

3.10 HYDROLOGY AND WATER QUALITY

This section of the 2024 PEIR describes the existing hydrology and water quality conditions within the SCAG region, sets forth the regulatory framework that affect hydrology and water quality, and analyzes the potential impacts of Connect SoCal 2024. In addition, this 2024 PEIR provides regional-scale mitigation measures, as well as project-level mitigation measures that can and should be considered and implemented by lead agencies for subsequent, site-specific environmental reviews to reduce identified impacts as appropriate and feasible. Impacts related to water supplies and associated infrastructure are discussed in Section 3.19, *Utilities and Service Systems*, of this 2024 PEIR.

3.10.1 ENVIRONMENTAL SETTING

DEFINITIONS

Definitions of terms used in the regulatory framework, characterization of baseline conditions, and impact analysis for hydrology and water quality follow:

- *Best management practices (BMPs)*: For purposes of this 2024 PEIR, a BMP is any program, technology, process, siting criteria, operating method, measure, or device that controls, prevents, removes, or reduces stormwater pollution. Generally, BMPs focus on water quality problems caused by increased impervious surfaces from land development. BMPs are designed to reduce stormwater volume, peak flows, and/or nonpoint source pollution through evapotranspiration, infiltration, detention, and filtration or biological and chemical actions.
- *Ephemeral drainages*: An ephemeral stream or drainage has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.
- *Eutrophication*: Eutrophication is the process by which an entire body of water, or parts of it, becomes progressively enriched with minerals and nutrients, particularly nitrogen and phosphorus.
- *Groundwater*: Groundwater is the water present beneath Earth's surface in rock and soil pore spaces and in the fractures of rock formations. A unit of rock or an unconsolidated deposit is called an aquifer when it can yield a usable quantity of water. The depth at which soil pore spaces or fractures and voids in rock become completely saturated with water is called the water table.
- *Hydrologic unit code (HUC)*: The United States is divided and sub-divided into successively smaller hydrologic units that are classified into four levels: regions, sub-regions, accounting units, and cataloging units. The hydrologic units are arranged or nested within each other, from the largest geographic area (regions) to the smallest geographic area (cataloging units). Each hydrologic unit is identified by a unique HUC consisting of two to eight digits based on the four levels of classification in the hydrologic unit system.
 1. The first level of classification divides the United States into 21 major geographic areas, or regions. These geographic areas contain either the drainage area of a major river, such as the Missouri region, or the combined drainage areas of a series of rivers, such as the California region.
 2. The second level of classification divides the 21 regions into 221 subregions. A subregion includes the area drained by a river system, a reach of a river and its tributaries in that reach, a closed basin(s), or a group of streams forming a coastal drainage area.

3. The third level of classification subdivides many of the subregions into accounting units. These 378 hydrologic accounting units are nested within or can be equivalent to the subregions.
 4. The fourth level of classification is the cataloging unit, the smallest element in the hierarchy of hydrologic units. A cataloging unit is a geographic area representing part or all of a surface drainage basin, a combination of drainage basins, or a distinct hydrologic feature. There are 2,264 Cataloging Units in the country.
- *Impaired waters:* Under Clean Water Act (CWA) Section 303(d), states, territories, and authorized tribes are required to develop lists of impaired waters. These are waters that are too polluted or otherwise degraded to meet the water quality standards of the jurisdiction. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop total maximum daily loads (TMDL) (defined further below) for these waters.
 - *Mudflow:* Mudflows result from the downslope movement of soil and/or rock under the influence of gravity.
 - *National Flood Insurance Program (NFIP):* The NFIP aims to reduce the impact of flooding on private and public structures. It does so by providing affordable insurance to property owners, renters, and businesses and by encouraging communities to adopt and enforce floodplain management regulations.
 - *Non-point source runoff:* Runoff that occurs on surfaces before reaching a channel is also called a nonpoint source. If a nonpoint source contains man-made contaminants, the runoff is called nonpoint source pollution. A land area which produces runoff that drains to a common point is called a drainage basin. When runoff flows along the ground, it can pick up soil contaminants including, but not limited to, petroleum, pesticides, or fertilizers that become discharge or nonpoint source pollution.
 - *Perennial stream:* A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.
 - *Runoff:* Runoff is the water flow that occurs when the soil is infiltrated to full capacity and excess water from rain, meltwater, or other sources flows over the land. This is a major component of the water cycle, and the primary agent in water erosion. In addition to causing water erosion and pollution, surface runoff in urban areas is a primary cause of urban flooding, which can result in property damage, damp and mold in basements, and street flooding.
 - *Seiche:* A seiche is an oscillation of a body of water in an enclosed or semi-enclosed basin, such as a reservoir, harbor, lake, or storage tank.
 - *Stormwater pollution prevention plan (SWPPP):* A plan created by constructors to show their plans for sediment and erosion control. Typically, these plans are part of an overall design that details procedures to be followed during various phases of construction. This is required by federal and state regulations governing stormwater runoff from active construction sites that are more than one acre in area.
 - *Total maximum daily loads (TMDL):* A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards.
 - *Tsunami:* A tsunami is a sea wave produced by a significant undersea disturbance that flows onto coastal areas and may cause damage.
 - *Waters of the United States:* The definition of "waters of the United States" are regulatory definitions of "waters of the United States" are those portions of 33 Code of Federal Regulations (CFR) Part 328 and 40 CFR Parts 110, 112, 116, 117, 122, 230, 232, 300, 302, and 401 as they existed immediately prior to the 2015 Rule's

amendments (see discussion below in Section 3.10.2, *Regulatory Framework*). For example, pursuant to 40 CFR 120.2(a), the term “waters of the United States” means:

- (1) Waters which are:
 - (i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
 - (ii) The territorial seas; or
 - (iii) Interstate waters;
- (2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;
- (3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;
- (4) Wetlands adjacent to the following waters:
 - (i) Waters identified in paragraph (a)(1) of this section; or
 - (ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;¹
- (5) Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section.

HYDROLOGIC REGIONS

The California Department of Water Resources (DWR) has divided the state into ten hydrologic regions, corresponding to the state’s major water drainage basins (DWR 2020). The SCAG region includes portions of four hydrologic regions: Central Coast, Colorado River, South Coast, and South Lahontan (see **Map 3.10-1, Hydrologic Regions**). The four hydrologic regions are described below; the information is from the California Water Plan and a California Public Utilities Commission (CPUC) state-wide water study (DWR 2019; CPUC 2010).

CENTRAL COAST

The Central Coast Hydrologic Region covers approximately 7.2 million acres and extends from southern San Mateo County in the north to Santa Barbara County in the south. The region includes all of Santa Cruz, Monterey, San Benito, San Luis Obispo and Santa Barbara counties and parts of San Mateo, Santa Clara, and Ventura counties. Precipitation ranged from 4.7 inches during the dry year of 2014 to 16.2 inches in the wet year of 2011. Due to the thriving agriculture and viticulture business in the area, the region is the most groundwater-dependent hydrologic

¹ On May 25, 2023, the U.S. Supreme Court issued a decision in the case of *Sackett v. U.S. Environmental Protection Agency* 143 S.Ct. 1322. The court found that wetlands separated from traditional navigable waters are not considered “waters of the United States” under federal Clean Water Act over which protections of the CWA extend; rather, wetlands subject to CWA regulation are limited to those directly adjacent to navigable lakes, rivers, streams and ocean waters, and which have a continuous surface connection with those waters; accordingly, federal regulators’ assertion of wetlands regulatory jurisdiction under CWA 404 over plaintiffs’ filing of their residential lot was improper.

region in California. Approximately 73 percent (2011 wet year) to 89 percent (2014 dry year) of water demands in the region are met via groundwater extraction. Additional water supply is supplemented from the State Water Project and the Central Valley Project. Due to the extent of groundwater extraction, the Central Coast faces challenges such as groundwater basin overdraft, seawater intrusion, and water quality degradation.

COLORADO RIVER

The Colorado River Hydrologic Region covers approximately 13 million acres of southeast California. Imperial County, and large parts of Riverside and San Bernardino counties are within this hydrologic region. It is the most arid hydrologic region in California. Precipitation ranged from 2.7 inches in the dry year of 2014 to 5.9 inches in the wet year of 2011. The Colorado River serves as the main tributary and water supply of the region with usage ranging from 81 percent during the dry year of 2014 to 78 percent during the wet year of 2011. Overdraft and leaking underground storage tanks pose issues to water availability and quality in the region.

SOUTH COAST

The South Coast Hydrologic Region comprises approximately 6.8 million acres in the southwestern portion of the state. The region is bounded to the south by Mexico and the Pacific Ocean to the west. Most of the region falls within SCAG's jurisdiction, including parts of Ventura, Orange, Los Angeles, Riverside, and San Bernardino counties. Approximately 50 percent of the population of California lives within this region and as such, it maintains the highest population density of any hydrologic region. Precipitation ranged from 4.4 inches during the dry year of 2014 to 14.2 inches in the wet year of 2011. Most water supply is provided by groundwater (39 percent during the dry year of 2014 to 30 percent during the wet year of 2011) and by the Colorado River (34 percent during the dry year of 2014 to 22 percent during the wet year of 2011).

SOUTH LAHONTAN

The South Lahontan Hydrologic Region covers over 21 million acres of eastern California. The region contains the highest (Mount Whitney) and lowest (Death Valley) surface elevations of the state and the contiguous U.S. Annual precipitation ranged from 5.3 inches during the dry year of 2014 to 13.6 inches in the wet year of 2011. SCAG counties within the South Lahontan Hydrologic Region include San Bernardino and Los Angeles. The 223-mile-long Los Angeles Aqueduct is the region's major water development feature. The aqueduct system provides large quantities of power and water to the region. However, most water supply within this hydrologic region is provided by groundwater, ranging from 70 percent during the dry year of 2014 to 57 percent during the wet year of 2011.

SURFACE HYDROLOGY

Surface water hydrology refers to surface water systems, including watersheds, floodplains, rivers, streams, lakes, and reservoirs.

WATERSHEDS

Watersheds refer to areas of land, or a basin, in which all waterways drain to one specific outlet, or body of water, such as a river, lake, ocean, or wetland. Watersheds have topographical divisions such as ridges, hills, or mountains. Precipitation that falls within a given watershed, or basin, eventually drains into the same body of water. As shown in **Map 3.10-2, Watersheds in the SCAG Region**, there are 65 watersheds in the SCAG region (SWRCB 2004).

Watersheds are an essential part of the landscape, ecological composition, economy, and life, especially in Southern California and the SCAG region where arid conditions place great emphasis on the necessity of water. Unfortunately, water resources in the SCAG region have been degraded by a multitude of factors. Industrial and agricultural run-off, mining operations, loss of habitat, illegal dumping, and eutrophication are just some of the causes of impaired water quality. As climate change affects precipitation patterns and drought conditions become more severe, water resources must be carefully managed to ensure their protection. Groundwater pumping must be performed with caution to prevent saltwater intrusion or permanent aquifer subsidence.

DRAINAGES

Despite its primarily arid climate, the SCAG region has a variety of surface water resources, such as creeks, rivers, lakes, and reservoirs. The major rivers, lakes, and reservoirs are shown on **Map 3.10-3, Federally Protected Wetlands and Waterways within the SCAG Region**. Due to the dry climate of the region, many rivers and creeks are intermittent or ephemeral,² drying up in the summer or flowing only in reaction to precipitation. Annual rainfall amounts vary depending on elevation and proximity to the coast. Some waterways in the region, like the Los Angeles River, maintain a perennial flow due to agricultural irrigation and urban landscape watering.

Most waterways in California have been diverted for agricultural and economic purposes. Within the SCAG region, surface waters such as Los Angeles River, San Gabriel River, and the San Jacinto River have been dammed, redirected, and paved for human uses and as flood control measures. The Salton Sea is a man-made inland sea that resulted from the diversion of the Colorado River around 1905. The drainage reservoir serves Imperial County and would dry up without agricultural runoff flows. Other major natural surface waters like the Ventura River, Santa Clara River, Santa Ana River, and portions of the Santa Margarita River maintain more natural conditions and flows and support aquatic species and natural habitats. All surface water drainages suffer from water quality impacts such as overuse, erosion, and illegal dumping.

LAKES AND RESERVOIRS

Most lakes in Southern California have been generated by humans, through manual digging and/or the damming of rivers across the state. Lakes and reservoirs serve as important habitat as well as recreational purposes; however, the most vital uses include agricultural irrigation, flood control, and drinking water, all of which are imperative to life in the semi-arid climate. Major lakes in the SCAG region include Big Bear Lake, Lake Arrowhead, Lake Casitas, Diamond Valley Lake, and the Salton Sea.

Big Bear Lake and Lake Arrowhead are in San Bernardino County and were created via the damming of rivers. Big Bear Lake was created in 1884 and has no tributary inflow, replenishing itself solely by snowmelt (Big Bear Municipal Water District 2018). The dam at Lake Arrowhead was completed in 1922 and the lake is still used for recreation and potable water (Arrowhead Lake Association 2023). Damming also created Lake Casitas in Ventura County (U.S. Bureau of Reclamation 2023) and the Salton Sea, which is one of the saltiest bodies of water on earth due to evaporation and agricultural runoff (The Salton Sea Authority 2017). Diamond Valley Lake is the newest and largest reservoir in Southern California, holding 800,000 acre-feet (af) of water (Diamond Valley Marina 2023). While the lake is situated in Riverside County, it is connected to the State Water Project and serves as an important resource for potable water and hydroelectric power throughout the SCAG region.

² An ephemeral stream flows only during or for a short duration after precipitation events. An intermittent stream flows during certain times of the year, when precipitation and groundwater provides water for stream flow.

COASTAL WATERS

Ventura, Los Angeles, and Orange Counties in the SCAG region border the Pacific Ocean and contain coastal waters such as bays, estuaries, beaches, and open ocean. Santa Monica Bay comprises a large portion of the region’s open coastal waters and important harbors include the Los Angeles/Long Beach Harbor complex and Port Hueneme. Important estuaries, providing unique and critical habitat for wildlife, include coastal lagoons and wetlands. Unfortunately, coastal wetlands are negatively impacted by run-off, discharges, oil spills, dredging, illegal dumping, and natural oil seeps (LARWQCB 2014).

FEDERALLY PROTECTED WETLANDS AND WATERWAYS

Under CWA Section (USEPA 2022b) and Rivers and Harbors Act (RHA) Section 10 (USEPA 2022a), some wetlands and waterways are federally protected by the U.S. Army Corps of Engineers (USACE). Parties must obtain special permits for discharging dredged or fill materials or pollutants into designated waters, intensifying protections for such wetlands and waterways. Designated wetlands and waterways in the SCAG region are identified in **Table 3.10-1, Federally Protected Wetlands and Waterways within the SCAG Region.**

TABLE 3.10-1 Federally Protected Wetlands and Waterways within the SCAG Region

MAJOR RIVER OR LAKE	ACRES	LINEAR MILES
Imperial County		
Salton Sea	190,391.60	—
Los Angeles County		
Castaic Lake	2,230.82	—
Morris Reservoir	283.42	—
Puddingstone Reservoir	243.77	—
Pyramid Lake	1,177.31	—
San Gabriel Reservoir	524.85	—
Los Angeles River	—	50.73
San Gabriel River	—	59.19
Santa Clara River	—	43.86
Orange County		
Irvine Lake	445.54	—
San Gabriel River	—	0.35
Santa Ana River	—	27.18

MAJOR RIVER OR LAKE	ACRES	LINEAR MILES
Riverside County		
Diamond Valley Lake	4,057.69	—
Lake Elsinore	3,308.69	—
Lake Matthews	2,666.79	—
Perris Reservoir	1,920.63	—
Salton Sea	42,537.27	—
Skinner Reservoir	790.46	—
Vail Lake	257.23	—
Santa Ana River	—	24.43
Santa Margarita River	—	5.14
San Bernardino County		
Big Bear Lake	2,692.69	—
Lake Arrowhead	735.62	—
Silverwood Lake	905.09	—
Santa Ana River	—	43.86
Ventura County		
Lake Casitas	2,446.81	—
Lake Piru	1,220.91	—
Santa Clara River	—	39.27
Total	258,837.19	294.00

Source: USGS 2023

GROUNDWATER HYDROLOGY

Groundwater accounts for most of the local fresh water within the SCAG region. The Central Coast and South Lahontan watersheds most heavily rely on groundwater for urban and agricultural use, although all four watersheds are dependent upon it. Drought conditions in recent years have led to groundwater overdraft and associated subsidence, in which the groundwater basin collapses with dirt and renders it unusable. Improved groundwater management and water reduction measures, as well as wet weather conditions, including historic rainfall from numerous storm systems in early 2023, have assisted in lessening groundwater overdraft. However, it is still a major concern within the SCAG region and across the state, as climate change leads to more severe and volatile weather patterns and the population of the area continues to expand.

