% of total pesticide applications in 2019 were in liquid form (as determined by weight).[3] Therefore, potential aerial drift from liquid applications would be negligible. Nonetheless, the VCP modifies, postpones, or ceases pesticide application when weather parameters exceed product label specifications, such as when wind speeds exceed the velocity stated on the product label or may result in drift or when a high chance of rain is predicted and rain is a determining factor on the label of the material to be applied.

Although aircrafts may be used for aerial surveillance and source treatment, aerial applications of pesticides would be infrequent. Granular and pellet forms of larvicides are typically applied using calibrated mechanical spreaders fixed to a helicopter. Application rates depend on the density of vegetative cover and the organic content of the vector-breeding water being treated. Therefore, the application of pesticides by aircraft would result in minimal drift to surface waters.

Additionally, the use of pesticides under the Proposed Project would incorporate several BMPs. Specifically, pesticides will be applied at the lowest effective concentration and calibrated and inspected annually (BMP B16); pesticide application will be modified, postponed, or cease when weather parameters exceed product label specification (e.g., during high wind speeds or predicted rain events) (BMP B17); reporting of pesticide spills and cleanups will occur (BMP B19); maintenance of a proper pesticide spill cleanup kit at the VCP's service yard and individual vehicles will occur (BMPs B20); pesticide spill containment and recovery measures will be implemented (BMP B21 and B22); annual training on storage and disposal of pesticides will occur (BMP B23); and minimization of accidental spill or release of pesticides during field-based mixing and loading will occur (BMP B24). Adherence to IVMP BMPs and NPDES Permit requirements would ensure that significant impacts to water bodies resulting from pesticide use would not occur.

With the implementation of BMPs required by the NPDES CGP, the County WPO, and the IVMP BMPs, potential impacts on surface water quality related to the proposed source reduction and source treatment techniques under the Proposed Project would be less than significant.

[3] According to products applied in calendar year 2019 reported by the VCP *Pesticide Use State Report*, approximately 101,075 pounds of pesticides were applied, of which liquid pesticides totaled approximately 168.8 pounds. This results in 0.17% of product applied in 2019 being in liquid form.

Groundwater Quality

The potential for impacts related to groundwater quality would be limited mainly to ground disturbances associated with source reduction techniques, which could result in the excavation of soils in depths that result in temporary groundwater dewatering activities. Should these occur in areas of groundwater contamination, the dewatering activities could result in water quality degradation if discharged to surface water, as the surface water eventually recharges the groundwater aquifer. Also, during temporary dewatering, construction wastes could potentially release into groundwater if the groundwater is exposed.

Compliance with all applicable federal, State, and local requirements concerning the handling, storage, and disposal of hazardous waste, in addition to several BMPs, would reduce the potential for groundwater disturbances associated with source reduction techniques. With the implementation of BMPs required by the NPDES CGP, the County WPO, and the IVMP BMPs, potential impacts on groundwater quality related to the proposed source reduction techniques under the Proposed Project would be less than significant.

Source treatment activities resulting from the Proposed Project would not result in groundwater dewatering or degradation because pesticides would be used in accordance with label instructions, which have been approved by the CDPR for use in California. Pesticide labels are application requirements and include instructions informing users how to apply the product and identifies precautions the applicator should employ to protect human health and the environment. Additionally, the pesticides would be applied in accordance with NPDES Permit requirements and applicable federal, State, and local regulations. Further, as discussed above, pesticides in a solid form would have a low potential for aerial drift and would therefore not result in accidental contamination. Liquid pesticides would be used in a manner that would prevent significant aerial drift despite method of application. All pesticides used by the VCP would be used by Certified Vector Control Technicians, who are approved personnel that have been trained and maintain certification through continuing education on how to use, store, and dispose of such substances. Therefore, the use of pesticides would not result in groundwater degradation. Impacts would be less than significant.

Groundwater Resources

Guidelines for the Determination of Significance

The Proposed Project would have a significant impact if it would substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Proposed Project may impede sustainable groundwater management of the basin.

Impact Analysis

Anticipated actions under the Proposed Project associated with ground disturbance would generally consist of vegetation and soil removal to maximize open water areas, restore the natural flow, or provide circulation to eliminate stagnant water. Other actions associated with source reduction measures may involve physical control techniques to reduce standing water. As these physical improvements associated with the Proposed Project relate to improving water circulation, none of the Proposed Project actions would rely on groundwater usage, and would therefore not significantly decrease groundwater supply. Furthermore, none of the actions would involve the construction of structures that would increase impervious surfaces that would impede or prevent groundwater recharge. Such activities would not rely on groundwater supplies and would not

result in changes to impervious surfaces affecting groundwater recharge. Impacts to groundwater resources would not occur.

Erosion or Siltation

Guidelines for the Determination of Significance

The Proposed Project would have a significant impact if it would substantially alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion or siltation on or off site.

Impact Analysis

Implementation of the Proposed Project would result in grading or earthmoving activities to implement source reduction measures and could result in vegetation removal and ground disturbance, resulting in increases in erosion or siltation. Specifically, source reduction measures could involve earthmoving or grading activities necessary to eliminate areas of standing water, remove vegetation or sediment, interrupt water flow, rotate stored water, pump and/or fill sources, improve drainage and water circulation systems, and install, improve, or remove culverts, tide gates, and other water control structures in wetlands or other water bodies. As described in Section 2.1, *Biological Resources*, these activities would be conducted in accordance with appropriate environmental regulations and in a manner that generally maintains or improves habitat values for desired species. In addition, other physical improvements within waterways associated with source reduction measures would also be designed to increase water circulation, which can increase dissolved oxygen and reduce water temperatures, and improve water quality conditions locally. Improving water circulation patterns can also increase localized areas of scour due to increased water velocities, particularly near structures. Any potential increases in erosion and siltation as a result of these activities would be temporary and short-term, and BMPs would be implemented during all stages of activity to ensure the temporary effects do not extend beyond the vicinity of the areas being improved.

As described under the first threshold above, future implementation of source reduction measures involving earthmoving activities would be required to comply with the NPDES CGP, the County WPO, and the IVMP BMPs. Adherence to existing regulations would limit erosion by minimizing site disturbance to the maximum extent practicable and requiring installation of erosion control BMPs to prevent off-site sediment discharges. As a result, impacts on erosion and siltation associated with source reduction measures of the Proposed Project would be less than significant. Surveillance and monitoring activities and source treatment activities associated with the Proposed Project would not involve grading or earthmoving activities, and their related impacts associated with erosion and siltation would be less than significant.

Flooding from Surface Runoff

Guidelines for the Determination of Significance

The Proposed Project would have a significant impact if it would substantially alter the existing drainage pattern of the site or area in a manner that would substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site.

Impact Analysis

As mentioned above, land-disturbing activities associated with the Proposed Project would be limited to source reduction measures that would involve physical control techniques to reduce standing water and the modification or construction of culverts, tide gates, and water control devices in wetlands or water bodies. These physical improvements are not anticipated to result in new or additional sources of runoff because they would be limited in size with the intent to manage standing water in streams and waterways.

Existing regulatory processes in place to protect surface water quality include the NPDES CGP program for disturbances that exceed 1 acre and the County WPO, Section 67.806, for disturbances of less than 1 acre. For disturbances exceeding 1 acre, a SWPPP must be prepared that identifies BMPs that minimize disturbance, protect slopes, reduce erosion, and limit or prevent various pollutants from entering surface water runoff. For disturbances of less than 1 acre, minimum BMPs such as silt fencing, desilting basins, sediment traps and check dams, street sweeping, stormwater inlet protection, sandbag barriers, straw bale barriers, gravel bag berms, and fiber rolls would be required to reduce the discharge of pollutants associated with smaller sites. Also, the Proposed Project includes the identification and implementation of several BMPs that would further reduce potential impacts on surface water quality. Specifically, any staging of equipment or materials associated with source reduction activities would occur in developed or disturbed areas outside existing wetlands and non-wetland waters (BMP B12); the changing of oil, refueling, or other service and maintenance activities would occur at least 100 feet from documented drainages and would be supported by the installation of barriers to prevent accidental spills (BMP B13); and minimization of the use of heavy equipment and machinery would occur (BMP B14). Impacts on runoff and flooding would be less than significant.

Stormwater Systems

Guidelines for the Determination of Significance

The Proposed Project would have a significant impact if it would substantially alter the existing drainage pattern of the site or area in a manner that would create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

Impact Analysis

As mentioned above, land-disturbing activities associated with the Proposed Project would be limited to source reduction measures that would involve physical control techniques to reduce standing water and the modification or construction of culverts, tide gates, and water control devices in wetlands or water bodies. These physical improvements are not anticipated to result in new or additional sources of runoff as they would be limited in size with the intent to manage standing water in streams and waterways. Therefore, source reduction activities would not cause stormwater drainage systems to exceed capacity or provide substantial additional sources of polluted runoff.

Similarly, source control activities would not contribute runoff water that would exceed the capacity of stormwater drainage systems or provide substantial additional sources of polluted runoff. The Proposed Project would adhere to the existing regulatory processes that are in place to protect surface water quality, such as the NPDES CGP program for disturbances that exceed 1 acre and the County WPO, Section 67.806, for disturbances of less than 1 acre. For

disturbances exceeding 1 acre, a SWPPP must be prepared that identifies BMPs that minimize disturbance, protect slopes, reduce erosion, and limit or prevent various pollutants from entering surface water runoff. For disturbances of less than 1 acre, minimum BMPs such as silt fencing, desilting basins, sediment traps and check dams, street sweeping, stormwater inlet protection, sandbag barriers, straw bale barriers, gravel bag berms, and fiber rolls would be required to reduce the discharge of pollutants associated with smaller sites. Also, the Proposed Project includes the identification and implementation of several BMPs that would further reduce potential impacts on surface water quality. Specifically, any staging of equipment or materials associated with source reduction activities would occur in developed or disturbed areas outside existing wetlands and non-wetland waters (BMP B12); the changing of oil, refueling, or other service and maintenance activities would occur at least 100 feet from documented drainages and would be supported by the installation of barriers to prevent accidental spills (BMP B13); and minimization of the use of heavy equipment and machinery would occur (BMP B14). Impacts related to stormwater drainage systems or polluted runoff would be less than significant.

Flood Flows

Guidelines for the Determination of Significance

The Proposed Project would have a significant impact if it would substantially alter the existing drainage pattern of the site or area in a manner that would impede or redirect flood flows.

Impact Analysis

As mentioned above, land-disturbing activities associated with the Proposed Project would be limited to source reduction measures that would involve physical control techniques to reduce standing water and the modification or construction of culverts, tide gates, and water control devices in wetlands or water bodies. These physical improvements would be minimal and would not impede or redirect flood flows.

Source treatment activities include the use of pesticides for vector management, which would have no impact on flood flows. Therefore, impacts related to impeding or redirecting flood flows would be less than significant.

Inundation in Flood Hazard, Tsunami, or Seiche Zones

Guidelines for the Determination of Significance

The Proposed Project would have a significant impact if it would risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones.

Impact Analysis

While the Service Area includes the entire county, such as areas near or adjacent to lakes, reservoirs, and the Pacific Ocean, the Proposed Project does not include the construction of structures and would not introduce permanent sources of pollutants (whether they be sediment, hydrocarbons, or trash). Any Proposed Project-related actions involving the potential release of pollutants would be short-term and limited to specific areas targeted for grading or vegetation removal activities, or during pesticide application with the intent of reducing vectors.

While some improvements related to source reduction would include improving or removing culverts, tide gates, and other water control structures in wetlands or other water bodies, these water control structures would not involve the use of pollutants that would have a risk of release due to inundation. Furthermore, the Proposed Project would not involve the construction of habitable structures, and the risk of the release of pollutants due to inundation would be less than significant.

Water Planning

Guidelines for the Determination of Significance

The Proposed Project would have a significant impact if it would conflict with or obstruct implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan.

Impact Analysis

The Proposed Project location includes all of San Diego County, which includes 19 groundwater basins and is within the regulatory boundaries of the RWQCB Regions 7 and 9. The RWQCB is responsible for the adoption and implementation of Water Quality Control Plans. The Water Quality Control Plan for the Colorado River Basin and Water Quality Control Plan for the San Diego Basin are the applicable plans for the Proposed Project because they address RWQCB Regions 7 and 9, respectively. Each Basin Plan has been designed to characterize the water resources within a region, identify beneficial uses that exist or have the potential to exist in each waterbody, establish water quality objectives for each waterbody to protect beneficial uses or allow their restoration, and provide an implementation program that achieves water quality objectives. The Basin Plans also include numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, and tastes and odors. Implementation of the Proposed Project would not interfere with the characterization of water resources within a region or potential beneficial uses for any waterbody. The Proposed Project would not cause a waterbody to miss water quality objectives and would not interfere with implementation of a program to achieve the water quality objectives established in the Basin Plans. The Proposed Project would be required to comply with applicable stormwater quality standards, including implementation of BMPs required by the NPDES CGP, the County WPO, and the IVMP BMPs, which would ensure that the Proposed Project would not significantly impact water quality of waterbodies. As a result, the Proposed Project would not conflict with the Water Quality Control Plan for the Colorado River Basin or Water Quality Control Plan for the San Diego Basin.

In relation to sustainable groundwater management, there are no adopted Sustainable Groundwater Management Plans within San Diego County. Further, individual activities under the Proposed Project are not expected to result in the depletion of groundwater supplies or interference with groundwater recharge as there is no anticipated increase in the amount of impervious surfaces. Potential impacts related to conflicts with or obstruction of a Water Quality Control Plan or Sustainable Groundwater Management Plan under the Proposed Project would be less than significant.

3.1.5.4 *Cumulative Impact Analysis*

The Proposed Project includes implementation of a countywide IVMP in which individual activities would occur throughout San Diego County. The geographic scope of cumulative impact analysis for hydrology and water quality includes drainage basins, watersheds, water bodies or groundwater basins, depending on the location of the potential impact and its tributary area. Consequently, the geographic scope includes the entirety of San Diego County. Cumulative projects may include countywide residential and non-residential land development, open space and recreation, and agricultural activities that have the potential for ground disturbance, vegetation removal, and pesticide use.