WATER QUALITY

Point and non-point source pollution are different forms of pollution that can damage surface and groundwater quality and are regulated at the federal, state, and local level. Point source pollution refers to contaminants that enter a watershed, usually through a specific location such as a pipe. The source must be documented and the flow from the source is subject to a discharge permit issued by a Regional Water Quality Control Board (RWQCB).

Examples of point source pollution are discharges from sewage treatment plants and industrial facilities. Because point sources are much easier to regulate than non-point sources, they were the initial focus of the 1972 CWA. Regulation of point sources since then has dramatically improved the water quality of rivers and streams throughout the country.

In contrast to point source pollution, non-point source pollution, also known as “pollution runoff,” is diffuse. Non-point pollution comes from different areas (such as contaminated runoff from urban areas) and is significantly influenced by land uses. A driveway or the road in front of a house may be a source of pollution if spilled oil, leaves, pet waste, or other contaminants are washed into a storm drain. Non-point source pollution is now considered a major water quality problem in the United States.

The problem of non-point source pollution, specifically runoff pollution is especially acute in urbanized areas where a combination of impermeable surfaces, landscape irrigation, highway runoff, and illicit dumping increase the pollutant loads in stormwater. The State Water Quality Control Board has identified the following pollutants found in urban runoff as being of concern:

- **Sediment.** Excessive sediment loads in streams can interfere with photosynthesis, aquatic life respiration, growth, and reproduction.
- **Nutrients.** Nitrogen and phosphorus can result in eutrophication of receiving waters (excessive or accelerated growth of vegetation or algae), reducing oxygen levels available for other species.
- **Pathogens.** Pathogens (e.g., bacteria and viruses) introduced to receiving waters from animal excrement in the watershed and by septic systems can restrict water contact activities.
- **Oxygen demanding substances.** Plant debris and animal waste (e.g., lawn clippings, animal excrement, and litter) can reduce dissolved oxygen levels as they decompose.
- **Petroleum Hydrocarbons.** Petroleum hydrocarbons (i.e., fuel, oil, and grease) from vehicles and motorized equipment are toxic to some aquatic life.
- **Metals.** Lead, zinc, cadmium, and copper are heavy metals commonly found in stormwater introduced by vehicles and motorized equipment. Other metals include chromium, iron, nickel, and manganese. These metals can enter waterways through storm drains along with sediment, or as atmospheric deposition.
- **Toxic pollutants.** Pesticides, phenols, and polynuclear aromatic hydrocarbons are toxic organic chemicals found in stormwater.
- **Floatables.** Trash, litter, and yard waste in waterways increases metals and toxic pollutant loads in addition to undesirable aesthetic impacts.
- **Synthetic Organics.** Synthetic organic pollutants (e.g., pesticides, herbicides, polychlorinated biphenyls, etc.) are toxic organic chemicals found in stormwater.
- **Physical Parameters.** Physical parameters such as salinity, elevated temperature, and pH can also be toxic if outside of naturally occurring ranges.

As shown in **Table 3.10-2, Pollutants Associated with Transportation**, there are pollutants specific to transportation that affect water quality. Highway runoff is a component of urban runoff contributing oil and grease, sediment, nutrients, heavy metals, and toxic substances.

TABLE 3.10-2 Pollutants Associated with Transportation

POLLUTANT	SOURCE
Asbestos	Clutch plates, brake linings
Cadmium	Tire wear and insecticides
Copper	Thrust-bearing, bushing, brake linings, and fungicides and insecticides
Chromium	Pavement materials, metal plating, rocker arms, crankshafts, rings, and brake linings
Cyanide	Anti-caking compound in de-icing salt
Lead	Leaded gasoline, motor oil, transmission Babbitt metal bearings, tire wear
Iron	Auto-body rust, steel highway structures, moving engine parts
Manganese	Moving engine parts
Nickel	Diesel fuel and gasoline, pavement material, lubricating oil, metal plating, bushing wear, and brake linings
Nitrogen and Phosphorus	Motor oil additives, fertilizers
Sulphates	Roadway beds, fuel, and de-icing salt
Zinc	Motor oil and tires
Grease and Hydrocarbons	Spills and leaks of oil and n-paraffin lubricants, antifreeze, hydraulic fluids
Rubber	Tire wear
Sediment	Pavement wear, construction, and maintenance activities

Source: USEPA 1995

The U.S. Environmental Protection Agency (USEPA) requires the listing of impaired and threatened waters under CWA Section 303(d) (USEPA 2022c). Each state submits candidate impaired and threatened waters to the USEPA for review and approval. Each state then identifies the pollutant causing the impairment and develops rules and guidelines towards its improvement. There are 335 impacted waterways and water bodies within the SCAG region (see **Appendix E, Hydrology**). Poor water management and overuse in Southern California has led to problems with the various above-listed pollutants.

LAND USE AND WATER QUALITY

Buildings, roads, sidewalks, parking lots, and other impervious surfaces define the urban landscape. Impervious surfaces also alter natural hydrology and prevent the infiltration of water into the ground. Impervious surfaces change the flow of stormwater over the landscape. In underdeveloped areas, vegetation holds down soil, slows the flow of stormwater over land, and filters out some pollutants by both slowing the flow of the water and trapping some pollutants in the root system. Additionally, some stormwater filters through the soil, replenishing underground aquifers. As land is converted to other uses such as commercial or residential development, many of these natural processes are eliminated as vegetation is cleared and soil is paved over. As more impervious surface coverage is added to the landscape, more stormwater flows faster off the land. The greater volume of stormwater increases the possibility of flooding, and the high flow rates of stormwater do not allow for pollutants to settle out, meaning that more pollution gets concentrated in the stormwater runoff. Research on urban stream protection has found that stream degradation occurs when a watershed reaches relatively low levels of imperviousness—in the range of 10 to 20 percent; water quality degradation can occur when impervious surface coverage in a watershed surpasses 10 percent (Hakkam 2016). Fish habitat, spawning, and diversity suffer when

imperviousness is greater than 10 to 12 percent. Wetland plants and amphibian populations diminish when impervious surfaces are greater than 10 percent. Generally, the higher the percentage of impervious surface, the greater the degradation in stream water quality (Brabec 2002). Based on this research, streams can be considered stressed in watersheds when the impervious coverage exceeds 10 to 15 percent. The link between impervious surfaces and degraded water quality points to the need for careful comparisons between dispersed and compact development strategies. On a regional or watershed level, greater overall water quality protection is achieved through more concentrated or clustered development. Concentrated development protects the watershed by leaving a larger percentage of it in its natural condition.

WASTE DISCHARGE REQUIREMENTS

If the operation or discharges from a property or business affects California's surface, coastal, or groundwater, it would normally be required to obtain a permit to discharge waste from the appropriate RWQCB. Discharges of pollutants into surface waters require a National Pollutant Discharge Elimination System (NPDES) permit application with the appropriate RWQCB (USEPA 2020). For other types of discharges, such as those affecting groundwater or in a diffused manner (e.g., erosion from soil disturbance or waste discharges to land) a report of waste discharge must be filed with the appropriate RWQCB to obtain waste discharge requirements (WDR). For specific situations, the RWQCB may waive the requirement to obtain a WDR for discharges to land or may determine that a proposed discharge can be permitted more effectively through enrollment in a general NPDES permit or general WDR.

RWQCBs in the SCAG region have identified a typical list of activities that affect water, but the list is by no means inclusive of all situations (SD RWQCB 2017):

- Discharge of process wastewater not discharging to a sewer (factories, cooling water, etc.)
- Confined Animal facilities (dairies, feedlots, etc.)
- Waste containments (landfills, waste ponds, etc.)
- Construction sites
- Boatyards and shipyards
- Discharges of pumped groundwater and cleanups (underground tank cleanups, dewatering, spills)
- Material handling areas draining to storm drains
- Sewage treatment facilities
- Filling of wetlands
- Dredging, filling, and disposal of dredge wastes
- Commercial activities not discharging to a sewer (e.g., factory wastewater, storm drain)
- Waste discharges to land

FLOOD HAZARDS

RIVERINE AND STORMWATER FLOODING

Riverine flooding generally occurs when soil and vegetation cannot absorb excess rainwater or snowmelt, and water runs off the land in quantities that cannot be carried in stream channels or kept in natural ponds or man-made reservoirs. Periodic floods occur naturally on many rivers, forming areas known as floodplains. These river floods usually result from heavy rain, sometimes combined with melting snow, which causes the rivers to overflow their banks. A flood that rises and falls rapidly with little or no advance warning is called a flash flood. Flash floods usually result from intense rainfall over a relatively small area.

Flooding occurs occasionally on streets and roads in urbanized areas where stormwaters are diverted into manmade or artificial drainage systems. In urbanized areas with significant area of impervious surfaces, stormwater is not able to permeate and percolate into the soil and is diverted into a storm drainage system. In some areas, these drainage systems are occasionally overloaded with stormwater drainage, or the drains become clogged with leaves and other debris, thereby impeding stormwater drainage onto transportation facilities (i.e., roadways). The ability of the storm drainage system to accommodate water flows is also largely based on ground permeability and infrastructure capacity. In metropolitan areas, agencies responsible for maintaining and upgrading drainage facilities to accommodate volume are local cities and the counties.

Principal impacts of flooding include damage to permanent structures, relocation of non-stationary objects, loss of human life, and damage to infrastructure and soil conditions. After the initial damage from floodwaters, standing water often creates a secondary level of destruction, by ruining crops, further undermining and damaging infrastructure, and contaminating water wells. Debris flows are another hazard associated with flooding, when heavy soils and rocks slide down into a valley, threatening the infrastructure below.

COASTAL FLOODING AND SEA-LEVEL RISE

During the winter months (generally November to March), offshore storms originating from the Pacific Ocean arrive at SCAG county shorelines that border the ocean. These storms can cause an up-surge in water levels above typical tides, and often include strong winds and wind-generated waves. In addition, as discussed below, seismically induced waves (i.e., as the result of a tsunami event) may occur on occasion, having the potential to cause coastal flooding. The water level storm surge, particularly if it coincides with extreme precipitation and riverine runoff, may result in coastal flooding. Waves and wave run-up riding on top of surging seas may also contribute to coastal flooding, wave-impact damage, and erosion.

Rising sea levels, caused by humans' greenhouse gas emissions (GHGs), will increase the potential for coastal flooding, and the issue of sea-level rise is important in land use planning and hazard analysis in coastal areas. The State of California released its *Sea-Level Rise Guidance 2018 Update* in 2018, which provides a science-based methodology for state and local governments to analyze and assess the risks associated with sea-level rise, including ranges of sea-level rise projections for locations along the California coast (California Natural Resources Agency and California Ocean Protection Council 2018). **Table 3.10-3, Estimates of Sea-Level Rise for Los Angeles Relative to the Year 2000**, lists the probabilistic projections of sea-level rise for the Los Angeles tidal gauge for low- and high-emissions scenarios through 2100. Sea-level rise projections beyond 2050 are highly dependent on assumptions regarding future global GHGs and future changes in the rate at which land ice melts. Based on mapping completed for Los Angeles County (Grifman et. al. 2016), portions of Southern California beaches could start to disappear as soon as 2030 and by 2100, beach retreat will be along the entire coast. In

addition, flooding hazards will rise and cliff retreat will accelerate. **Map 3.10-4, Areas Vulnerable to Sea Level Rise**, shows the coastal areas anticipated to be affected by sea level rise.

TABLE 3.10-3 Estimates of Sea-Level Rise for Los Angeles Relative to the Year 2000

YEAR	LIKELY RANGE (FEET) ^A 66% PROBABILITY SEA LEVEL RISE IS ...	1-IN-200 CHANCE (FEET) ^B 0.5% PROBABILITY SEA LEVEL RISE MEETS OR EXCEEDS ...	H++ SCENARIO (FEET) ^C
2050	1.0	1.8	2.6
2100 Low Emissions ^d	2.1	5.4	—
2100 High Emissions	3.2	6.7	9.9

Source: CNRA/OPC 2018

Table Notes:

- The “Likely Range” shown is the value recommended by the State of California for low-risk aversion decisions and represents the upper end of the range of sea-level rise that has a 66% probability of occurring by the given year.
- The “1-in-200 Chance” shown is the value recommended by the State for medium- to high-risk aversion decisions and represents the feet of sea-level rise that has a 0.5% probability of occurring by the given year.
- The “H++ Scenario” shown is the value recommended by the State for extreme-risk aversion decisions and is a single scenario that does not have an associated likelihood of occurrence as do the other probabilistic projections. The state recommends considering the H++ Scenario for projects with a life span beyond 2050 that have a low tolerance for risk.
- The State recommends considering low- and high-emissions scenarios after 2050. The emissions scenarios are the same as those used by the Intergovernmental Panel on Climate Change’s Fifth Assessment Report. The “High Emissions” value is consistent with a “business-as-usual” future in which there are few global efforts to limit or reduce carbon dioxide emissions. The “Low Emissions” value is consistent with a future in which global carbon dioxide emissions decline by about 70% between 2015 and 2050, to zero by 2080, and below zero thereafter.

The *State of California Sea-Level Rise Guidance* recommends that all planning for construction projects in areas that are vulnerable to future sea-level rise must consider a range of scenarios for 2050 and 2100 to assess project vulnerability, and, to the extent feasible, must reduce expected risks and increase resiliency with respect to sea-level rise. The state’s strategic plan to protect the coast stipulates that projects should seek to be resilient to at least 3.5 feet of sea-level rise and should achieve this level of resilience by 2050 (California Natural Resources Agency and California Ocean Protection Council, 2020). To accommodate the potential for additional sea-level rise beyond 3.5 feet, state guidance calls for an adaptive management approach. Adaptive management is an iterative process that involves monitoring conditions to evaluate whether an area could be inundated by flooding exacerbated by sea-level rise and identifying actions to be implemented to ensure that the area and existing structures are resilient to future flooding conditions.

100-YEAR FLOODPLAIN

The 100-year floodplain denotes an area that has a 1 percent chance of being inundated during any particular 12-month period. Floodplain zones are determined by Federal Emergency Management Agency (FEMA) and used to create Flood Insurance Rate Maps (FIRM) (FEMA 2023). These tools assist communities in mitigating flood hazards through land use planning. FEMA also outlines specific requirements for any construction located within a 100-year floodplain, whether residential, commercial, or industrial, that a local community needs to comply with to participate in the NFIP. Cities or counties then implement these requirements as regulations specified in the local building code. Each watershed in the SCAG region has associated 100-year flood plains, with Imperial County containing the most land designated as being in floodplains. In addition, sections of the SCAG region that have ocean or estuarine shorelines also have coastal 100-year floodplains mapped on FIRMs. FEMA does not account for future sea-level rise on its FIRMs.

SEICHE

A seiche is an oscillation of a body of water in an enclosed or semi enclosed basin, such as a reservoir, harbor, lake, or storage tank. Seiches can be caused by strong winds, rapid changes in atmospheric pressure, or the seismic shaking of an earthquake. Many examples of seiches can be found in Southern California, where water reservoirs have been constructed or developed by damming rivers. Examples of enclosed water bodies in the SCAG region include Big Bear Lake, Lake Arrowhead, Lake Casitas, Castaic Lake, Pyramid Lake, Lake Elsinore, Diamond Valley Lake, and the Salton Sea.