Water Quality Standards and Requirements

Implementation of the Proposed Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. In addition, cumulative projects would be subject to regulations that require compliance with water quality standards, including: the CWA, Porter-Cologne Water Quality Control Act, NPDES, applicable basin plans, and local regulations. Therefore, implementation of the IVMP would not result in a cumulatively considerable contribution associated with water quality standards and requirements.

Groundwater Resources

Implementation of the Proposed Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. Cumulative projects would be required to comply with all applicable local, state, and federal regulations governing groundwater usage or interference. Additionally, cumulative projects would be subject to provisions and would be required to adhere to Sustainable Groundwater Management Plans, when adopted. Therefore, implementation of the IVMP would not result in a cumulatively considerable contribution associated with decreasing groundwater supplies or interfering with groundwater recharge.

Erosion or Siltation

Implementation of the Proposed Project would not result significant impacts associated with erosion or siltation. Any potential increases in erosion and siltation as a result of the IVMP would be temporary and short-term, and BMPs would be implemented during all stages of activity to ensure the temporary effects do not extend beyond the vicinity of the areas being improved. Furthermore, similar to the Proposed Project, cumulative projects would be required to abide by the NPDES CGP, the County WPO, and other water quality regulations to prevent off-site sediment discharges. As such, implementation of the IVMP would not result in a cumulatively considerable contribution to erosion or siltation impacts.

Flooding from Surface Runoff

Implementation of the Proposed Project would involve physical control techniques to reduce standing water through the modification or construction of facilities in wetlands or water bodies. These improvements are not anticipated to result in new or additional sources of runoff because they would be limited in size with the intent to manage standing water in streams and waterways. Whereas, cumulative projects may involve residential and non-residential land development, open space and recreation, and agricultural activities. However, cumulative projects in San Diego

County would be subject to local, state, and federal requirements, such as the County WPO, Section 67.806 which requires a SWPPP for certain projects and the NPDES CGP, both of which are existing regulatory processes that protect surface water quality. Therefore, implementation of the IVMP would not result in a cumulatively considerable contribution to increasing the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

Stormwater Systems

As mentioned above, land-disturbing activities associated with the Proposed Project would be limited to source reduction measures that would involve physical control techniques to reduce standing water and would not cause stormwater drainage systems to exceed capacity or provide substantial additional sources of polluted runoff. Whereas, cumulative projects may involve residential and non-residential land development, open space and recreation, and agricultural activities. However, cumulative projects in San Diego County would be subject to local, state, and federal requirements, such as the County WPO, Section 67.806 which requires a SWPPP for certain projects and the NPDES CGP, both of which are existing regulatory processes that protect surface water quality. Therefore, implementation of the IVMP would not result in a cumulatively considerable contribution to runoff water that would exceed capacity or provide additional sources of polluted runoff.

Flood Flows

Implementation of the Proposed Project would include physical improvements that would be minimal in nature and would not impede or redirect flood flows. In addition, it is expected that cumulative projects in California are required to comply with applicable regulations that would prevent the construction of structures in floodways, such as the National Flood Insurance Act, National Flood Insurance Reform Act, Cobey-Alquist Floodplain Management. Therefore, it is expected that through these and other regulations, a cumulative impact would not occur. Therefore, implementation of the IVMP would not result in a cumulatively considerable contribution to impeding or redirecting flood flows.

Inundation in Flood Hazard, Tsunami, or Seiche Zones

Implementation of the Proposed Project would not risk release of pollutants in a flood hazard, tsunami, or seiche zone. While cumulative projects have the potential to place structures or other facilities within dam inundation areas multiple regulations exist, such as the National Flood Insurance Act, National Flood Insurance Reform Act, Cobey-Alquist Floodplain Management Act, and local regulations that would be expected to mitigate any potential impacts to below a level of significance. Therefore, implementation of the IVMP would not result in a cumulatively considerable contribution to inundation in flood hazard, tsunami, or seiche zones.

Water Planning

The Proposed Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. As with the Proposed Project, cumulative projects would be required to comply with applicable stormwater quality standards, including implementation of BMPs required by the NPDES CGP and the County WPO, which would ensure that the water quality of waterbodies are not significantly impacted. In relation to sustainable groundwater management, there are no adopted Sustainable Groundwater Management Plans within San Diego County. Therefore, implementation of the IVMP would not result in a

cumulatively considerable contribution to conflicting with or obstructing a water quality control plan or sustainable groundwater management plan.

3.1.5.5 *Significance of Impact Prior to Mitigation*

Impacts resulting from the Proposed Project to hydrology and water quality would be less than significant. Ground-disturbing activities would be required during IVMP's source reduction activities due to the use of equipment and vehicles, as well as minor grading during source reduction activities. As detailed above, the ground disturbance would be minimal in scope and would not require large-scale grading. Additionally, source treatment activities would be conducted in accordance with applicable regulations and NPDES Permit requirements, which would reduce impacts to hydrology and water quality to a less than significant level. Furthermore, the Proposed Project would implement the IVMP BMPs that would reduce the impacts to undeveloped and undisturbed areas. Therefore, impacts to hydrology and water quality from implementation of the Proposed Project's source reduction and source treatment activities would be less than significant prior to mitigation.

3.1.5.6 *Mitigation Measures*

Because the Proposed Project would not result in significant impacts, no mitigation is required.

3.1.5.7 *Conclusion*

As described above, direct project or cumulative impacts to hydrology and water quality resulting from IVMP activities would be less than significant.

Table 3.1.5-1
IMPAIRED WATER BODIES IN SAN DIEGO COUNTY

Watershed Management Area	Water Body	303(d) Impairment
Carlsbad	Agua Hedionda Creek	Benthic Community Effects, Pesticides (Bifenthrin, Chlorpyrifos, Cyfluthrin, Cyhalothrin [Lambda], Cypermethrin, Deltamethrin, Malathion, Pyrethroids), Indicator Bacteria, Manganese, Nitrogen, Phosphorus, Selenium, TDS, Toxicity, Turbidity
	Agua Hedionda Lagoon	Toxicity
	Batiquitos Lagoon	Toxicity
	Buena Creek	Benthic Community Effects, Indicator Bacteria, Nitrate and Nitrite, Nitrogen, Pesticides (DDT), Phosphorus, Sulfates
	Buena Vista Creek	Benthic Community Effects, Indicator Bacteria, Pesticides (Bifenthrin, Cyfluthrin, Cypermethrin, Pyrethroids), Nitrogen, Phosphorus, Selenium, TDS, Toxicity
	Buena Vista Lagoon	Indicator Bacteria, Nutrients, Sedimentation/Siltation, Toxicity
	Cottonwood Creek (San Marcos Creek Watershed)	Benthic Community Effects, Nitrogen, Pesticides (DDT), Phosphorus, Selenium, Toxicity
	Encinitas Creek	Benthic Community Effects, Indicator Bacteria, Nitrogen, Phosphorus, Selenium, Toxicity
	Escondido Creek	Benthic Community Effects, Pesticides (Bifenthrin, Cyfluthrin, Cypermethrin, DDT, Pyrethroids), Indicator Bacteria, Iron, Manganese, Nitrogen, Phosphate, Phosphorus, Selenium, Sulfates, TDS, Toxicity, Turbidity
	Lake San Marcos	Ammonia as Nitrogen, Copper, Nutrients, Phosphorus
	Loma Alta Creek	Benthic Community Effects, Indicator Bacteria, Pesticides (Bifenthrin, Cyfluthrin, Cyhalothrin [Lambda], Pyrethroids), Nitrogen, Phosphorus, Selenium, Toxicity
	Loma Alta Slough	Eutrophic, Indicator Bacteria
	Pacific Ocean Shoreline, Batiquitos HSA, at Moonlight State Beach (Cottonwood Creek outlet)	Indicator Bacteria, Trash
	Pacific Ocean Shoreline, Loma Alta HSA, at Loma Alta Creek mouth	Indicator Bacteria, Trash
	Pacific Ocean Shoreline, Los Monos HSA, Carlsbad State Beach at Tamarack Ave	Trash
	Pacific Ocean Shoreline, Rancho Santa Fe HSA, at Fletcher Cove Beach	Indicator Bacteria
	Pacific Ocean Shoreline, San Elijo HSA, at Cardiff State Beach at parking lot entrance	Indicator Bacteria, Trash
	Pacific Ocean Shoreline, San Luis Rey HU, at Tyson Way	Indicator Bacteria
	Reidy Canyon Creek	Indicator Bacteria, Phosphorus
	San Elijo Creek (San Diego County)	Indicator Bacteria
	San Elijo Creek (San Diego County), unnamed tributary at San Elijo Avenue	Indicator Bacteria
	San Elijo Lagoon	Eutrophic, Indicator Bacteria, Oxygen (Dissolved), Phosphorus, Sedimentation/Siltation, Toxicity, Turbidity

Table 3.1.5-1
IMPAIRED WATER BODIES IN SAN DIEGO COUNTY

Watershed Management Area	Water Body	303(d) Impairment
	San Marcos Creek, Lower (below San Marcos Lake)	Nitrogen, Phosphorus, Selenium, Toxicity
	San Marcos Creek, Upper (above San Marcos Lake)	Benthic Community Effects, Indicator Bacteria, Pesticides (Bifenthrin, DDE, Pyrethroids), Nitrogen, Phosphorus, Selenium, TDS, Toxicity
	San Marcos Lake, drain to central southwest fork of lake	Copper, Indicator Bacteria
Los Peñasquitos	Carmel Valley Creek	Benthic Community Effects, Indicator Bacteria, Oxygen (Dissolved), Pesticides (Bifenthrin, Pyrethroids), Phosphorus, TDS
	Carroll Canyon	Benthic Community Effects, Pesticides (Cyfluthrin, Pyrethroids), Toxicity
	Chollas Creek	Benthic Community Effects, Copper, Indicator Bacteria, Lead, Nitrogen, Oxygen (Dissolved), Pesticides (Bifenthrin, Cyfluthrin, Cyhalothrin [Lambda], Cypermethrin, Dichlorvos, Malathion, Permethrin, Pyrethroids), Phosphorus, TDS, Toxicity, Trash, Zinc
	Harbison Canyon	Indicator Bacteria
	Jamacha Creek	Indicator Bacteria
	Los Peñasquitos Creek	Benthic Community Effects, Indicator Bacteria, Nitrogen, Pesticides (Bifenthrin, Cyfluthrin, Cyhalothrin [Lambda], Cypermethrin, Permethrin, Pyrethroids), Phosphate, Phosphorus, TDS, Toxicity
	Los Peñasquitos Lagoon	Sediment/Siltation, Toxicity
	Mission Bay	Mercury, PCBs
	Mission Bay (area at mouth of Rose Creek only)	Eutrophic, Lead
	Mission Bay (area at mouth of Tecolote Creek only)	Eutrophic, Lead
	Mission Bay at Quivira Basin	Copper
	Mission Bay Shoreline, at Bonita Cove	Indicator Bacteria
	Mission Bay Shoreline, at Bonita Cove (eastern shore)	Indicator Bacteria
	Mission Bay Shoreline, at Campland	Indicator Bacteria
	Mission Bay Shoreline, at De Anza Cove	Indicator Bacteria
	Mission Bay Shoreline, at Enchanted Cove	Trash
	Mission Bay Shoreline, at Fanual Park	Indicator Bacteria
	Mission Bay Shoreline, at Fiesta Island northwest shore	Indicator Bacteria
	Mission Bay Shoreline, at Leisure Lagoon	Indicator Bacteria
	Mission Bay Shoreline, at Tecolote Shores	Indicator Bacteria
	Mission Bay Shoreline, at Visitors Center	Indicator Bacteria
	Pacific Ocean Shoreline, Scripps HA, at Avenida de la Playa at La Jolla Shores Beach	Indicator Bacteria
	Pacific Ocean Shoreline, Scripps HA, at Belmont Park at Mission Beach (near San Fernando Place)	Trash

Table 3.1.5-1
IMPAIRED WATER BODIES IN SAN DIEGO COUNTY

Watershed Management Area	Water Body	303(d) Impairment
	Pacific Ocean Shoreline, Scripps HA, at Children's Pool	Indicator Bacteria
	Pacific Ocean Shoreline, Scripps HA, at Crystal Pier	Trash
	Pacific Ocean Shoreline, Scripps HA, at La Jolla Cove	Indicator Bacteria
	Pacific Ocean Shoreline, Scripps HA, at North Lane at Windansea Beach	Trash
	Pacific Ocean Shoreline, Scripps HA, at Pacific Beach Drive, Pacific Beach	Trash
	Pacific Ocean Shoreline, Scripps HA, at Pacific Beach Point, Pacific Beach	Indicator Bacteria
	Pacific Ocean Shoreline, Scripps HA, at South Casa Beach	Indicator Bacteria
	Pacific Ocean Shoreline, Scripps HA, at Tourmaline Surf Park, Pacific Beach	Trash
	Pacific Ocean Shoreline, Scripps HA, at Vallecitos Court at La Jolla Shores Beach	Trash
	Pacific Ocean Shoreline, Scripps HA, at Whispering Sands Beach, Nicholson Point, La Jolla	Indicator Bacteria
	Pacific Ocean Shoreline, Torrey Pines State Beach, at North Beach Entrance parking lot	Trash
	Poway Creek	Nitrogen, Selenium, Toxicity
	Rose Creek	Benthic Community Effects, Indicator Bacteria, Pesticides (Bifenthrin, Cyfluthrin, Pyrethroids) Nitrogen, Phosphorus, Selenium, TDS, Toxicity
	Soledad Canyon	Benthic Community Effects, Nitrogen, Phosphorus, Sediment Toxicity, Selenium
	Tecolote Creek	Benthic Community Effects, Indicator Bacteria, Nitrogen, Pesticides (Bifenthrin, Cyfluthrin, Cyhalothrin [Lambda], Cypermethrin, Diazinon, Permethrin, Pyrethroids), pH, Phosphorus, Selenium, Toxicity, Turbidity
	Tecolote Creek, South Fork	Indicator Bacteria
San Diego Bay **(Otay, Pueblo, Sweetwater)**	Alpine Creek	Indicator Bacteria, Nitrogen
	Alvarado Creek	Nitrogen, Selenium
	Chocolate Creek	Indicator Bacteria, Nitrogen, Phosphorus
	Jamul Creek	Toxicity
	Long Canyon Creek (Lower Sweetwater Watershed)	Indicator Bacteria
	Loveland Reservoir	Aluminum, Manganese, Mercury, Oxygen (Dissolved), pH
	Mexican Canyon Creek (eastern tributary to Sweetwater River, Upper)	Indicator Bacteria
	Mexican Canyon Creek (western tributary to Sweetwater River, Upper)	Indicator Bacteria
	Otay Reservoir, Lower	Ammonia, Color, Iron, Manganese, Mercury, Nitrogen, pH, Phosphorus