TSUNAMI

Tsunamis are massive waves triggered by large earthquakes along fault lines or volcanic eruptions in or near the ocean. Tsunamis have potential to inundate and flood areas much further inland than regular ocean waves. Such inundation can cause severe damage to local infrastructure and even loss of life. The three coastal counties susceptible to tsunamis include Los Angeles, Orange, and Ventura Counties (CGS 2022). The areas susceptible to tsunamis are shown on **Map 3.10-5, Areas Susceptible to Tsunamis**.

3.10.2 REGULATORY FRAMEWORK

FEDERAL REGULATIONS

RIVERS AND HARBORS APPROPRIATION ACT, SECTION 10

Authorization from USACE must be obtained for construction of a structure in or over any navigable water of the U.S., pursuant to Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 United States Code [USC] 403). Authorization is also needed for structures built near navigable water if they would affect the course, location, condition, or capacity of the water body, as through re-channelization, disposal of fill, and so forth.

RHA Section 10 (33 USC Section 403) requires authorization from USACE for work or structures in or affecting navigable waters of the United States. The term “navigable waters of the United States” generally includes those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity (33 CFR Section 329.4). Wild and Scenic Rivers Act of 1968 (WSRA).

The objective of the WSRA (Public Law 90–542), dated October 2, 1968, is the preservation of certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition. The WSRA provides permanent protection for some of the country’s most outstanding free flowing rivers and prohibits federal support for actions such as the construction of dams or other harmful instream activities.

CLEAN WATER ACT, AS AMENDED

Congress enacted the CWA, originally enacted as the Federal Water Pollution Control Act (Public Law 92–500) in 1948; it took on its modern form when completely rewritten in 1972 in an act entitled the Federal Water Pollution Control Act Amendments of 1972, now commonly known as the CWA. Major changes have subsequently been introduced via amendatory legislation including the CWA of 1977 and the Water Quality Act of 1987.

The CWA is the primary federal law governing water pollution. Its objective is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands. It is one of the first and most influential modern environmental laws in the U.S. As with many other major federal environmental statutes, it is administered by the USEPA, in coordination with state governments. Its implementing regulations are codified at 40 CFR Subchapters D, N, and O (Parts 100–140, 401–471, and 501–503).

The CWA authorizes federal, state, and local entities to cooperatively create comprehensive programs for eliminating or reducing the pollution of state waters and tributaries. Amendments to the CWA in 1972 established the NPDES permit program, which prohibits discharge of pollutants into the nation's waters without procurement of a NPDES permit from the USEPA. The purpose of the permit is to translate general requirements of the CWA into specific provisions tailored to the operations of each organization that is discharging pollutants. Although federally mandated, the NPDES permit program is generally administered at the state and regional levels.

The USEPA NPDES program requires NPDES permits for (1) Municipal Separate Storm Sewer Systems (MS4) Permit generally serving, or located in, incorporated cities with 100,000 or more people (referred to as municipal permits); (2) 11 specific categories of industrial activity (including landfills); and (3) construction activity that disturbs five acres or more of land. As of March 2003, Phase II of the NPDES Program extended the requirements for NPDES permits to numerous small municipal separate storm sewer systems, construction sites of 1 to 5 acres, and industrial facilities owned or operated by small municipal separate storm sewer systems, which were previously exempted from permitting.

The following paragraphs discuss specific relevant sections of the CWA.

SECTION 303(D)

CWA Section 303 (33 USC Section 1251) requires states to establish water quality standards consisting of designated beneficial uses of water bodies and water quality standards to protect those uses for all waters of the United States. Under CWA Section 303(d), states, territories, and authorized tribes are required to develop lists of impaired waters. Impaired waters are waters that do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish a priority ranking for listed waters and develop action plans to improve water quality. This process includes development of TMDLs that set discharge limits for non-point source pollutants.

SECTION 401 - WATER QUALITY CERTIFICATION

CWA Section 401 (33 USC Section 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into navigable waters, including the crossing of rivers or streams during road, pipeline, or transmission line construction, to obtain a certification from the state in which the discharge originates. The certification ensures that the discharge will comply with the applicable effluent limitations and water quality standards. The California state agency responsible for implementing CWA Section 401 in California is the RWQCB.

SECTION 402 - NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

CWA Section 402 (33 USC 1341) establishes the NPDES permit process. In California, NPDES permitting authority is delegated to, and administered by the nine RWQCBs. Pursuant to Section 402, a discharge of any pollutant from

a point source into navigable waters is prohibited unless an NPDES permit is obtained. Point sources are discrete conveyances such as pipes or manmade ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. The NPDES permit program is discussed in detail below under State Regulations.

SECTION 404 - DISCHARGE OF DREDGE OR FILL MATERIAL

CWA Section 404(33 USC Section 1344) is administered and enforced by USACE. CWA Section 404 established a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands and non-wetland bodies of water that meet specific criteria as defined in the CFR and applicable USACE guidance. The selection and use of dredge and disposal sites will be in accordance with guidelines developed by the USEPA in conjunction with the USACE and published in 40 CFR Part 230 (the "guidelines"). 40 CFR Part 230 Subpart C includes water quality aspects of dredge and fill activities. Among other topics, these guidelines address discharges, which alter substrate elevation or contours, suspended particulates, water clarity, nutrients and chemical content, current patterns and water circulation, water fluctuations, and salinity gradients. USACE administers the day-to-day program, including the determination of eligibility of projects for use of Categorical Exclusions and Nationwide Permits, and review and consideration of individual permit decisions and jurisdictional determinations. USACE also develops policy and guidance; and enforces Section 404 provisions.

EXECUTIVE ORDER 11990 - PROTECTION OF WETLANDS

Executive Order 11990 (42 Federal Register 26961) is an overall wetlands policy for all agencies managing federal lands, sponsoring federal projects, or providing federal funds to state or local projects. This executive order requires that when a construction project involves wetlands, a finding must be made by the federal agency that there is no practicable alternative to such construction, and that the proposed action includes all practicable measures to minimize impacts to wetlands resulting from such use.

ANTIDegradation POLICY

The Antidegradation Policy under USEPA's Water Quality Standards Regulations (48 Federal Register 51400, 40 CFR 131.12, November 8, 1983), requires states and tribes to establish a three-tiered antidegradation program to prevent a decrease in water quality standards:

- **Tier 1**—Maintains and protects existing uses and water quality conditions that support such uses. Tier 1 is applicable to all surface waters.
- **Tier 2**—Maintains and protects "high quality" waters where existing conditions are better than necessary to support "fishable/swimmable" waters. Water quality can be lowered in such waters but not to the point at which it would interfere with existing or designed uses.
- **Tier 3**—Maintains and protects water quality in outstanding national resource waters. Water quality cannot be lowered in such waters except for certain temporary changes.

Antidegradation was explicitly incorporated into the CWA through 1987 amendments, codified in Section 303(d)(4)(B), requiring satisfaction of antidegradation requirements before making certain changes in NPDES permits.

WATERS OF THE UNITED STATES

In 1986, the term “waters of the United States” was defined in 33 CFR 328.3(a). Various subsequent amendments, rules, lawsuits, and court decisions implemented various changes. The current regulatory and legal interpretation has returned to the original definition, as identified above in Environmental Setting under Definitions.

On June 29, 2015, USEPA and USACE jointly published a final Waters of the United States Rule (40 CFR Parts 110, 112, 116, et al. and 33 CFR Part 328) for determining the extent to which wetlands and other water features are protected under the CWA.

Following publication of the 2015 Waters of the United States Rule, 31 states, and 53 non-state parties, including environmental groups and groups representing farming, recreational, forestry, and other interests, filed complaints and petitions for review in multiple federal district and appellate courts challenging the 2015 Rule. On February 28, 2017, the President of the United States issued Executive Order 13778 directing USEPA and the Department of the Army to review and rescind or revise the 2015 Clean Water Rule. On December 30, 2022, USEPA and the Department of the Army announced a final rule founded upon the pre-2015 definition of “waters of the United States,” updated to reflect consideration of Supreme Court decisions, the science, and the agencies’ technical expertise. The new rule was published in the Federal Register January 18, 2023, and became effective March 2023 (see Section 3.4, *Biological Resources*). As noted above, on May 25, 2023, the U.S. Supreme Court issued a decision in the case of *Sackett v. U.S. Environmental Protection Agency* 143 S.Ct. 1322 indicating that wetlands separated from traditional navigable waters are not considered “waters of the United States” under federal Clean Water Act over which protections of the CWA extend; rather, wetlands subject to CWA regulation are limited to those directly adjacent to navigable lakes, rivers, streams, and ocean waters, and that have a continuous surface connection with those waters. On August 29, 2023, the agencies issued a final rule amending the Code of Federal Regulations to conform the January 2023 Rule’s definition of “waters of the United States” to the Supreme Court decision in *Sackett*. The conforming rule amends the provisions of the agencies’ definition of “waters of the United States” in the January 2023 Rule that are invalid under the Supreme Court’s interpretation of the Clean Water Act in the *Sackett* decision. The conforming rule, “Revised Definition of ‘Waters of the United States’; Conforming,” became effective on September 8, 2023 (USEPA 2023d).

NATIONAL FLOOD INSURANCE ACT

The U.S. Congress passed the National Flood Insurance Act in 1968 and the Flood Disaster Protection Act in 1973 (42 USC 4001 et seq.) to restrict certain types of development on floodplains and to provide for a NFIP. The purpose of these acts is to reduce the need for large, publicly funded flood control structures and disaster relief. The NFIP is a federal program administered by the Flood Insurance Administration of FEMA. It enables individuals who have property (a building or its contents) within the 100-year floodplain to purchase insurance against flood losses. FEMA works with the states and local communities to identify flood hazard areas and publishes a flood hazard boundary map of those areas. Floodplain mapping is an ongoing process and flood maps must be regularly updated for both major rivers and tributaries as land uses and development patterns change.

EXECUTIVE ORDER 11988, FLOOD PLAIN MANAGEMENT

The objective of Presidential Executive Order 11988, dated May 24, 1977 (42 Federal Register 26951), is the avoidance of, to the extent possible, long- and short-term adverse impacts associated with the occupancy and modification of the base floodplain (100-year floodplain) and the avoidance of direct and indirect support of development in the base floodplain wherever there is a practicable alternative. Under the Executive Order, USACE

must provide leadership and take action to avoid development in the base floodplain unless it is the only practicable alternative; reduce the hazard and risk associated with floods; minimize the impact of floods to human safety, health, and welfare; and restore and preserve the natural and beneficial values of the base floodplain.

CALIFORNIA TOXICS RULE

On May 18, 2000, USEPA promulgated numeric water quality criteria for priority toxic pollutants and other provisions for water quality standards to be applied to waters within California (40 CFR Part 131.38). USEPA promulgated this rule based on the USEPA Administrator's determination that the numeric criteria are necessary in California to protect human health and the environment. The rule fills a gap in California water quality standards that was created in 1994 when a state court overturned the state's water quality control plans containing water quality criteria for priority toxic pollutants. Thus, the state of California has been without numeric water quality criteria (which is required by the CWA) for many priority toxic pollutants, necessitating this action by USEPA. These federal criteria are legally applicable in the state of California for inland surface waters, enclosed bays, and estuaries for all purposes and programs under the CWA. USEPA and the State Water Resources Control Board (SWRCB) have the authority to enforce these standards, which are incorporated into the NPDES permits that regulate existing discharges in California.

STATE

PORTER COLOGNE WATER QUALITY CONTROL ACT

The Porter-Cologne Act is the principal law governing water quality regulation in California. It establishes a comprehensive program to protect water quality and the beneficial uses of water. The Porter-Cologne Act applies to surface waters, wetlands, and groundwater and to both point and nonpoint sources of pollution. Pursuant to the Porter-Cologne Act (California Water Code Section 13000 et seq.), the policy of the State is as follows:

- That the quality of all the waters of the state shall be protected;
- That all activities and factors affecting the quality of water shall be regulated to attain the highest water quality within reason; and
- That the State must be prepared to exercise its full power and jurisdiction to protect the quality of water in the State from degradation.

As discussed in more detail below, the Porter-Cologne Act established nine RWQCBs, based on hydrogeologic barriers) and the SWRCB, which are charged with implementing its provisions and which have primary responsibility for protecting water quality in California. The SWRCB provides program guidance and oversight, allocates funds, and reviews RWQCBs' decisions. In addition, the SWRCB allocates rights to the use of surface water. The RWQCBs have primary responsibility for individual permitting, inspection, and enforcement actions within each of nine hydrologic regions. The SWRCB and RWQCBs have numerous NPS-related responsibilities, including monitoring and assessment, planning, financial assistance, and management.

The RWQCBs regulate discharges under the Porter-Cologne Act primarily through issuance of NPDES permits and WDRs for point and nonpoint source discharges). Anyone discharging or proposing to discharge materials that could affect water quality (other than to a community sanitary sewer system regulated by an NPDES permit) must file a report of waste discharge.

The Porter-Cologne Act also implements many provisions of the CWA, such as NPDES permitting program. [CWA Section 401](#) gives the SWRCB the authority to review any proposed federally permitted or federally licensed activity that may impact water quality and to certify, condition, or deny the activity if it does not comply with state water quality standards.

The Porter-Cologne Act also requires adoption of water quality control plans (basin plans) that contain the guiding policies of water pollution management in California. A number of statewide water quality control plans have been adopted by the SWRCB. In addition, regional water quality control plans (basin plans) have been adopted by each of the RWQCBs and are updated as necessary and practical. These plans identify the existing and potential beneficial uses of waters of the state and establish water quality objectives to protect these uses. The basin plans also contain implementation, surveillance, and monitoring plans. Statewide and regional water quality control plans include enforceable prohibitions against certain types of discharges, including those that may pertain to nonpoint sources. Portions of water quality control plans, the water quality objectives and beneficial use designations, are subject to review by USEPA, when approved they become water quality standards under the CWA.

REGIONAL WATER QUALITY CONTROL BOARDS

As a result of the Porter-Cologne Water Quality Control Act, the SWRCB and nine RWQCBs were established that exercise rulemaking and regulatory activities by basin. Each RWQCB conducts a broad range of activities to protect ground and surface water resources within their respective jurisdictions. The purpose of the RWQCBs is “to preserve, enhance, and restore the quality of California’s water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use, for the benefit of present and future generations.” Each board has seven part-time board members, appointed by the Governor, who make critical decisions including setting water quality standards, issuing permits, and determining and enforcing compliance. Furthermore, each RWQCB completes, reviews, and updates a Basin Plan, designed specifically to each region’s climate and topography. Basin Plans are designed to preserve and enhance water quality, as well as protect the beneficial uses of all regional waters. Each Basin Plan designates beneficial uses, sets protection goals to comply with the state’s anti-degradation policy, and describes protection programs. By incorporating all applicable water rules and regulations, the Basin Plans serve as a resource for agencies involved with water, wastewater, discharge, environmental permitting, and resource management, as well as the public interested in local water quality issues. Seven of the nine RWQCBs (either wholly or in part) have jurisdiction that includes portions of the SCAG region as shown in **Map 3.10-6, Regional Water Quality Control Boards**:

- *Region 3—Central Coast RWQCB.* The Central Coast RWQCB jurisdiction includes Santa Clara (south of Morgan Hill), San Mateo (southern portion), Santa Cruz, San Benito, Monterey, Kern (small portions), San Luis Obispo, Santa Barbara, Ventura (northern portion) counties.
- *Region 4—Los Angeles RWQCB.* The Los Angeles RWQCB jurisdiction includes the coastal watersheds of Los Angeles and Ventura Counties, along with very small portions of Kern and Santa Barbara Counties.
- *Region 5—Central Valley RWQCB.* The jurisdiction of the Central Valley RWQCB includes a small portion of northern Ventura County.
- *Region 6—Lahontan RWQCB.* The jurisdiction of the Lahontan RWQCB extends from the Oregon border to the northern Mojave Desert and includes all of California east of the Sierra Nevada crest, including San Bernardino County and northeastern Los Angeles County.