Table 3.1.5-1
IMPAIRED WATER BODIES IN SAN DIEGO COUNTY

Watershed Management Area	Water Body	303(d) Impairment
	Otay River	Benthic Community Effects, Copper, Indicator Bacteria, Nitrogen, Oxygen (Dissolved), Pesticides (Bifenthrin, Cyfluthrin, Pyrethroids), Phosphorus, TDS, Toxicity, Zinc
	Pacific Ocean Shoreline, Coronado HA, at Avenida del Sol	Indicator Bacteria
	Pacific Ocean Shoreline, Coronado HA, at G Ave, Central Beach	Trash
	Pacific Ocean Shoreline, Coronado HA, at Silver Strand (north end, Oceanside)	Indicator Bacteria
	Pacific Ocean Shoreline, Otay Valley HA, at Carnation Ave and Camp Surf Jetty	Indicator Bacteria
	Pacific Ocean Shoreline, Point Loma HA, at Bermuda Ave	Indicator Bacteria
	Pacific Ocean Shoreline, Point Loma HA, at Sunset Cliffs and Froude Street	Trash
	Paleta Creek	Copper, Lead
	Poggi Canyon Creek	Nitrogen, Toxicity
	San Diego Bay	Mercury, PAHs, PCBs
	San Diego Bay Shoreline, 32nd Street Naval Station	Benthic Community Effects, Sediment Toxicity
	San Diego Bay Shoreline, at America's Cup Harbor	Copper
	San Diego Bay Shoreline, at Bayside Park (J Street)	Indicator Bacteria
	San Diego Bay Shoreline and Coronado Cays	Copper
	San Diego Bay Shoreline at Glorietta Bay	Copper
	San Diego Bay Shoreline, at Harbor Island (East Basin)	Copper
	San Diego Bay Shoreline, at Harbor Island (West Basin)	Copper
	San Diego Bay Shoreline, at Marriott Marina	Copper
	San Diego Bay Shoreline, between Sampson and 28th Streets	Copper, Mercury, PAHs, PCBs, Zinc
	San Diego Bay Shoreline, at Chula Vista Marina	Copper
	San Diego Bay Shoreline, Downtown Anchorage	Benthic Community Effects, Sediment Toxicity
	San Diego Bay Shoreline, G Street Pier	Indicator Bacteria
	San Diego Bay Shoreline, Near Chollas Creek	Benthic Community Effects, Sediment Toxicity
	San Diego Bay Shoreline, near Coronado Bridge	Benthic Community Effects, Sediment Toxicity
	San Diego Bay Shoreline, near sub base	Benthic Community Effects, Toxicity
	San Diego Bay Shoreline, Near Switzer Creek	Pesticides (Chlordane), PAHs
	San Diego Bay Shoreline, North of 24th Street Marine Terminal	Benthic Community Effects, Sediment Toxicity

Table 3.1.5-1
IMPAIRED WATER BODIES IN SAN DIEGO COUNTY

Watershed Management Area	Water Body	303(d) Impairment
	San Diego Shoreline, Seventh Street Channel	Benthic Community Effects, Sediment Toxicity
	San Diego Bay Shoreline, at Silver Strand Beach (bayside)	Indicator Bacteria
	San Diego Bay Shoreline, Shelter Island Shoreline Park	Indicator Bacteria
	San Diego Bay Shoreline, Tidelands Park	Indicator Bacteria
	San Diego Bay Shoreline, Vicinity of B Street and Broadway Piers	Benthic Community Effects, Indicator Bacteria, Sediment Toxicity
	San Diego Bay, Shelter Island Yacht Basin	Copper (Dissolved)
	Steele Canyon	Indicator Bacteria
	Sweetwater Reservoir	Mercury, Oxygen (Dissolved)
	Sweetwater River, Lower (below Sweetwater Reservoir)	Benthic Community Effects, Indicator Bacteria, Nitrogen, Oxygen (Dissolved), Pesticides (Bifenthrin, Chlorpyrifos, Pyrethroids), Phosphorus, TDS, Toxicity
	Sweetwater River, Middle (between Sweetwater and Loveland Reservoirs)	Aluminum, Benthic Community Effects, Indicator Bacteria, Nitrogen, Phosphorus, Selenium, TDS, Toxicity, Turbidity
	Sweetwater River, North Fork, unnamed tributary at Tavern Road	Indicator Bacteria, Manganese
	Sweetwater River, Upper (above Loveland Reservoir)	Toxicity
	Switzer Creek	Copper, Lead, Zinc
	Telegraph Canyon Creek	Nitrogen, Selenium
San Diego River	Cloverdale Creek	Nitrogen, Phosphorus, TDS
	El Capitan Lake	Color, Manganese, Mercury, Phosphorus, Total Nitrogen as N
	Eucalyptus Hills Creek	Indicator Bacteria, Pesticides (Diazinon)
	Famosa Slough and Channel	Eutrophic, Oxygen (Dissolved)
	Felicita Creek	1,4-Dioxane, Aluminum, Indicator Bacteria, Tetrachloroethylene/PCE, TDS, Trichloroethylene/TCE
	Forester Creek	Benthic Community Effects, Chloride, Indicator Bacteria, Nitrogen, Oxygen (Dissolved), Phosphorus, Selenium, TDS, Turbidity
	Green Valley Creek	Benthic Community Effects, Chloride, Manganese, Nitrogen, PCP, Pesticides (Bifenthrin, Chlorpyrifos, Cyfluthrin, Pyrethroids), Sulfates, Total Nitrogen as N, Toxicity
	Lake Jennings	Mercury
	Los Coches Creek	Indicator Bacteria, Nitrogen, Phosphorus, Selenium
	Murphy Canyon	Benthic Community Effects, Nitrogen, Phosphorus
	Pacific Ocean Shoreline, Mission San Diego HSA, at Newport Ave	Indicator Bacteria
	Pacific Ocean Shoreline, Mission San Diego HSA, at Ocean Beach pier at Narrangaset	Trash
	Pacific Ocean Shoreline, Otay Valley HA, north of Palm Avenue Jetty	Indicator Bacteria

Table 3.1.5-1
IMPAIRED WATER BODIES IN SAN DIEGO COUNTY

Watershed Management Area	Water Body	303(d) Impairment
	Pacific Ocean Shoreline, San Diego HU, at Stub Jetty, south of the San Diego River outlet, near Cape May Avenue	Indicator Bacteria, Trash
	Pacific Ocean Shoreline, San Diego HU, at the San Diego River outlet, at Dog Beach	Indicator Bacteria
	San Diego River (Lower)	Benthic Community Effects, Chloride, Color, Indicator Bacteria, Nitrogen, Oxygen (Dissolved), Pesticides (Bifenthrin, Chlordane, Cyfluthrin, Cypermethrin, Permethrin, Pyrethroids), Phosphorus, TDS, Toxicity, Turbidity
	San Vicente Creek (San Diego County)	Ammonia as Nitrogen, Indicator Bacteria, Phosphorus, Total Nitrogen as N, Toxicity
	San Vicente Reservoir	Chloride, Color, Nitrogen, pH, Sulfates
	Shepherd Canyon East	Nitrogen, Phosphorus
	Sycamore Canyon	Oxygen (Dissolved)
San Dieguito	Kit Carson Creek	PCP, TDS
	La Zanja Canyon	Indicator Bacteria
	Lake Hodges	Color, Manganese, Mercury, Nitrogen, pH, Phosphorus, Turbidity
	Lusardi Creek	Benthic Community Effects, Indicator Bacteria, Phosphorus
	Pacific Ocean Shoreline, Rancho Santa Fe HSA, at Powerhouse Park	Trash
	Pacific Ocean Shoreline, San Dieguito HU, at San Dieguito Lagoon Mouth at San Dieguito River Beach	Indicator Bacteria
	Pacific Ocean Shoreline, San Mateo Canyon HA, at San Mateo Creek outlet	Indicator Bacteria
	Salt Creek (Orange County)	Benthic Community Effects, Pesticides (Imidacloprid, Malathion), Toxicity
	San Dieguito River	Benthic Community Effects, Chloride, Nitrogen, Pesticides (Bifenthrin, Pyrethroids), Oxygen (Dissolved), Phosphorus, TDS, Toxicity
	San Dieguito River, unnamed tributary below Hodges Dam	Indicator Bacteria
	San Mateo Creek (San Diego County)	Indicator Bacteria, Invasive Species, Oxygen (Dissolved)
	Santa Ysabel Creek (below Sutherland Reservoir)	Benthic Community Effects, Manganese, Nitrogen, Phosphorus, TDS, Toxicity
	Sutherland Reservoir	Color, Iron, Manganese, Mercury, Nitrogen, pH, Phosphorus
San Juan	Couser Canyon Creek	Indicator Bacteria
	East Channel Creek	Indicator Bacteria
	Gopher Creek	Indicator Bacteria
San Luis Rey	Cristianitos Creek	Cadmium, Indicator Bacteria, Selenium
	De Luz Creek	Iron, Manganese, Nitrogen, Sulfates
	De Luz Creek, unnamed tributary at De Luz Murrieta Road	Chloride, Nitrogen, Sulfates
	Gomez Creek	Nitrogen

Table 3.1.5-1
IMPAIRED WATER BODIES IN SAN DIEGO COUNTY

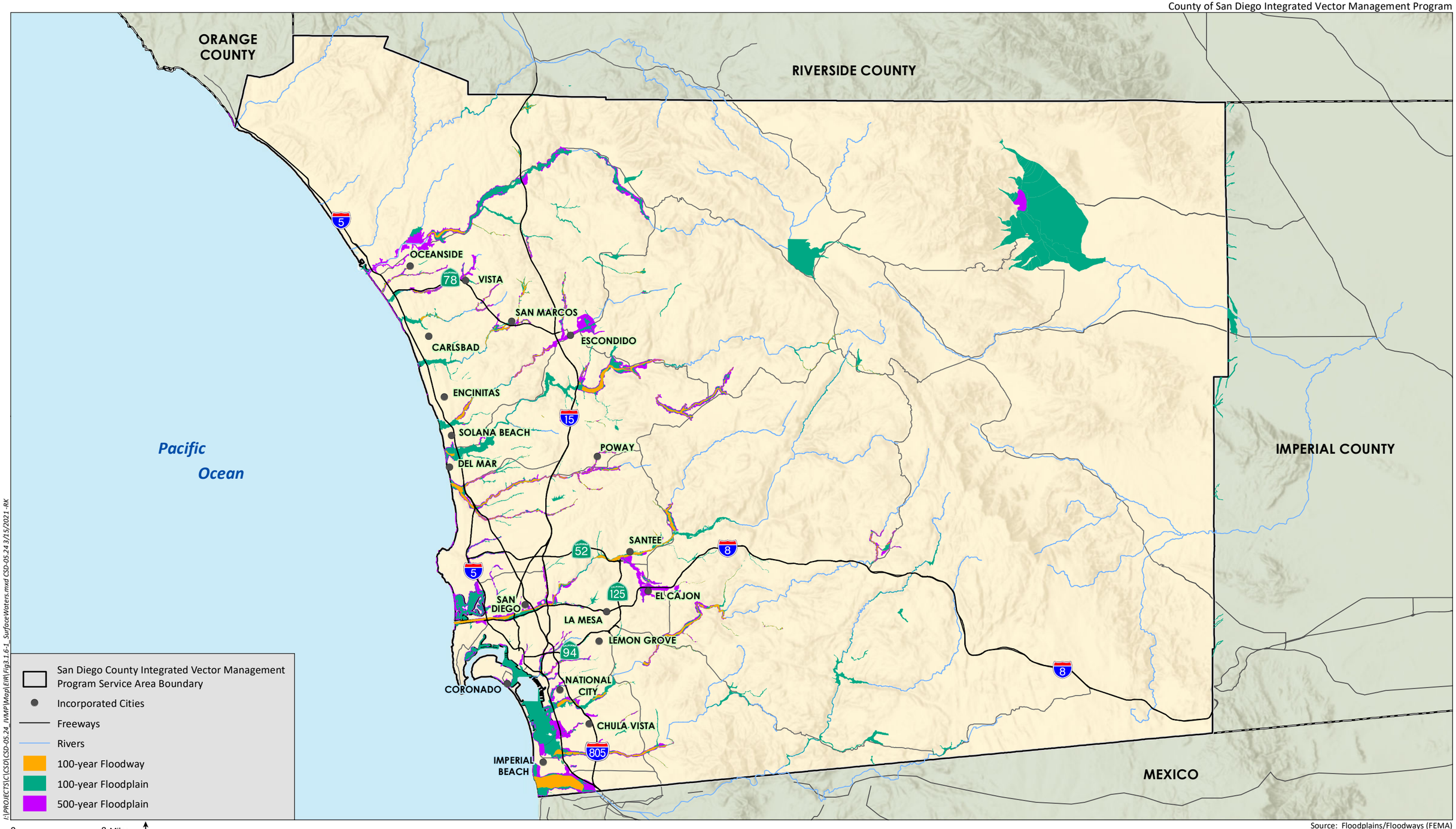
Watershed Management Area	Water Body	303(d) Impairment
	Green Canyon Creek	Indicator Bacteria
	Guajome Lake	Eutrophic
	Keys Creek	Indicator Bacteria, Nitrogen, Phosphorus, Selenium
	Live Oak Creek (San Diego County)	Indicator Bacteria
	Long Canyon Creek (tributary to Murietta Creek)	Iron, Manganese, Nitrogen, Pesticides (Chlorpyrifos), Phosphorus
	Moosa Canyon Creek	Benthic Community Effects, Indicator Bacteria, Nitrogen, Phosphorus
	Moosa Canyon South Fork	Indicator Bacteria
	Pacific Ocean Shoreline, San Luis Rey HU, at San Luis Rey River outlet	Indicator Bacteria
	Pacific Ocean Shoreline, San Luis Rey HU, Oceanside Pier at Pier View Way	Trash
	Paradise Creek, HSA 908.320	Phosphorus, Selenium
	San Luis Rey River, Lower (west of Interstate 15)	Benthic Community Effects, Chloride, Nitrogen, Oxygen (Dissolved), Pesticides (Bifenthrin, Pyrethroids), Phosphorus, TDS, Toxicity
	San Luis Rey River, Upper (east of Interstate 15)	Indicator Bacteria, Nitrogen, Phosphorus, Total Nitrogen as N
Santa Margarita	Barrett Lake	Color, Manganese, Perchlorate, pH, Phosphorus, Total Nitrogen as N
	Campo Creek	Indicator Bacteria, Nitrogen, Phosphorus, TDS
	Margarita Glen	Nitrogen, Phosphorus, Sulfates, TDS
	Oceanside Harbor	Copper, Toxicity
	Rainbow Creek	Aluminum, Benthic Community Effects, Iron, Nitrate/Nitrite (Nitrite + Nitrate as N), Nitrogen, Pesticides (Fenpyroximate, Imidacloprid) Phosphorus, Sulfates, TDS, Turbidity
	Rainbow Glen	Iron, Nitrogen, Phosphorus, Sulfates, TDS, Turbidity
	Sandia Creek	Aluminum, Ammonia (unionized), Iron, Manganese, Nitrogen, Selenium, Silver, Sulfates, TDS
	Santa Margarita Lagoon	Eutrophic
	Santa Margarita River (Lower)	Benthic Community Effects, Indicator Bacteria, Nitrogen, Pesticides (Chlorpyrifos), Phosphorus, Toxicity
	Santa Margarita River (Upper)	Benthic Community Effects, Indicator Bacteria, Iron, Manganese, Nitrogen, Pesticides (Bifenthrin, Cyhalothrin [Lambda], Pyrethroids), Phosphorus, TDS, Toxicity, Turbidity
	Temecula Creek	Benthic Community Effects, Copper, Indicator Bacteria, Iron, Manganese, Mercury, Nitrogen, Pesticides (Bifenthrin, Chlorpyrifos, Cyfluthrin, Cyhalothrin [Lambda], Permethrin, Pyrethroids), Phosphorus, Sulfates, TDS, Toxicity, Turbidity
	Via Milpas	Iron, Nitrogen, Phosphorus, Sulfates, TDS, Turbidity
	Willow Glen	Nitrogen, Phosphorus, Sulfates, TDS
Tijuana	Cottonwood Creek above Morena Reservoir	Indicator Bacteria
	Cottonwood Creek below Barrett Reservoir	Selenium