- *Region 7—Colorado River RWQCB.* The Colorado River RWQCB jurisdiction includes Imperial, San Bernardino, Riverside, and San Diego counties.
- *Region 8—Santa Ana RWQCB.* The Santa Ana RWQCB jurisdiction includes Orange, Riverside, and San Bernardino counties.
- *Region 9—San Diego RWQCB.* The San Diego RWQCB includes San Diego, Imperial, and Riverside counties.

Water quality within the four hydrologic regions in the SCAG region (see Map 3.10-1) are regulated by the above-listed seven RWQCBs: The Central Coast, Los Angeles, Central Valley, Lahontan, Colorado River, Santa Ana and the San Diego RWQCB.

SUSTAINABLE GROUNDWATER MANAGEMENT ACT (SGMA)

On September 16, 2014, Governor Edmund G. Brown Jr. signed a three-bill package (Assembly Bill 1739 (Dickenson), and Senate Bills 1319 and SB 1168 (Pavley) known as the Sustainable Groundwater Management Act. The legislation allows local Groundwater Sustainability Agencies (GSAs) to manage groundwater in a sustainable manner and allows limited state intervention when necessary to protect groundwater resources (Assembly Bill 1739 (Dickenson), and Senate Bills 1319 and SB 1168 (Pavley). SGMA defined “sustainable groundwater management,” established a framework for local jurisdictions to develop plans, and implement strategies to sustainably manage groundwater resources, established basin prioritization (ranked from very low to high priority), and set a 20-year timeline for implementation. Basins are prioritized under the SGMA by DWR. All high- and medium-priority basins are required to prepare and implement a Groundwater Sustainability Plan (GSP) to return the groundwater basin to sustainable use. Within the SCAG counties, there are 27 GSAs in the process of returning the groundwater basins to the sustainable use of groundwater (DWR 2023a).

ADJUDICATED BASINS

When water users within a basin are in dispute over legal rights to the water, a court can issue a ruling known as an adjudication. Adjudications can cover an entire basin, a portion of a basin, or a group of basins and all non-basin locations between. The court decree will define the area of adjudication. The court typically appoints a watermaster to administer the court's decree. In basins or areas where a lawsuit is brought to adjudicate, the groundwater rights of all the overlies and appropriators are determined by the court. The court also decides:

- Who the water rights owners are
- How much groundwater those rights owners can extract
- How the groundwater area will be managed.

Similar to SGMA, the purpose of the adjudication is to sustainably manage the groundwater supplies within the particular basin. Within the SCAG region, there are 22 groundwater basins that are adjudicated (DWR 2023b).

COBEY-ALQUIST FLOODPLAIN MANAGEMENT ACT

The Cobey-Alquist Floodplain Management Act (California Water Code 8400-8415) and Executive Order B-39-77 support the NFIP. The Act encourages local governments to plan, adopt, and enforce land use regulations for floodplain management, to protect people and property from flooding hazards. The Act also identifies requirements that jurisdictions must meet to receive State financial assistance for flood control. Executive Order B-39-77 requires state agency compliance with good floodplain management practices.

CALIFORNIA COASTAL ACT

The California Coastal Act of 1976 (Coastal Act) (Pub. Res. Code §30000 et seq.) was enacted to establish policies and guidelines that provide direction for the conservation and development of the California coastline. The Coastal Act established the California Coastal Commission (CCC) and created a state and local government partnership to ensure that public concerns regarding coastal development are addressed. The basic goals of this program are to:

1. Protect, maintain, and, where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources;
2. Ensure orderly, balanced utilization and conservation of coastal zone resources, taking into account the social and economic needs of the people of the state;
3. Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resource conservation principles and constitutionally protected rights of private property owners;
4. Ensure priority for coastal-dependent and coastal-related development over other development on the coast; and
5. Encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

The CCC serves as the coastal management and regulatory agency with jurisdiction over the Coastal Zone (Public Resources Code Section 30103). The California Coastal Zone generally extends seaward 3 miles and inland anywhere from 0.5 miles to 5 miles. The CCC is responsible for assisting in the preparation, review, and certification of Local Coastal Programs/Local Coastal Plans (LCP), which are developed by municipalities for that portion of their jurisdiction that falls within the coastal zone. Following certification of the LCP, regulatory responsibility then is delegated to the local jurisdiction, although the CCC retains jurisdiction over the immediate shoreline.

California Coastal Act Chapter 3 contains Coastal Resources Planning and Management Policies. Policies include protection of certain water oriented recreational activities (Section 30220); minimizing the adverse effects of wastewater discharge, controlling runoff and preventing depletion of ground water supplies (Section 30231); and water supply and flood control through channelization, dams, or other substantial alternations (Section 30236).

LAKE OR STREAMBED ALTERATION PROGRAM

The California Department of Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, California Fish and Game Code Section 1600 requires an entity to notify CDFW of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state, or local government agency or public utility that proposes an activity that will:

- Substantially divert or obstruct the natural flow of any river, stream or lake;
- Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water. If CDFW determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared.

STATEMENT OF POLICY WITH RESPECT TO MAINTAINING HIGH-QUALITY WATERS IN CALIFORNIA

California's antidegradation policy, formally known as the Statement of Policy with Respect to Maintaining High Quality Waters in California (SWRCB Resolution No. 68-16), restricts degradation of surface and ground waters. It protects waters where existing quality is higher than necessary for the protection of beneficial uses. Any actions with the potential to adversely affect water quality must (1) be consistent with maximum benefit to the people of the state, (2) not unreasonably affect present and anticipated beneficial use of the water, and (3) not result in water quality less than that prescribed in water quality plans and policies. Any actions that can adversely affect surface waters are also subject to the federal antidegradation policy (40 CFR Section 131.12) developed under the CWA.

NPDES GENERAL PERMITS

CONSTRUCTION GENERAL PERMIT

Construction associated with projects that would disturb more than one acre of land surface would be subject to the *NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (Order 2022-0057-DWQ, NPDES No. CAS000002). The Construction General Permit regulates discharges of pollutants in stormwater associated with construction activity to waters of the United States from construction sites that disturb 1 acre or more of land surface, or that are part of a common plan of development or sale that disturbs more than one acre of land surface. The permit regulates stormwater discharges associated with construction or demolition activities, such as clearing and excavation; construction of buildings and structures; and linear underground projects, including installation of roadways and utility lines.

The Construction General Permit requires that construction sites be assigned a Risk Level of 1 (low), 2 (medium), or 3 (high), based both on the sediment transport risk at the site and the receiving waters risk during periods of soil exposure (e.g., grading and site stabilization). The sediment risk level reflects the relative amount of sediment that could potentially be discharged to receiving water bodies and is based on the nature of the construction activities and the location of the site relative to receiving water bodies. The receiving waters risk level reflects the risk to the receiving waters from the sediment discharge. Depending on the risk level, the construction projects could be subject to the following requirements:

- Effluent standards;
- Good site management "housekeeping;"
- Non-stormwater management;
- Erosion and sediment controls;
- Run-on and runoff controls;
- Inspection, maintenance, and repair; or
- Monitoring and reporting requirements.

The Construction General Permit requires the development and implementation of an SWPPP that includes specific BMPs designed to prevent sediment and pollutants from contacting stormwater from moving off site into receiving waters. The BMPs fall into several categories, including erosion control, sediment control, waste management and good housekeeping, and are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. Routine inspection of all BMPs is required under the provisions of the Construction General Permit. In addition, the SWPPP is required to 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 303(d) list for sediment.

The SWPPP must be prepared before construction begins. The SWPPP must contain a site map(s) that delineates the construction work area, existing and proposed buildings, parcel boundaries, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the project area. The SWPPP must list BMPs and the placement of those BMPs that the applicant would use to protect stormwater runoff. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Examples of typical construction BMPs include scheduling or limiting certain activities to dry periods, installing sediment barriers such as silt fence and fiber rolls, and maintaining equipment and vehicles used for construction. Non-stormwater management measures include installing specific discharge controls during certain activities, such as paving operations, vehicle and equipment washing and fueling. The Construction General Permit also sets post-construction standards (i.e., implementation of BMPs to reduce pollutants in stormwater discharges from the site following construction).

In the Project area, the Construction General Permit is implemented and enforced by the local RWQCB, which administers the stormwater permitting program. Dischargers must electronically submit a notice of intent and permit registration documents to obtain coverage under this Construction General Permit. Dischargers are to notify the RWQCB of violations or incidents of non-compliance and submit annual reports identifying deficiencies in the BMPs and explaining how the deficiencies were corrected. The risk assessment and SWPPP must be prepared by a State Qualified SWPPP Developer, and implementation of the SWPPP must be overseen by a State Qualified SWPPP Practitioner. A legally responsible person, who is legally authorized to sign and certify permit registration documents, is responsible for obtaining coverage under the permit.

Also note that the State of California Department of Transportation (Caltrans) Statewide Stormwater Permit, described below in the Municipal Stormwater Program, requires Caltrans projects to meet the same requirements as any other construction site in the state (i.e., Caltrans must file for coverage of each of its construction projects under the Construction General Permit, which regulates stormwater runoff from construction sites.

INDUSTRIAL GENERAL PERMIT

The Statewide General Permit for Storm Water Discharges Associated with Industrial Activities, Order 2014-0057-DWQ, NPDES Permit No. CAS000001, as amended in 2015 and 2018 (Industrial General Permit or IGP) implements the federally required stormwater regulations in California for stormwater associated with industrial activities discharging to waters of the United States. The IGP is called a general permit because many industrial facilities are covered by the same permit but comply with its requirements at their individual industrial facilities. The SWRCB and RWQCBs (collectively, the Water Boards) implement and enforce the IGP.

MUNICIPAL STORMWATER PROGRAM

MUNICIPALITIES

The Municipal Storm Water Program regulates stormwater discharges from municipal separate storm sewer systems (MS4s) throughout California. Pursuant to the Federal Water Pollution Control Act (CWA) Section 402(p), stormwater permits are required for discharges from an MS4 serving a population of 100,000 or more. The Municipal Storm Water Program manages the Phase I Permit Program (serving municipalities over 100,000 people), the Phase II Permit Program (for municipalities less than 100,000), and the Caltrans Stormwater Permit (which is also an MS4 permit covering operations), described further below. The MS4 permits require counties and cities (i.e., the permittee) to implement development planning guidance and control measures that control and mitigate stormwater quality and runoff volume impacts to receiving waters as a result of new development and redevelopment. Counties and cities also are required to implement other municipal source detection and elimination programs, as well as maintenance measures. Counties and cities are required to develop and implement development standards, also known as BMPs and low-impact development (LID)/post-construction standards to guide projects during the entitlement stage, CEQA process, and the development plan review process. These treatment control BMPs must be sufficiently designed and constructed to treat or retain the greater of an 85th percentile rain event or first 0.75 inch of stormwater runoff from a storm event.

Projects are required to a hydrology or drainage plan to describe the project design features to be constructed and operated to control discharges of sediment and other pollutants from point sources during operations. The stormwater management goals are that the runoff volume and rate must be same or less as existing conditions, the infiltration volume must be same or more unless site condition are not conducive to infiltration, and stormwater must be treated prior to being discharged from the project site. BMPs to collect, control, treat and infiltrate stormwater may include infiltration galleries, bioswales, bioretention basins, storage and reuse of stormwater for landscaping, and others. To address water quality, the project design must be able to capture and treat the volume from 85th percentile storm event³ or 0.75-inch storm event. To address erosion, the project design must be able to capture and treat the volume from 50-year design storm event (Q50).⁴ To address impervious surfaces that interfere with infiltration of stormwater, the project design must reduce the percent impervious surface or manage the runoff rate to not exceed capacity of the existing stormwater system.

CALTRANS

Caltrans is responsible for the design, construction, management, and maintenance of the State highway system, including freeways, bridges, tunnels, Caltrans' facilities, and related properties, and is subject to the permitting requirements of CWA Section 402(p). Caltrans' discharges consist of stormwater and non-stormwater discharges from state-owned rights-of-way. On June 22, 2022, the SWRCB adopted Order 2022-0033-DWQ, NPDES Permit CAS000003, that regulates Caltrans' statewide stormwater discharges and conditionally exempt non-stormwater discharges from its MS4. The Order requires Caltrans to comply with existing TMDLs established by the USEPA or adopted by the RWQCBs, identifying stormwater discharges from the Caltrans transportation system as a source of pollutants causing receiving water impairment, as listed in Attachment D to the Order.

The Caltrans Stormwater Permit requires development of a program for communication with local jurisdictions, and coordination with other MS4 programs where those programs overlap geographically with Caltrans facilities.

³ The 85th percentile storm event for a particular location is the amount of rainfall equal to or greater than that produced by 85 percent of storms that have occurred in that locale over a specified duration (i.e., 24 hours or 1 hour), based upon long-term historical records of local storm events.

⁴ A 50-year or Q50 storm event has a 1 in 50, or 2 percent, chance of occurring in a year.

As part of the permit, Caltrans is required to create and annually update a stormwater management plan (SWMP) that is used to outline the regulation of pollutant discharge caused by current and future construction and maintenance activities. SWMP requirements apply to discharges from Caltrans stormwater conveyances, including catch basins and drain inlets, curbs, gutters, ditches, channels, and storm drains. The SWMP applies to discharges consisting of stormwater and non-stormwater resulting from the following:

- Maintenance and operation of state-owned highways, freeways, and roads
- Maintenance facilities
- Other facilities with activities that have the potential for discharging pollutants
- Permanent discharges from subsurface dewatering
- Temporary dewatering
- Construction activities

Caltrans' SWMP describes the procedures and practices used to reduce or eliminate the discharge of pollutants to storm drainage systems and receiving waters.

CALIFORNIA GREEN BUILDING STANDARDS CODE

California Green Building Standards Code (CALGreen) Chapters 4 and 5 include mandatory measures for residential and nonresidential development, respectively. Section 4.106.2 requires residential projects that disturb less than 1 acre and are not part of a larger common plan of development, manage stormwater drainage during construction through use of on-site retention basins, filtration systems where stormwater is conveyed to a public drainage system, and/or compliance with a stormwater management ordinance. Section 5.106.1 requires newly constructed nonresidential projects and additions of less than one acre to prevent the pollution of stormwater runoff because of construction through compliance with a local ordinance or implementing BMPs that address soil loss and good housekeeping to manage equipment, materials, and wastes. California Fish and Game Code – Section 1602.

CDFW is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code (Section 1602) requires an entity to notify CDFW of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state or local government agency, or public utility that proposes an activity that will:

- Substantially divert or obstruct the natural flow of any river, stream, or lake;
- Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.

CALIFORNIA OCEAN PLAN

The California Ocean Plan establishes water quality objectives for California's ocean waters and provides the basis for regulation of wastes discharged into the state's coastal waters. The plan applies to point and nonpoint source discharges. Both the SWRCB and the six coastal RWQCBs implement and interpret the California Ocean Plan. The California Ocean Plan identifies the applicable beneficial uses of marine waters. These beneficial uses include preservation and enhancement of designated Areas of Special Biological Significance, rare and endangered species, marine habitat, fish migration, fish spawning, shellfish harvesting, recreation, commercial and sport fishing, mariculture, industrial water supply, aesthetic enjoyment, and navigation.

The California Ocean Plan establishes a set of narrative and numerical water quality objectives to protect beneficial uses. These objectives are based on bacterial, physical, chemical, and biological characteristics as well as radioactivity. The water quality objectives in Table 1 (formerly Table B) of the California Ocean Plan apply to all receiving waters under the jurisdiction of the plan and are established for the protection of aquatic life and for the protection of human health from both carcinogens and noncarcinogens. Within Table 1 there are 21 objectives for protecting aquatic life, 20 for protecting human health from noncarcinogens, and 42 for protecting human health from exposure to carcinogens. The Ocean Plan also includes an implementation program for achieving water quality objectives. Effluent limitations are established for the protection of marine waters.