Table 3.1.5-1
IMPAIRED WATER BODIES IN SAN DIEGO COUNTY

Watershed Management Area	Water Body	303(d) Impairment
	Morena Reservoir	Ammonia, Color, Manganese, Nitrogen, pH, Phosphorus
	Pacific Ocean Shoreline, Imperial Beach Pier	Indicator Bacteria, PCBs, Trash
	Pacific Ocean Shoreline, Tijuana HU, at Border	Indicator Bacteria
	Pacific Ocean Shoreline, Tijuana HU, at Cortez Avenue	Indicator Bacteria
	Pacific Ocean Shoreline, Tijuana HU, at end of Seacoast Drive	Indicator Bacteria
	Pacific Ocean Shoreline, Tijuana HU, at Monument Road	Indicator Bacteria
	Pacific Ocean Shoreline, Tijuana HU, at Tijuana River mouth	Indicator Bacteria
	Pine Valley Creek (Lower)	Indicator Bacteria
	Tecate Creek	Nitrogen, Phosphorus, Selenium
	Tijuana River	Ammonia, Ammonia (Unionized), Ammonia as Nitrogen, Benthic Community Effects, Cadmium, Color, Eutrophic, Indicator Bacteria, Low Dissolved Oxygen, Nitrogen, Oxygen (Dissolved), Pesticides (Bifenthrin, Chlorpyrifos, Cypermethrin, Diazinon, Dichlorvos, Malathion, Permethrin, Pyrethroids, other pesticides undefined), Phosphorus, Sedimentation/Siltation, Selenium, Solids, Surfactants, Synthetic Organics, Total Nitrogen as N, Toxicity, Trace Elements, Trash, Turbidity
	Tijuana River, Upper (Cottonwood Creek confluence to 1st border crossing)	Nitrogen, Phosphorus
	Tijuana River Estuary	Eutrophic, Indicator Bacteria, Lead, Low Dissolved Oxygen, Nickel, Pesticides (undefined), Thallium, Toxicity, Trash, Turbidity

Source: SWRCB 2022.

Notes: DDE = Dichlorodiphenydichloroethylene; DDT = Dichlorodiphenyltrichloroethane; HA = hydrologic area; HSA = hydrologic sub area; HU = hydrologic unit; PAHs = polycyclic aromatic hydrocarbon; PCBs = Polychlorinated biphenyls; PCP = Pentachlorophenol; TDS = total dissolved solids