CALIFORNIA STATE LANDS COMMISSION

The California State Lands Commission (SLC) provides stewardship of California's public trust lands, waterways, and resources through economic development, protection, preservation, and restoration. The SLC is tasked with public land management and resource protection to ensure the future quality of the environment and balanced use of the lands and resources entrusted to its care. The State's public trust lands include tidelands, navigable waterways, and submerged coastal lands extending to a distance of three nautical miles, as well as the waters and underlying beds of more than 120 rivers, lakes, streams, and sloughs.

The California SLC regulates the use of tidelands and submerged lands under its jurisdiction to ensure that proposed uses of these lands are consistent with the Public Trust Doctrine principle that certain resources are preserved for public use. Generally, the SLC has jurisdiction over land below mean high tide. Public and private entities may apply to the SLC for land leases or permits on State lands for many purposes including dredging among others. California Government Code Section 65940 describes the degree of specificity and contents required for a surface land lease application.

CALIFORNIA GEOLOGICAL SURVEY TSUNAMI INUNDATION MAPS

The California Geological Survey (CGS) provides geologic and seismic expertise to the public, other State government offices, and local government agencies (cities and counties). CGS is working closely with the California Emergency Management Agency (Cal EMA) and the University of Southern California Tsunami Research Center to produce statewide tsunami inundation maps for California. These maps are used by coastal communities to produce emergency evacuation plans. The Cal EMA provides generalized maps for projected tsunami inundation to coastal government agencies for emergency planning purposes. These maps are used as a basic guideline for what areas are prone to tsunami inundation.

CALIFORNIA COASTAL COMMISSION SEA-LEVEL RISE POLICY GUIDANCE

The California Natural Resources Agency and California Ocean Protection Council have developed Sea-Level Rise Policy Guidance intended to help local governments, permit applicants, and other interested parties address the challenges presented by sea-level rise in California's coastal zone (California Natural Resources Agency and California Ocean Protection Council 2018). The Sea-Level Rise Policy Guidance outlines the types of information, analysis, and design considerations that the agency's staff requires to determine whether shoreline projects conform to the above-listed Coastal Act policies. Specifically, the Sea-Level Rise Policy Guidance provides step-by-step guidance on how to address sea-level rise in new and updated LCPs and Coastal Development Permits (CDP) according to the policies of the California Coastal Act. LCPs and the CDP processes are the fundamental land use planning and regulatory governing mechanisms in the coastal zone. While it is advisory, the data requirements, resource considerations, projections for sea-level rise, alternatives analyses, and monitoring requirements outlined in detail in the Sea-Level Rise Policy Guidance represent information that would likely be required to produce as part of the evaluation of coastal projects in conformance with Coastal Act Sections 30235 and 30253. Specifically, the Sea-Level Rise Policy Guidance outlines that projects will need to be planned, located, designed, and engineered for the rising water levels and associated impacts that might occur over the life of the development. In addition, project planning should anticipate the landward migration, erosion, and natural adaptation of coastal resources (beaches, access, etc.) due to future sea-level rise conditions in order to avoid future impacts to those resources from the new development.

The most recent update in 2018 of the Sea-Level Rise Guidance aims to respond to the needs for guidance that can help cities, counties and the State prepare for, and adapt to sea-level rise. The 2018 update provides a science-based methodology for state and local governments to analyze and assess the risks associated with sea-level rise, and to incorporate sea-level rise into their planning, permitting, and investment decisions. The Guidance expands the preferred coastal adaptation planning approaches, incorporating existing law, expressed policy preferences by the Governor and Legislature, and the goal of fostering consistency across coastal and ocean government agencies. Some recommendations include protection of coastal habitats and public access, adaptation strategies that prioritize protection of vulnerable communities, and adaptive capacity should be built into design and planning.

CALIFORNIA STORMWATER QUALITY ASSOCIATION BMP HANDBOOKS

The California Stormwater Quality Association (CASQA) is a professional member association dedicated to the advancement of stormwater quality management through collaboration, education, implementation guidance, regulatory review, and scientific assessment. CASQA's membership comprises a diverse range of stormwater quality management organizations and individuals, including cities, counties, special districts, industries, and consulting firms throughout the state. CASQA develops and publishes four BMP Handbooks. The New Development and Redevelopment Handbook provides guidance on developing project specific SWMPs, including selection and implementation of BMPs, for a particular development or redevelopment project.

REGIONAL

Each RWQCB is required to prepare, update, and implement a regional water quality control plan, more commonly referred to as a basin plan, for their respective region to describe how the quality of the surface and ground waters in their region should be managed to provide the highest water quality reasonably possible. The websites for each RWQCB provide each region basin plan. The Basin Plans within the SCAG region are summarized below.

WATER QUALITY CONTROL PLAN FOR THE CENTRAL COASTAL BASIN

The Water Quality Control Plan for the Central Coastal Basin, or Basin Plan, identifies how the quality of the surface and ground waters in the Central Coast Region should be managed to provide the highest water quality reasonably possible. This basin plan lists the various water uses. Second, it describes the water quality which must be maintained to allow those uses. It then describes the programs, projects, and other actions which are necessary to achieve the standards established in this plan. It summarizes SWRCB and RWQCB plans and policies to protect water quality and describes statewide surveillance and monitoring programs as well as regional surveillance and monitoring programs. The Regional Board implements the basin plan by issuing and enforcing WDRs to individuals, communities, or businesses whose waste discharges can affect water quality. These requirements can be either state WDRs for discharges to land, or federally delegated NPDES permits for discharges to surface water. Methods of treatment are not specified. When such discharges are managed so that (1) they meet these requirements, (2) water quality objectives are met, and (3) beneficial uses are protected and water quality is controlled. The basin plan is also implemented by encouraging water users to improve the quality of their water supplies, particularly where the wastewater they discharge is likely to be reused. Public works or other projects which can affect water quality are reviewed and their impacts identified. Proposals which implement or help achieve the goals of the basin plan are supported; the Regional Board makes water quality control recommendations for other projects.

WATER QUALITY CONTROL PLAN FOR THE LOS ANGELES REGION

The LA RWQCB has prepared a Water Quality Control Plan for the Los Angeles Region. This basin plan encompasses all coastal drainages flowing to the Pacific Ocean between Rincon Point (on the coast of western Ventura County) and the eastern Los Angeles County line, as well as the drainages of five coastal islands (Anacapa, San Nicolas, Santa Barbara, Santa Catalina, and San Clemente). In addition, the Los Angeles region includes all coastal waters within three miles of the continental and island coastlines. As the eastern boundary, formed by the Los Angeles County line, departs somewhat from the hydrologic divide, the Los Angeles and Santa Ana regions share jurisdiction over watersheds along their common border.

This basin plan assigned beneficial uses to surface and groundwater such as municipal water supply and water-contact recreation to all waters in the basin. It also set water quality objectives, subject to approval by the USEPA, intended to protect designated beneficial uses. These objectives apply to specific parameters (numeric objectives) and general characteristics of the water body (narrative objectives). An example of a narrative objective is the requirement that all waters must remain free of toxic substances in concentrations producing detrimental effects upon aquatic organisms. Numeric objectives specify concentrations of pollutants that are not to be exceeded in ambient waters of the basin. The Los Angeles RWQCB is involved in the regulation of several activities that are relevant to the consideration of the basin plan:

- Prepares, monitors compliance with, and enforces WDRs, including NPDES permits;
- Implements and enforces local stormwater control efforts;
- Enforces water quality laws, regulations, and WDRs; and
- General Construction Activity Stormwater Discharges

Stormwater discharges that are composed entirely of runoff from qualifying construction activities may require regulation under the General Construction Activity Storm Water Permit issued by the SWRCB. Construction activities that qualify include clearing, grading, excavation, reconstruction, and dredge-and-fill activities that result

in the disturbance of at least one acre and less than five acres of total land area. The evaluation of the plan does not generate the need for compliance with the Construction General Permit. The development of single-family residences would require permit coverage if the development disturbs greater than 1 acre of land. Additionally, the plan would require the consideration of a Standard Urban Stormwater Management Plan (SUSMP) as part of compliance with the NPDES General Construction Activity Storm Water Permit to reduce water quality impacts to the maximum extent practicable. A SUSMP is a report that includes one or more site maps, an identification of construction activities that could cause pollutants to enter the stormwater, and a description of measures or BMPs to control these pollutants to the maximum extent practicable.

WATER QUALITY CONTROL PLAN FOR THE LAHONTAN REGION

This basin plan for the Lahontan Region sets forth water quality standards for the surface and ground waters which include both designated beneficial uses of water and the narrative and numerical objectives which must be maintained or attained to protect those uses. It identifies general types of water quality problems, which can threaten beneficial uses. It then identifies required or recommended control measures for these problems. The plan also summarizes past and present water quality monitoring programs, and identifies monitoring activities, which should be carried out to provide the basis for future basin plan updates and for WDRs or conditional waivers.

Additionally, the Lahontan basin plan implements a number of state and federal laws, the most important of which are the federal CWA and the State Porter-Cologne Water Quality Control Act. Other pertinent federal laws include the Safe Drinking Water Act, Toxic Substances Control Act, Resource Conservation and Recovery Act, and Endangered Species Act, and the Comprehensive Response, Compensation, and Liability Act (CERCLA or "Superfund") and Superfund Amendment and Reauthorization Act (SARA). Other applicable California laws include the Health and Safety, Fish and Game, and Food and Agriculture Codes.

WATER QUALITY CONTROL PLAN FOR THE COLORADO RIVER BASIN

The intent of this basin plan is to provide definitive guidelines and give direction to the full scope of activities that serve to optimize the beneficial uses of the state waters within the Colorado River Basin by preserving and protecting the quality of these waters. Water uses and water benefits vary. Water quality is an important factor in determining use and benefit. For example, drinking water must be of higher quality than the water used to irrigate pastures. Both are beneficial water uses, but the quality requirements for irrigation water are different from those for drinking water. The basin plan recognizes the variations of water quality and water uses. The basin plan lists and defines the various beneficial water uses (Chapter 2). It describes the water quality which must be maintained to support such uses (Water Quality Objectives, Chapter 3). The section on implementation (Chapter 4) describes the programs, projects and other actions that are necessary to achieve the standards established in this basin plan. Plans, Policies, and Issues (Chapter 5), summarize the various plans and policies which protect water quality. This chapter also describes water quality issues which require special attention. Surveillance and Monitoring (Chapter 6), describes activities within the Colorado River Basin Region related to surveillance, monitoring, assessment, lab support, and quality assurance and quality control.

WATER QUALITY CONTROL PLAN FOR THE SANTA ANA RIVER BASIN

This basin plan establishes water quality standards for the ground and surface waters of the region. The term "water quality standards," as used in the federal CWA, includes both the beneficial uses of specific waterbodies and the levels of quality that must be met and maintained to protect those uses. The plan describes actions by the Regional Board and others that are necessary to achieve and maintain water quality standards. The Regional Board

regulates waste discharges to minimize and control their effect on the quality of the region's ground and surface water. Permits are issued under several programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means. Water quality problems in the region are listed in the plan, along with the causes, where they are known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included.

WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO BASIN

The San Diego Regional Board's basin plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the 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 the state's antidegradation policy, (3) describes implementation programs to protect the beneficial uses of all waters in the region, and (4) describes surveillance and monitoring activities to evaluate the effectiveness of the plan (California Water Code Sections 13240–13244, Section 13050(j)). Additionally, the plan incorporates by reference all applicable state and regional board plans and policies.

SCAG'S WATER ACTION RESOLUTION SCAG RESOLUTION NO. 22-647-3 (DROUGHT AND WATER SHORTAGE EMERGENCY)

The Resolution states that "SCAG shall identify, recommend and integrate into Connect SoCal 2024 policies and strategies to align investments in water infrastructure with housing needs and the adopted growth forecast and development pattern.

Whereas, SCAG has adopted mitigation measures for its most recent long-range plan, Connect SoCal 2020, related to coordinating and working with local jurisdictions and water agencies; encouraging regional-scale planning for improved stormwater management, groundwater recharge, wastewater and stormwater management, water quality management, pollution prevention, and drainage patterns; and fostering the implementation of urban greening, greenbelts, and community separator land use strategies that promote improved water quality, groundwater recharge, watershed health, reduced urban runoff, stormwater and rainwater collection."

LOCAL

IMPERIAL COUNTY GENERAL PLAN

The Imperial County General Plan provides specific goals and policies related to maintaining the viability of the Salton Sea and other surface water resources in the county.

- **Goal 2:** Long-term viability of the Salton Sea, Colorado River, and other surface waters in the County will be protected for sustaining wildlife and a broad range of ecological communities.
 - **Objective 2.1:** The continued viability of the agricultural sector as an important source of surface water for the maintenance of valuable wildlife and recreational resources in the County.
 - **Objective 2.2:** A balanced ecology associated with the riparian and ruderal biological communities important as breeding and foraging habitats for native and migratory birds and animals occurring within the County.
 - **Objective 2.3:** Preservation of riparian and ruderal habitats as important biological filters as breeding and foraging habitats for native and migratory birds and animals.

LOS ANGELES COUNTY GENERAL PLAN

As part of the Conservation and Natural Resources Element of the 2040 General Plan Update, the Board of Supervisors of the County of Los Angeles has adopted three goals for water quality initiatives related to hydrology and water quality and two goals related to watershed and river master plans:

WATER QUALITY INITIATIVES

- Support multi-benefit outcomes, such as water quality benefits arising from ecosystem restoration efforts, and identify, attract, and create funds and resources to implement this initiative.
- Participate in enhanced watershed management programs and watershed management programs in coordination with other agencies throughout Los Angeles County.
- Participate in coordinated integrated watershed monitoring plans in coordination with other agencies throughout Los Angeles County.

WATERSHED AND RIVERS MASTER PLANS

- Participate with stakeholders in the preparation of watershed management plans in response to the NPDES MS4 Permit by promoting multi-benefit outcomes, including, but not limited to new public access to natural resources, new recreational opportunities, enhanced aquatic habitats, and restored natural features, where appropriate, while maintaining necessary levels of flood protection.
- Identify, attract, and create funds and resources to implement these plans.

ORANGE COUNTY GENERAL PLAN

In the Orange County region, the protection of water quality is a major concern. The need to maintain safe water quality may constrain the development of energy resources, from methane (landfills) and geothermal sources. At a minimum, water quality concerns will need to be considered during the process of developing these resources and water intensive resources such as agriculture.

Development of land and the increase in population density has also created new sources of non-stormwater discharges and pollutants in stormwater discharges. The San Diego and Santa Ana RWQCBs require that water quality and watershed protection principles are considered as part of land use planning and development review.

DRAINAGE AREA MANAGEMENT PLAN

The specific water pollutant control elements of the Orange County Stormwater Program are documented in the 2003 Drainage Area Management Plan (DAMP) which is the County of Orange, incorporated cities of Orange County, and Orange County Flood Control District's (collectively referred to as Permittees) primary policy, planning and implementation document for municipal NPDES Stormwater Permit compliance. The DAMP was prepared and is periodically updated using a consensus building process that involving public and private sector input and public review through the CEQA process.

The DAMP describes the agreements, structures, and programs that:

- Provide the framework for the program management activities and plan development (DAMP Section 2.0 and Section 3.0);

- Provide the legal authority for prohibiting unpermitted discharges into the storm drain system and for requiring BMPs in new development and significant redevelopment (DAMP Section 4.0);
- Improve existing municipal pollution prevention and removal BMPs to further reduce the amount of pollutants entering the storm drain system (DAMP Section 5.0);
- Educate the public about the issue of urban stormwater and non-stormwater pollution and obtain their support in implementing pollution prevention BMPs (DAMP Section 6.0);
- Ensure that all new development and significant redevelopment incorporates appropriate Site Design, Source Control and Treatment Control BMPs to address specific water quality issues (DAMP Section 7.0);
- Ensure that construction sites implement control practices that address control of construction related pollutants discharges including erosion and sediment control and on-site hazardous materials and waste management (DAMP Section 8.0);
- Ensure that existing development will address discharges from industrial facilities, selected commercial businesses, residential development and common interest areas/homeowner associations (Note: The San Diego permit explicitly outlines a residential component, but the Santa Ana permit is more general about residential requirements) (DAMP Section 9.0);
- Detect and eliminate illegal discharges/illicit connections to the municipal storm drain system (DAMP Section 10.0);
- Identify impacted receiving waters and produce environmental quality information to direct management activities, including prioritization of pollutants to support the development of specific controls to address these problems (DAMP Section 11.0); and
- Assess watersheds and manage urban runoff on a watershed basis (DAMP Section 12.0).

One of the major challenges for the Permittees in updating the programs was the reconciliation between the two Regional Board permits and the resulting program requirements that have significant differences for the first time. As a result of this separation, the 2003 DAMP now includes local implementation plans (LIP)—also termed Jurisdictional Urban Runoff Management Programs—in the San Diego Regional Board Third Term Permit). The LIPs were created to assist each Permittee in implementing an increasingly complex program within its jurisdiction while maintaining a single policy document that addresses two sets of permit requirements. The LIPs were completed by the San Diego Permittees in February 2003 and by the Santa Ana Permittees in June 2003.

The requirement to overlay separate, but nonetheless, highly interrelated water quality protection and planning processes based on hydrologic rather than political boundaries was addressed through the creation of watershed action plans (WAP). A WAP (see DAMP Appendix D) was created for each of the six watersheds under the jurisdiction of the San Diego Regional Board in August 2003. A model WAP was created for the Newport Bay watershed during 2005-06 and draft WAPs are being prepared for the other watersheds in the area of Orange County under the jurisdiction of the Santa Ana Regional Board.

RIVERSIDE COUNTY GENERAL PLAN

The Riverside County General Plan specifically addresses hydrology and water quality in four categories: water resources, water quality (including groundwater quality), floodplain management, and wetlands.

WATER RESOURCES

The General Plan acknowledges that contamination from natural or manufactured sources has reduced groundwater quality such that its use requires treatment. Management of the amount of water available (local and imported) and its quality, is identified as an important response to the gap between supply and demand in Riverside County. The General Plan provides policies that seek to protect and enhance the water resources in the county. These policies address broad water planning issues, and the relationship of land use decisions to water issues.

WATER QUALITY

The General Plan recognizes BMPs established by the three applicable RWQCBs, Regions 7, 8, and 9 to provide state-level water quality policy and NPDES as effective means of managing water quality problems that have occurred in Riverside County. Such problems are related to inadequate subsurface sewage disposal, waste disposal management of the Santa Ana River, agriculturally related problems such as runoff in the western county and increasing salinity of the desert groundwater basins, sediment buildup of water bodies from construction-related erosion, lake water quality problems, and pollution due to urban stormwater system runoff.

FLOODPLAIN AND RIPARIAN AREA MANAGEMENT

The intent of the county is to sustain living riparian habitats to the maximum extent possible, recognizing that flooding is part of the dynamic nature of healthy rivers and ecosystems. High flows and flood waters are needed to cleanse the channels of accumulated debris, build stream banks, import gravels for aquatic life, thin riparian forests and create riparian habitat. The open space of floodplains adjacent to rivers and streams helps store and slowly release floodwaters, thus reducing flood flow and peaks and their subsequent impacts during small and frequent flood events. Further, riparian habitat within floodplains is of great value to resident and migratory animal species, as it provides corridors and linkages to and from the biotic regions of the county. The numerous essential habitat elements provided by the remaining riparian corridors of Riverside County make them a significant contributor to wildlife habitat throughout the county.

WETLANDS

The General Plan provides specific policies for the protection of wetlands including the requirement to ensure compliance with CWA Section 404 in terms of wetlands mitigation policies and policies concerning fill material in jurisdictional wetlands during development review and approval process; preservation of buffer zones around wetlands where feasible and biologically appropriate; and consideration of wetlands for use as natural water treatment areas that will result in improvement of water quality.

SAN BERNARDINO COUNTY GENERAL PLAN

San Bernardino County has established goal and policies to ensure coordination and cooperation with governmental agencies at all levels to ensure safe, reliable, and high-quality water supply for all residents and ensure prevention of surface and ground water pollution. The County General Plan provides specific policies for adherence to federal and state water quality standards for surface and groundwater and wastewater discharge requirements in the review of development proposals that relate to type, location and size of the project to safeguard public health. Similarly, the County General Plan specifies the need to work with the RWQCBs to establish uniform criteria for appropriate sewerage options for new development. The County General Plan further directs cooperation with state, regional, and responsible authorities to expand water sampling programs to

determine ambient groundwater quality conditions affecting public, agricultural, and private wells. Identify the sources, extent, and types of organic and inorganic groundwater contaminants, and evaluation of their impacts on groundwater resources. The County General Plan calls for the prevention of surface and groundwater pollution through continued cleanup of contaminated waters and watersheds.

VENTURA COUNTY GENERAL PLAN

The Ventura County General Plan provides specific goals and policies related to the inventory and monitoring of water quantity and quality to facilitate effective management of the resources. The Ventura County General Plan has identified ten specific programs to support achievement of the goals and policies. The programs include:

- Support of the Seawater Intrusion Abatement Project;
- Enforcement of Chapter 70 (Excavation and Grading) of the Uniform Building Code, as incorporated by reference in and amended by the Ventura County Building Code, to ensure that any proposed grading in a waterway or wetland is adequately investigated and that any development incorporates appropriate design provisions to protect waterways or wetlands;
- Support the Fox Canyon Groundwater Management Agency Plan for both the Upper and Lower Aquifer Systems;
- Continued coordination with water districts and other appropriate agencies to establish a data base on actual available supply, projected use factors for types of land use and development, and threshold limits for development within available water resources;
- Planning Division will continue to promote of the efficient use of water through the Landscape Design Criteria Program;
- Cooperation between the Public Works Agency and the Environmental Health Division, to pursue the use of reclaimed water for agricultural irrigation;
- Continued monitoring, inspection and regulation of underground storage tanks;
- Identification of waste disposal sites and seek to mitigate impacts to water resources; and consideration of the Board of Supervisors of a Countywide water conservation retrofit program to fund the installation of water conservation fixtures) for businesses and residents located within Ventura County.

CITY GENERAL PLAN AND ORDINANCES

In accordance with California Government Code Section 65560(g), all cities are required to have a conservation element as part of their General Plans. The conservation element provides goals and policies related to conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources. One of the six required aspects of the open space element is for planning, conservation and management of open space for the preservation of natural resources, including habitat for fish and wildlife species; areas required for ecologic and other scientific study purposes; rivers, streams, bays and estuaries; and coastal beaches, lakeshores, banks of rivers and streams, and watershed lands. In addition, many cities have ordinances related to protection, conservation and management of natural water resources consistent with the applicable beneficial uses stipulated in the applicable RWQCB basin plan.

Furthermore, some local jurisdictions have started to address climate change impacts such as sea-level rise in policy documents. For example, the City of Long Beach developed a draft of its Climate Action and Adaptation Plan (CAAP) to help reduce GHG, prepare the community for the impacts of climate change, improve the quality of life, and enhance economic vitality. The CAAP provides a framework for creating or updating policies, programs, practices, and incentives to reduce the City's GHG footprint, and ensure the community and physical assets are better protected from the impacts of climate change.

LOW-IMPACT DEVELOPMENT

Many local jurisdictions in the SCAG region, including the Counties of Imperial, Los Angeles, Orange, Riverside, and San Bernardino, Ventura as well as most cities including the City of Los Angeles, have either incorporated LID standards into their respective County MS4 permit requirements or have adopted jurisdiction-specific ordinances to require implementation of LID practices and appropriate BMPs for all new development projects. The overall intent of LID requirements is to mimic pre-development runoff conditions on a given project site using various design measures and BMPs such that the rate, volume, and pollutant load of stormwater flows leaving the site are no greater than prior to project implementation. This is typically achieved through on-site capture and retention (or infiltration where feasible) of stormwater flows, on-site treatment, and controlled release of the treated stormwater at a rate less than or equal to pre-project flows. Each jurisdiction is subject to various requirements for residential and non-residential development types and provides guidance for project applicants regarding potential BMPs and design options to achieve LID compliance for a range of site conditions, in order to provide flexibility in how the requirements are met for any given project.

3.10.3 ENVIRONMENTAL IMPACTS

THRESHOLDS OF SIGNIFICANCE

For the purposes of this 2024 PEIR, SCAG has determined that adoption and/or implementation of the Plan could result in significant adverse impacts to hydrology and water resources, if the Plan would result in any of the following:

- Violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality;
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Plan may impede sustainable groundwater management of the basin;
- 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:
 - Result in substantial erosion or siltation on- or off-site;
 - Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
 - 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; or
 - impede or redirect flood flows;
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or

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

METHODOLOGY

Chapter 2, *Project Description*, describes the Plan's vision, goals, policies, forecasted regional development pattern, policies and strategies, and individual transportation projects and investments. The Plan aims to increase mobility, promote sustainability, and improve the regional economy. Although land use development is anticipated to occur within the region even without the Plan, the Plan could influence growth, including distribution patterns. To address this, the 2024 PEIR includes an analysis on the implementation of policies and strategies as well as potential projects and evaluates how conditions in 2050 under the Plan would differ from existing conditions. The analysis for hydrology and water quality considered public comments received on the NOP and feedback and discussions at the various public and stakeholder outreach meetings.

The methodology for determining the significance of the Plan's impacts to wildfire response and related hazards and infrastructure compares the existing (2022) conditions to future (2050) conditions. The environmental analysis of the potential impacts related to hydrology and water quality from Connect SoCal 2024 based on information provided by SCAG and a review of available literature and database information.

As discussed in Chapter 2, *Project Description*, and Section 3.0, *Introduction to the Analysis*, Connect SoCal 2024 includes Regional Planning Policies and Implementation Strategies some of which will effectively reduce impacts in the various resource areas. Furthermore, compliance with all applicable laws and regulations (as set forth in the Regulatory Framework) would be reasonably expected to reduce impacts of the Plan. See CEQA Guidelines Section 15126.4(a)(1)(B). As discussed in Section 3.0, *Introduction to the Analysis*, where remaining potentially significant impacts are identified, SCAG mitigation measures are incorporated to reduce these impacts. Finally, if SCAG cannot mitigate impacts of the Plan to less than significant, project-level mitigation measures are identified which can and should be considered and implemented by lead agencies as applicable and feasible.

IMPACTS AND MITIGATION MEASURES

IMPACT HYD-1 **Potential to violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.**

Significant and Unavoidable Impact – Mitigation Required

Implementation of the Plan has the potential to result in increased pollutant loads in stormwater flows during construction activities and long-term operations. Connect SoCal 2024 would increase the amount of urbanized land and densify existing urbanized areas in the SCAG region by encouraging development within priority development areas (PDAs) and discouraging development in green region resource areas (GRRAs). Plan policies and implementation strategies encourage coordinating and working with local jurisdictions and water agencies. In addition, the Plan encourages regional-scale planning for improved stormwater management, groundwater recharge, wastewater and stormwater management, water quality management, pollution prevention, and drainage patterns; and fostering the implementation of urban greening, greenbelts, and other community land use strategies that promote improved water quality, groundwater recharge, watershed health, reduced urban runoff, stormwater, and rainwater collection. Nonetheless, construction activities for projects implemented as a

result of the Plan could potentially violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

Construction activities for projects implemented as a result of the Plan would involve ground-disturbing earthwork that could include removal of existing buildings and paved areas, soil excavation and backfilling, trenching, and grading. These activities could increase the susceptibility of soils on project sites to erosion by water (i.e., stormwater) or wind. During construction, heavy equipment such as bulldozers, graders, earth movers, heavy trucks, trenching equipment, and other machinery is anticipated to be used. Such machinery could contribute pollutants to stormwater runoff in the form of sediment, fuels, oil, lubricants, hydraulic fluid, or other contaminants. Additionally, site-specific work could result in conditions of runoff during storm events. Sediment, silt, construction debris, and vehicle-related pollutants, if mobilized during construction, could be transported to receiving waters. In the absence of runoff controls, exceedances of water quality standards could result. If not controlled and managed, the impact of soil erosion and other construction-related pollutants could be significant.

As discussed above in Section 3.10.2, *Regulatory Framework*, many jurisdictions in the region, such as the County of Los Angeles and City of Los Angeles, have strict guidelines requiring no net increase in runoff during construction and operation. These LID standards help to reduce the potential for contaminated runoff and would reduce impacts associated with urban runoff for projects of all sizes in the region when properly implemented. Also, as discussed above, for projects where construction activities would disturb more than one acre of land, projects are also subject to State Construction General Permit requirements, which require the preparation and implementation of a SWPPP. The SWPPP would include BMPs designed to control and reduce soil erosion and off-site transport of construction-related pollutants. Examples of typical construction BMPs include scheduling or limiting certain activities to dry periods, installing sediment barriers such as silt fences and fiber rolls to trap sediment, and maintaining equipment and vehicles used for construction. Non-stormwater management measures include installing specific discharge controls during certain activities, such as paving operations, vehicle and equipment washing, and fueling. In addition, all state projects for which Caltrans is the sponsor agency must comply with the Caltrans Stormwater Permit that regulates all stormwater discharges from Caltrans-owned conveyances, maintained facilities, and construction activities. The Caltrans Stormwater Permit also requires the implementation of similar BMPs. The inclusion of runoff control measures during construction activities associated with projects under the Plan would generally preclude substantial adverse impacts to water quality.

Overall, given that the specific details and locations of individual projects under the Plan are not known at this time, there could be unforeseen circumstances that could result in some projects not being covered under previously discussed regulations. These types of impacts occur with existing development and would continue to be a possibility for projects under Connect SoCal 2024. For a construction example, a project might disturb less than one acre of ground and therefore not be required to obtain coverage under the state Construction General Permit but would instead rely solely on local LID requirements, which may not be uniformly conditioned or implemented in some jurisdictions. In such cases, sediment and/or other pollutants from the construction site could run off into a surface water body and adversely affect water quality. As such, adverse impacts to water quality from construction activities could occur in numerous discrete locations throughout the region, and therefore such circumstances are considered reasonably foreseeable and could occur frequently enough that they would collectively constitute a significant adverse effect on water quality at a regional scale. As such, despite compliance with applicable regulatory requirements, construction-related water quality impacts could be significant requiring the consideration of mitigation measures.

Regarding long-term operational impacts, stormwater runoff from operation of projects under the Plan potentially contains pollutants common in urban and transportation runoff, including sediment, fuels and oils, metals, pesticides and herbicides, nutrients, and trash. Pollutants in stormwater runoff from urban development under the Plan would continue to have the potential to adversely impact water quality if the types and amounts are not adequately controlled or treated. As discussed above in Section 3.10.2, *Regulatory Framework*, stormwater runoff from urban uses would continue to be regulated under the Municipal Stormwater Program (i.e., the MS4 or Municipal Regional Permit or Caltrans Stormwater Permit depending on the project location). Project applicants would be required to submit project design plans to the appropriate regulatory agency to demonstrate that the operation of their project would comply with the applicable permit requirements. The requirements include capturing and treating stormwater prior to exiting the project site and designing the on-site stormwater facilities to not exceed the capacity of the local stormwater system into which the stormwater is discharged. BMPs included in site designs and plans for proposed projects would be reviewed by the relevant agency's engineering staff to ensure adequate treatment and design capacity prior to permit issuance. The review and permitting process would typically ensure that the permit's WDRs would not be violated during long-term operation of future projects. These operational BMPs would include stormwater collection and treatment systems with measures such as infiltration galleries, bioswales, bioretention basins, and storage and reuse of stormwater for landscaping irrigation. The implementation of BMPs required by the permits would help prevent substantial adverse impacts to water quality. Given compliance with existing permits and associated conditions, operation of projects implemented under the Plan would generally not be expected to violate any WDRs or otherwise substantially degrade water quality.