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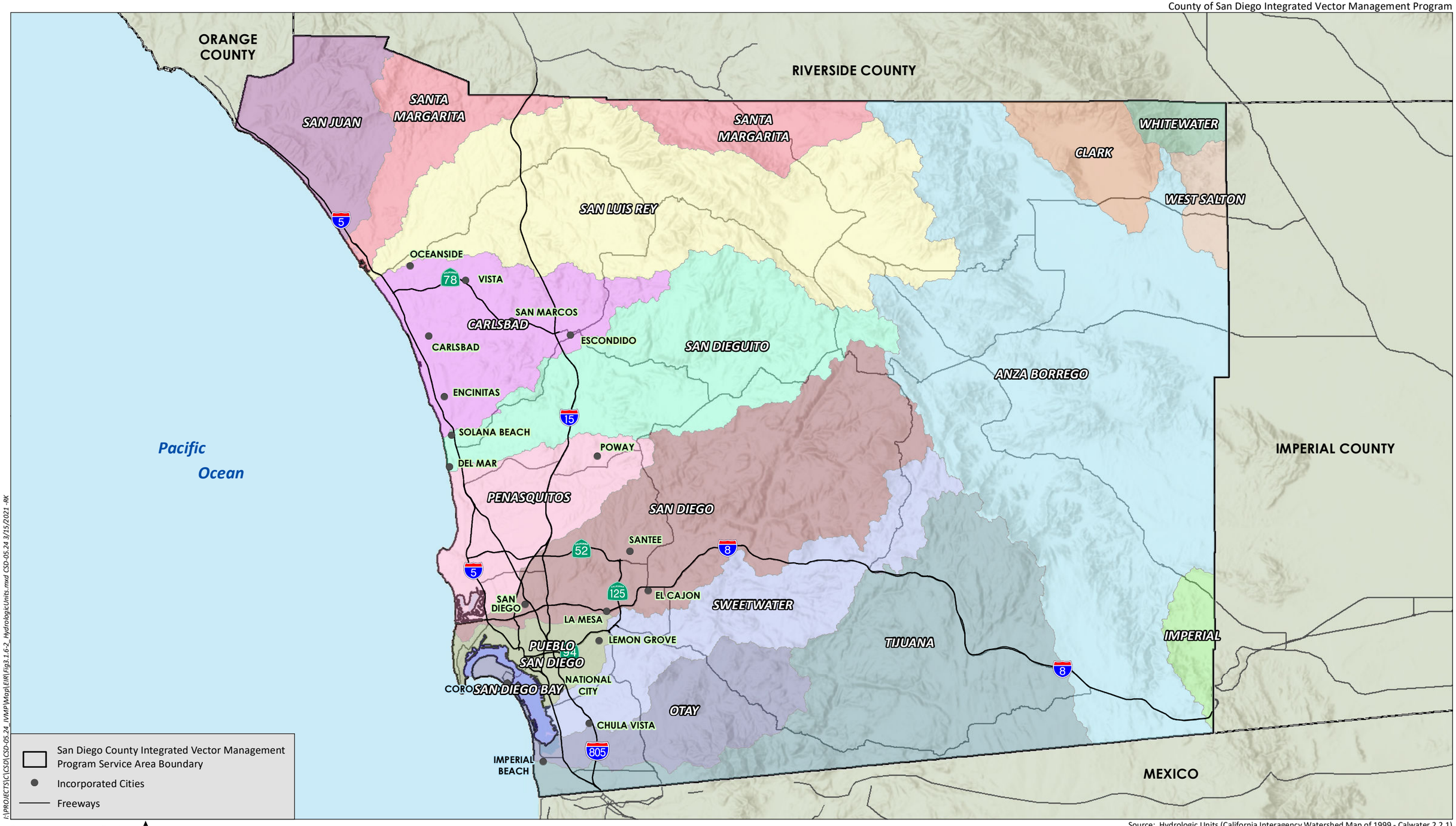
Source: Floodplains/Floodways (FEMA)

Surface Waters and Floodplains

Figure 3.1.5-1



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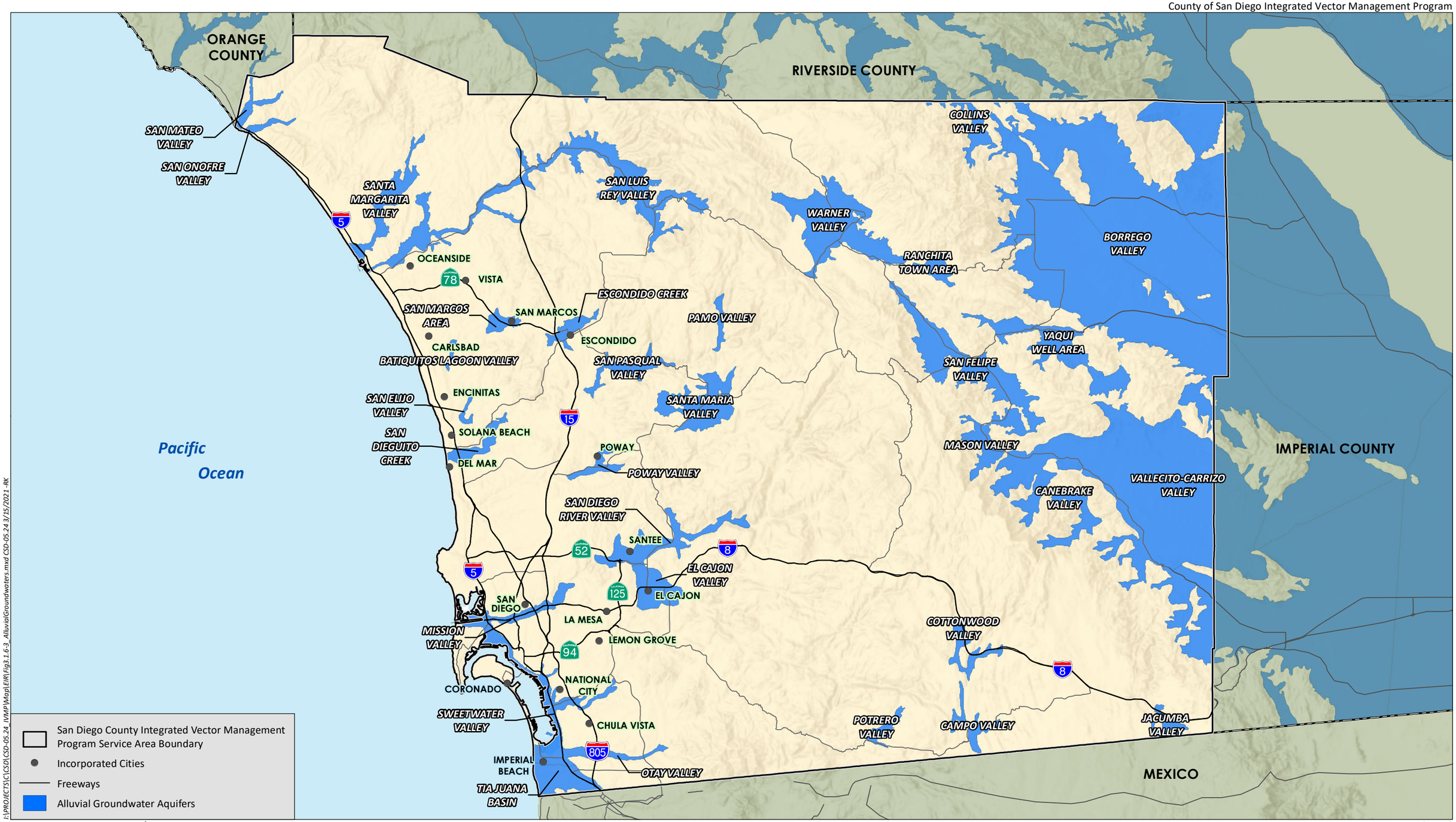
Source: Hydrologic Units (California Interagency Watershed Map of 1999 - Calwater 2.2.1)

Hydrologic Units

Figure 3.1.5-2



Source: Groundwater Basins (SanGIS)

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Alluvial Groundwater Aquifers

Figure 3.1.5-3