However, as is the case with construction-related impacts, it is acknowledged that there could be instances in which certain projects are not subject to stormwater permit requirements for long-term operation once constructed. For example, projects in rural areas may be located outside of areas covered under an existing municipal stormwater permit (i.e., MS4) such projects might not be designed to capture and treat stormwater runoff and thus could adversely affect water quality of nearby surface water bodies. While not typical, such circumstances are considered reasonably foreseeable and could occur frequently enough that they would collectively constitute a significant adverse effect on water quality at a regional scale. As such, despite compliance with applicable regulatory requirements, operational water quality impacts would be significant requiring the consideration of mitigation measures.

MITIGATION MEASURES

SCAG MITIGATION MEASURE

SMM-HYD-1 SCAG shall continue to facilitate regional forums for collaboration opportunities, such as through the Sustainable & Resilient Communities Working Group, to share best practices and develop recommendations to create resilient communities in the region. SCAG shall continue to work with stakeholders and the public to encourage regional-scale planning that addresses regional shocks and stressors, such as improved water quality, groundwater, stormwater management, pollution prevention, flooding, wildfire prevention, disaster emergency services, emergency evacuation plans, wildfire resiliency, and earthquake preparedness to the extent practical and feasible through cooperative planning, information sharing, and encouragement of comprehensive control measure development within the SCAG region.

PROJECT-LEVEL MITIGATION MEASURE

PMM-HYD-1 In accordance with provisions of CEQA Guidelines Sections 15091(a)(2) and 15126.4(a)(1)(B), a lead agency for a project can and should consider mitigation measures to reduce substantial adverse effects from violation of any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality, as applicable and feasible. While compliance with the various municipal regional stormwater permits (MS4s) is required by law, not all areas are necessarily covered under one. For those areas that are not covered under a municipal stormwater permit (MS4), such measures may include the following or other comparable measures identified by the lead agency:

- a) Implement best management practices to reduce the peak stormwater runoff from the project site to the maximum extent practicable.
- b) Complete, and have approved, a Standard Urban Stormwater Management Plan, prior to occupancy of residential or commercial structures.
- c) Ensure adequate capacity of the surrounding stormwater system to support stormwater runoff from new or rehabilitated structures or buildings.
- f) Where feasible, restore or expand riparian areas such that there is no net loss of impervious surface as a result of the project.
- g) Install structural water quality control features, such as drainage channels, detention basins, oil and grease traps, filter systems, and vegetated buffers to prevent pollution of adjacent water resources by polluted runoff where required by applicable urban stormwater runoff discharge permits, on new facilities.
- h) Provide operational best management practices for street cleaning, litter control, and catch basin cleaning are implemented to prevent water quality degradation in compliance with applicable stormwater runoff discharge permits; and ensure treatment controls are in place as early as possible, such as during the acquisition process for rights-of-way, not just later during the facilities design and construction phase.
- h) Incorporate as appropriate treatment and control features such as detention basins, infiltration strips, and porous paving, other features to control surface runoff and facilitate groundwater recharge into the design of new transportation projects early on in the process to ensure that adequate acreage and elevation contours are provided during the right-of-way acquisition process.
- i) Upgrade stormwater drainage facilities to accommodate any increased runoff volumes. These upgrades may include the construction of detention basins or structures that will delay peak flows and reduce flow velocities, including expansion and restoration of wetlands and riparian buffer areas. System designs shall be completed to eliminate increases in peak flow rates from current levels.
- j) Encourage low-impact development and incorporation of natural spaces that reduce, treat, infiltrate, and manage stormwater runoff flows in all new developments, where practical and feasible.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

As previously discussed, the Plan's Regional Planning Policies and Implementation Strategies (see Chapter 2, *Project Description*, and Section 3.0, *Introduction to the Analysis*) and compliance with existing laws and regulations would reduce impacts; however, given the regional scale of the analysis in this 2024 PEIR, it is not possible or feasible to determine if all impacts would be fully mitigated. Therefore, this 2024 PEIR identifies SCAG and project-level mitigation measures. At the project-level, lead agencies can and should consider the identified project-level mitigation measures during subsequent review of transportation and land use projects as appropriate and feasible. While the mitigation measures will reduce the impacts related to violating any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality, due to the regional nature of the analysis, unknown site conditions and project-specific details, and SCAG's lack of land use authority over individual projects, SCAG finds that the impact could be **significant and unavoidable** even with mitigation.

IMPACT HYD-2 **Potential to substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Plan may impede sustainable groundwater management of the basin.**

Significant and Unavoidable Impact – Mitigation Required

The discussion presented below addresses impacts associated with groundwater hydrology and management of groundwater basins in the SCAG region. Impacts related to water supplies and associated infrastructure are discussed in Section 3.19, *Utilities and Service Systems*, of this 2024 PEIR.

GROUNDWATER SUPPLIES

During construction, some projects implemented under the Plan may require excavation that extends down to below groundwater levels. To keep the excavations open, dewatering may be necessary to facilitate the construction of infrastructure, foundations, and subterranean building levels. The source of the water could be from groundwater supplies. However, dewatering would be temporary and limited, and would not result in the pumping of substantial volumes of groundwater. For some projects, water may be needed for dust suppression. The use of groundwater for dust suppression, if any, would be also temporary and limited, and would not result in substantial volumes of pumped groundwater. Therefore, impacts associated with the short-term use of groundwater during construction would be less than significant.

As discussed in Section 3.19, *Utilities and Service Systems*, water supply within the SCAG region is from a combination of local surface water, local groundwater, recycled water, and imported water. Groundwater is pumped from various local wells for a variety of uses. Certain projects may use groundwater depending on the location and needs of a particular project. There are existing regulations that require each specific project to verify the availability of the water supply needed for the specific project. California Senate Bill 610 (SB 610) requires projects subject to CEQA of a specified minimum size to prepare a water supply assessment (WSA) for the project. The WSA must document sources of water supply, quantify water demands, and compare future water supply and demand to show that sufficient water will be available to serve the specific project. Water supply must be assessed for normal, single dry, and multiple dry water years during a 20-year forecast. If supplies are found to be insufficient to serve the project, the WSA must include plans for acquiring sufficient supplies. The WSA must be included in the CEQA document for each project, as applicable. California Senate Bill 221 (SB221) applies to subdivisions of more than 500 dwelling units. Like SB 610, it is intended to ensure an adequate water supply for new development.

SB 221 requires that approval of a tentative map showing the design and improvement of a proposed subdivision shall include a requirement that a sufficient water supply be available.

As discussed in Section 3.10.2, *Regulatory Framework*, SGMA requires the formation of GSAs to manage groundwater in a sustainable manner and allows limited local or state intervention when necessary to protect groundwater resources. All high- and medium-priority basins are required to prepare and implement a GSP to return the groundwater basin to sustainable use. Within the SCAG counties, there are 27 GSAs in the process of returning the groundwater basins to the sustainable use of groundwater. Projects that are subject to CEQA are required to analyze the impact of that specific project relative to the sustainable use of groundwater. In general, assuming compliance with existing permits, operation of projects does not and would not substantially decrease groundwater supplies such that any project may impede sustainable groundwater management of the basin.

However, given that the specific locations and details of all projects under the Plan are not known at this time, there could be unforeseen circumstances that could result in some projects not being covered under previously discussed regulations. For an operations example, projects constructed in rural areas may be located outside of areas covered under an existing GSP or adjudicated basin agreement or other regulatory agency; such projects might not be designed to use groundwater in a sustainable manner, which could adversely affect groundwater supplies. Therefore, to account for these circumstances, at the regional level, operational impacts to groundwater supplies would be significant requiring the consideration of mitigation measures.

GROUNDWATER RECHARGE

The introduction of impermeable surfaces greatly reduces natural infiltration, which in turn reduces replenishment of groundwater supplies. Projects implemented as a result of the Plan could result in the addition of new impervious surfaces. The addition of impervious surfaces could substantially interfere with groundwater recharge.

As discussed in Impact HYD-1, the vast majority of projects implemented under the Plan would be required to comply with the requirements of the Municipal Stormwater Program (i.e., the MS4 or Municipal Regional Permit, or Caltrans Stormwater Permit depending on the project location), as discussed in Section 3.10.2, *Regulatory Framework*. Project applicants would, under normal circumstances, continue to be required to submit project design plans to the appropriate regulatory agency to demonstrate that the operation of their project would comply with the applicable permit requirements. The requirements include addressing changes to the amount of impervious surface on a given project site that may interfere with groundwater recharge. Similarly, projects that increase the amount of impervious surface would be required to implement BMPs to address the change. BMPs may include the installation of infiltration galleries, bioswales, and other measures to infiltrate stormwater into the surface, thus maintaining groundwater recharge. Other BMPs may include recycling the water for landscaping or graywater use, thus reducing the reliance of water supplies, of which groundwater is one source. BMPs included in site designs and plans for such projects are reviewed by the relevant agency's engineering staff to ensure the addition of impervious surfaces and interference with groundwater recharge are addressed. The implementation of BMPs required by the permits generally prevent substantial adverse impacts relative to interfering with groundwater recharge. With compliance with permits, operation of most projects implemented as a result of the Plan would continue to not interfere substantially with groundwater recharge such that any one project or multiple projects may impede sustainable groundwater management of the basin.

The operation of projects implemented as a result of the Plan is anticipated to be addressed as part of construction in establishing a given project in the first place (i.e., in providing for recharge areas, stormwater retention, drainage etc.) in compliance with existing federal, state, city, or county regulations. However, given that the specific locations

and details of all projects that would be developed under this Plan are not known at this time, there could be unforeseen circumstances that could result in some projects not being covered under previously discussed regulations. For an operations example, projects constructed in rural areas may be located outside of areas covered under an existing municipal stormwater permit (i.e., MS4); such projects might not be designed to address the addition of impervious surfaces, which could adversely affect groundwater recharge. Therefore, to account for these circumstances, at the regional level, impacts to groundwater recharge are considered significant requiring the consideration of mitigation measures.

MITIGATION MEASURES

SCAG MITIGATION MEASURE

See SMM HYD-1.

PROJECT-LEVEL MITIGATION MEASURES

PMM-HYD-2 In accordance with provisions of CEQA Guidelines Sections 15091(a)(2) and 15126.4(a)(1)(B), a lead agency for a project can and should consider mitigation measures to reduce substantial adverse effects from violation of any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality, as applicable and feasible. Such measures may include the following or other comparable measures identified by the Lead Agency:

- a) Avoid designs that require continual dewatering where feasible. For projects requiring continual dewatering facilities, implement monitoring systems and long-term administrative procedures to ensure proper water management that prevents degrading of surface water and minimizes adverse impacts on groundwater for the life of the project. Construction designs comply with appropriate building codes and standard practices including the CBC.
- b) Maximize, where practical and feasible, permeable surface area to protect water quality and allow for groundwater recharge. Minimize new impervious surfaces, including the use of in-lieu fees and off-site mitigation.
- c) Avoid construction and siting on groundwater recharge areas, where feasible, to prevent conversion of those areas to impervious surface.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

As previously discussed, the Plan's Regional Planning Policies and Implementation Strategies (see Chapter 2, *Project Description*, and Section 3.0, *Introduction to the Analysis*) and compliance with existing laws and regulations would reduce impacts; however, given the regional scale of the analysis in this 2024 PEIR, it is not possible or feasible to determine if all impacts would be fully mitigated. Therefore, this 2024 PEIR identifies SCAG and project-level mitigation measures. At the project-level, lead agencies can and should consider the identified project-level mitigation measures during subsequent review of transportation and land use projects as appropriate and feasible. While the mitigation measures will reduce the impacts related to decreasing groundwater supplies or interfering with groundwater recharge such that the project may impede sustainable groundwater management of the basin, due to the regional nature of the analysis, unknown site conditions and project-specific details, and SCAG's lack of land use authority over individual projects, SCAG finds that the impact could be **significant and unavoidable** even with mitigation.

IMPACT HYD-3A 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 result in substantial erosion or siltation on- or off-site.

Significant and Unavoidable Impact – Mitigation Required

During construction of projects implemented as a result of the Plan, existing drainage patterns could be substantially altered. Inadequate controls of stormwater runoff and/or runoff could expose ground surfaces, redirect drainage, and consolidate runoff resulting in substantial erosion or siltation onsite or offsite.

As discussed above in Impact HYD-1, during construction, most projects would be required to comply with local LID requirements as well as the Construction General Permit or the Caltrans Stormwater Permit, which would require the preparation and implementation of a site-specific SWPPP and implementation of BMPs. The BMPs would be designed to minimize the potential for onsite and offsite erosion or siltation, as well as temporary changes in drainage patterns during construction. Construction BMPs would capture and infiltrate sheet flow during storm events into the ground such that offsite runoff from the construction site would not increase, ensuring that drainage patterns would not be significantly altered. BMPs would be implemented to control construction site runoff, ensure proper stormwater control and treatment, and prevent the discharge of sediment and other pollutants to offsite areas. Therefore, construction would not substantially alter the existing drainage pattern of the area in a manner that would result in substantial erosion or siltation under typical conditions. It is acknowledged, however, that in some instances adverse impacts to water quality from construction activities, including impact related to erosion and siltation, could occur in some discrete locations, and thus such circumstances are considered reasonably foreseeable and could occur frequently enough that they would collectively constitute a significant adverse effect on water quality at a regional scale. Accordingly, despite compliance with applicable regulatory requirements, construction-related impacts regarding erosion and siltation associated with alterations in drainage patterns or waterways, or increases in impervious surfaces, would be significant requiring the consideration of mitigation measures.

Implementation of projects as a result of the Plan could substantially alter existing drainage patterns and add impervious surfaces. The changes could expose ground surfaces, redirect drainage, and concentrate flow due to the addition of impervious surfaces. Projects may include lane widening projects and new transportation facilities that could cross existing creeks or be expanded into wetland areas. Stormwater runoff is influenced by rainfall intensity, ground surface permeability, watershed size and shape, and physical barriers. The introduction of impermeable surfaces greatly reduces natural infiltration, allowing for a greater volume of runoff. In addition, paved surfaces and drainage conduits can accelerate the velocity of runoff, concentrating peak flows in downstream areas faster than under natural conditions. Significant increases to runoff and peak flow can overwhelm drainage systems and alter flood elevations in downstream locations. Failure to properly implement appropriate BMPs or other design features could result in substantial erosion or siltation during rain events.

As discussed above in Impact HYD-1, stormwater runoff from the types of urban uses that would result from Connect SoCal 2024 would, under most circumstances, be regulated under the Municipal Stormwater Program (i.e., the MS4 or Municipal Regional Permit or Caltrans Stormwater Permit depending on the project location), and applicable LID requirements, as discussed in Section 3.10.2, *Regulatory Framework*. Project applicants would be required to submit project design plans (e.g., drainage plans, hydrology plans, LID plans) to the appropriate regulatory agency to demonstrate that the operation of their project would comply with the applicable permit

requirements. The requirements include quantifying the volume and rate of stormwater runoff and the percent change in the amount of impervious surfaces. The project design would be required to capture and treat stormwater prior to exiting the project site and designing the stormwater system so as to prevent erosion. BMPs included in site designs and plans for proposed projects would be reviewed by the relevant agency's engineering staff to ensure adequate treatment and design capacity prior to permit issuance. The review and permitting process, when implemented properly, would ensure that the permit's WDRs would not be violated by proposed projects. The BMPs would include stormwater collection and treatment systems with measures such as infiltration galleries, bioswales, bioretention basins, and storage, treatment, and reuse of stormwater for landscaping or graywater use. With compliance with existing permit requirements, operation of projects implemented under the Plan would not result in increases in erosion and siltation associated with alterations in drainage patterns or waterways or increases in impervious surfaces. As is the case with construction-related impacts, however, there could be limited instances in which certain projects are not subject to stormwater permit requirements, thereby increasing the potential for adverse erosion and siltation to occur during storm events. Such circumstances are considered reasonably foreseeable given the size of the SCAG region and variability in site conditions and regulatory enforcement, and thus could occur frequently enough that they would collectively constitute a significant adverse effect on water quality at a regional scale. Accordingly, despite compliance with applicable regulatory requirements for most projects, operational impacts including erosion and siltation associated with alterations in drainage patterns or waterways, or increases in impervious surfaces, could be significant requiring the consideration of mitigation measures.

MITIGATION MEASURES

SCAG MITIGATION MEASURES

See SMM-HYD-1.

PROJECT-LEVEL MITIGATION MEASURES

See PMM-HYD-1.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

As previously discussed, the Plan's Regional Planning Policies and Implementation Strategies (see Chapter 2, *Project Description*, and Section 3.0, *Introduction to the Analysis*) and compliance with existing laws and regulations would reduce impacts; however, given the regional scale of the analysis in this 2024 PEIR, it is not possible or feasible to determine if all impacts would be fully mitigated. Therefore, this 2024 PEIR identifies SCAG and project-level mitigation measures. At the project-level, lead agencies can and should consider the identified project-level mitigation measures during subsequent review of transportation and land use projects as appropriate and feasible. While the mitigation measures will reduce the impacts related to altering the existing drainage pattern of a site or area in a manner which would result in substantial erosion or siltation on- or off-site, due to the regional nature of the analysis, unknown site conditions and project-specific details, and SCAG's lack of land use authority over individual projects, SCAG finds that the impact could be **significant and unavoidable** even with mitigation.

IMPACT HYD-3B 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 substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

Significant and Unavoidable Impact – Mitigation Required

As discussed in Impact HYD-3a, implementation projects as a result of the Plan would have the potential to change existing drainage patterns. Transportation projects such as lane widening projects, new highways, as well as bridges/tunnels, and transportation facilities projects that could cross existing creeks, water crossings, rivers or be expanded into wetland areas may impact water bodies by placing fill material within a stream channel. Such changes could result in increased flooding. In addition, land use projects resulting from the Plan's policies and strategies could increase impervious surfaces including the consumption of greenfield lands.

Stormwater runoff is influenced by rainfall intensity, ground surface permeability, watershed size and shape, and physical barriers. The introduction of impermeable surfaces may allow for a greater or concentrated volume of runoff. As stated previously, paved surfaces and drainage conduits can accelerate the velocity of runoff, concentrating peak flows in downstream areas faster than under natural conditions. Significant increases to runoff and peak flow can overwhelm drainage systems and alter flood elevations in downstream locations. The increase in velocity has the potential to create or contribute runoff flows that would exceed the capacity of existing or planned stormwater drainage systems and flood offsite areas. In addition, placing new structures within an existing floodplain can impede or redirect flood waters, altering the flood risks both upstream and downstream.

As discussed in Impacts HYD-1, HYD-2, and HYD-3a, the construction activities for and operations of most projects under the Plan are anticipated to be covered under existing federal, state, city, or county regulations, which would generally preclude adverse impacts involving flooding. However, it is acknowledged that there could be incidental cases where localized flooding could occur, and therefore it is reasonably foreseeable, despite compliance with existing MS4, LID, and Caltrans stormwater requirements for most projects, that these incidental flooding events could occur on a widespread basis given the size of the SCAG region and variability in site conditions and regulatory enforcement. Therefore, such incidental flooding could collectively constitute a significant adverse impact at a regional scale, which requires the consideration of mitigation measures.

MITIGATION MEASURES

SCAG MITIGATION MEASURES

See SMM-HYD-1.

PROJECT-LEVEL MITIGATION MEASURES

See PMM-HYD-1 and PMM-HYD-2.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

As previously discussed, the Plan's Regional Planning Policies and Implementation Strategies (see Chapter 2, *Project Description*, and Section 3.0, *Introduction to the Analysis*) and compliance with existing laws and regulations

would reduce impacts; however, given the regional scale of the analysis in this 2024 PEIR, it is not possible or feasible to determine if all impacts would be fully mitigated. Therefore, this 2024 PEIR identifies SCAG and project-level mitigation measures. At the project-level, lead agencies can and should consider the identified project-level mitigation measures during subsequent review of transportation and land use projects as appropriate and feasible. While the mitigation measures will reduce the impacts related to altering the existing drainage pattern of the site or area in a manner that would substantially increase the rate or amount of surface runoff which would result in flooding on- or off-site, due to the regional nature of the analysis, unknown site conditions and project-specific details, and SCAG's lack of land use authority over individual projects, SCAG finds that the impact could be **significant and unavoidable** even with mitigation.

Impact HYD-3C 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 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.

Significant and Unavoidable Impact – Mitigation Required

As discussed in Impact HYD-3a, implementation of projects as a result of the Plan has the potential to alter existing drainage patterns. Implementation of the Plan may increase impervious surfaces, which in turn could increase urban runoff if not regulated, resulting in the transport of greater volumes of polluted water into storm drain systems. Stormwater runoff is influenced by rainfall intensity, ground surface permeability, watershed size and shape, and physical barriers. The introduction of impermeable surfaces greatly reduces natural infiltration, allowing for a greater volume of runoff.

As stated previously, paved surfaces and drainage conduits can accelerate the velocity of runoff, concentrating peak flows in downstream areas faster than under natural conditions. Significant increases to runoff and peak flow can overwhelm drainage systems and alter flood elevations in downstream locations. Increased runoff velocity can also promote scouring of existing drainage facilities, reducing system reliability and safety. In addition, this increase in velocity has the potential to create or contribute runoff flows that would exceed the capacity of existing or planned stormwater drainage systems and provide additional sources of polluted runoff.

As discussed in Impacts HYD-1, HYD-2, and HYD-3a, the construction activities for and operations of most projects implemented under the Plan are anticipated to be covered under existing federal, state, city, or county regulations, which would generally preclude adverse impacts involving exceeding the capacity of existing or planned stormwater drainage systems or providing substantial additional sources of polluted runoff. However, it is also acknowledged that there could be incidental cases where increased flow rates or pollutant loading could occur, and given the size of the SCAG region and variability in site conditions and regulatory enforcement, it is reasonably foreseeable, despite compliance with existing MS4, LID, and Caltrans stormwater requirements for most projects, that such exceedances of stormwater system capacity or increases in pollutant sources could occur on a widespread basis. Therefore, such individual occurrences would collectively constitute a significant adverse impact at a regional scale, which requires the consideration of mitigation measures.

MITIGATION MEASURES

SCAG MITIGATION MEASURES

See SMM-HYD-1.

PROJECT-LEVEL MITIGATION MEASURES

See PMM-HYD-1 and PMM-HYD-2.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

As previously discussed, the Plan's Regional Planning Policies and Implementation Strategies (see Chapter 2, *Project Description*, and Section 3.0, *Introduction to the Analysis*) and compliance with existing laws and regulations would reduce impacts; however, given the regional scale of the analysis in this 2024 PEIR, it is not possible or feasible to determine if all impacts would be fully mitigated. Therefore, this 2024 PEIR identifies SCAG and project-level mitigation measures. At the project-level, lead agencies can and should consider the identified project-level mitigation measures during subsequent review of transportation and land use projects as appropriate and feasible. While the mitigation measures will reduce the impacts related to altering the existing drainage pattern of the site or area in a manner which would 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, due to the regional nature of the analysis, unknown site conditions and project-specific details, and SCAG's lack of land use authority over individual projects, SCAG finds that the impact could be **significant and unavoidable** even with mitigation.

IMPACT HYD-3D Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows.

Significant and Unavoidable Impact – Mitigation Required

As discussed in Impact HYD-3a, projects implemented as a result of the Plan would continue to have the potential to alter existing drainage patterns and increase impervious surfaces, which in turn could impede or redirect flood flows that could adversely affect individual project sites and surrounding properties. Stormwater runoff is influenced by rainfall intensity, ground surface permeability, watershed size and shape, and physical barriers. The introduction of impermeable surfaces may allow for a greater or concentrated volume of runoff.

As stated previously, paved surfaces and drainage conduits can accelerate the velocity of runoff, concentrating peak flows in downstream areas faster than under natural conditions. Significant increases to runoff and peak flow can overwhelm drainage systems and alter flood elevations in downstream locations. The increase in velocity has the potential to create or contribute runoff flows that would exceed the capacity of existing or planned stormwater drainage systems and flood offsite areas. In addition, placing new structures within an existing floodplain can impede or redirect flood waters, altering the flood risks both upstream and downstream.

Further, as discussed in Impact HYD-1, HYD-2, and HYD-3a, the construction activities for and operations of most projects implemented as a result of the Plan are anticipated to be covered under existing federal, state, city, or county regulations, which would generally preclude adverse impacts involving impeding or redirecting flood flows.

However, there could be incidental cases where impedance or redirection of stormwater flows could occur given the size of the SCAG region and variability in site conditions and regulatory enforcement, and thus it is reasonably foreseeable that such conditions could occur on a widespread basis despite compliance with existing MS4, LID, and Caltrans stormwater requirements for most projects. Therefore, individual occurrences of impeded or redirected stormwater flows would collectively constitute a significant adverse impact at a regional scale requiring the consideration of mitigation measures.

MITIGATION MEASURES

SCAG MITIGATION MEASURES

See SMM-HYD-1.

PROJECT-LEVEL MITIGATION MEASURES

See PMM-HYD-1 and PMM-HYD-2.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

As previously discussed, the Plan's Regional Planning Policies and Implementation Strategies (see Chapter 2, *Project Description*, and Section 3.0, *Introduction to the Analysis*) and compliance with existing laws and regulations would reduce impacts; however, given the regional scale of the analysis in this 2024 PEIR, it is not possible or feasible to determine if all impacts would be fully mitigated. Therefore, this 2024 PEIR identifies SCAG and project-level mitigation measures. At the project-level, lead agencies can and should consider the identified project-level mitigation measures during subsequent review of transportation and land use projects as appropriate and feasible. While the mitigation measures will reduce the impacts related to altering the existing drainage pattern of the site or area in a manner which would impede or redirect flood flows, due to the regional nature of the analysis, unknown site conditions and project-specific details, and SCAG's lack of land use authority over individual projects, SCAG finds that the impact could be **significant and unavoidable** even with mitigation.

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

Significant and Unavoidable Impact – Mitigation Required

Implementation of projects as a result of the Plan that are proposed to be built within coastal areas, low-lying areas or in proximity to waterways or dam inundation zones may be subject to flood hazards from rain-induced flooding (e.g., located in 100-year flood zones), sea-level rise, tsunamis, or seiches. Flooding risks are associated with projects that are located downstream of dams and retention basins, or otherwise afforded protection by levee systems. These areas may be subject to flooding as a result seismic ground-shaking or other natural or anthropogenic actions that could compromise the stability of such structures leading to failure. Additional compact urban development, as well as possible expansion of existing urban areas in areas that are potentially subject to flooding as a result of failure of a levee or dam, could create a potential to release pollutants during a flood event. With more than 150 miles of coastline, projects implemented as a result of the Plan that are located near the coast could be susceptible to tsunamis or sea level rise. The entire SCAG region is susceptible to impacts from seismic activity including the occurrence of seiches in enclosed water bodies such as Big Bear Lake, Lake Arrowhead, Lake Casitas, Castaic Lake, Pyramid Lake, Lake Elsinore, Diamond Valley Lake, and the Salton Sea.

In general, compliance with existing regulatory requirements described in Section 3.10.2, *Regulatory Framework*, and discussed further below, would ensure that the land use changes and transportation network improvements would not expose people or structures to a significant risk from the release of pollutants due to inundation. However, in some cases it is possible that projects would not be subject to applicable regulations or appropriate measures are not implemented such that significant inundation impacts could occur, thereby requiring the consideration of mitigation measures.

FLOOD HAZARD ZONES

The Plan encourages higher-density housing and commercial development in PDAs. PDAs are generally located in urban areas that are subject to Flood Management Plans (FMPs) and major flood control infrastructure that have been constructed to constrain the 100-year flood into flood control systems in these areas.

The flood control districts in the SCAG region participate in the NFIP, which is based on a mutual agreement between the federal government and communities. Participating communities agree to regulate floodplain development according to specified criteria and standards. Specifically, communities must adopt and enforce minimum floodplain management regulations so that development, including buildings, is undertaken in ways that reduce exposure to flooding.

Flood-prone areas in Imperial County are managed pursuant to an FMP, which includes a future-oriented approach to planning in flood risk areas. It is a pre-disaster planning approach that is required by FEMA for the County to continue to participate in the NFIP. When a community chooses to join the NFIP, it must adopt and enforce minimum floodplain management standards for participation. The floodplain management requirements within the Special Flood Hazard Area are designed to prevent new developments from increasing the flood threat and to protect new and existing buildings from anticipated flood events. When a community chooses to join the NFIP, it must require permits for all development within the Special Flood Hazard Area and ensure that construction materials and methods used will minimize future flood damage.

The Los Angeles Flood Control District includes the majority of drainage infrastructure within incorporated and unincorporated areas in every watershed in the County, including 500 miles of open channel, 2,800 miles of underground storm drain, and an estimated 120,000 catch basins.

The County of Orange maintains 350 miles of concrete, rock lined and earthen flood control facilities. Flood control facilities are designed to handle water flow from storm drains and other runoff and "channel" the water into the bay or ocean.

The Riverside County Flood Control District owns and operates over 600 miles of channels storm drains and levees along with 74 dams and detention basin that reduce flood risk throughout the District.

Similarly, the San Bernardino County Flood Control District has developed a very extensive system of facilities, including dams, conservation basins, channels, and storm drains to intercept and convey flood flows through and away from the major developed areas of the County.

The Ventura County Flood Control District provides for the control and conservation of flood and stormwaters and for the protection of watercourses, watersheds, public highways, life, and property in the district from damage or destruction from these waters.

The Plan encourages development in PDAs and other urban areas that are generally afforded flood protection by flood control facilities and are subject to specific land use planning regulations pursuant to the NFIP. Therefore, the Plan would not be expected to result in development in flood hazard zones. However, in some cases it is possible that projects would not be subject to applicable regulations or would be located in areas where adequate flood protection infrastructure has not been implemented such that significant flooding impacts could occur, thereby requiring the consideration of mitigation measures.

SEA LEVEL RISE AND TSUNAMIS

Rising sea levels will increase the potential for coastal flooding and flood hazards in the future (see *Flood Hazards*, in Environmental Setting above), and the issue of sea-level rise is a critical component of land use planning and hazard analysis in coastal areas. Until the year 2050, most of the climate models predict a similar degree of sea-level rise; however, after 2050, projections of sea-level rise become less certain because of divergent modeling results and differences in various estimates of GHGs (California Ocean Protection Council 2018).

The CCC's Sea-Level Rise Policy Guidance outlines the types of information, analysis, and design considerations the CCC's staff requires to determine whether shoreline projects conform to the Coastal Act policies in anticipation of increasing flood and erosion hazards caused by sea-level rise. To be consistent with the Coastal Act, projects must be designed to minimize conflicts with applicable requirements, including that new development (1) be designed to eliminate or mitigate adverse effects on local shoreline sand supply; and (2) ensure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of a site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along the coast (Pub. Res. Code Sections 30235 and 30253).

Sea-level rise and the risk of tsunamis are existing environmental conditions, and unless future projects exacerbate these conditions, they are not considered potentially significant impacts under CEQA. As discussed in Section 3.8, *Greenhouse Gas Emissions*, the Plan could result in a significant impact with respect to GHG emissions, and GHGs are considered a primary cause of global climate change and sea-level rise. However, the relationship between development in any given region or country and measurable sea-level rise is not possible to determine and is therefore considered too speculative to be analyzed any further in this environmental document.

Projects resulting from Connect SoCal 2024 are generally expected to be built in areas already subject to the flooding hazards discussed above, and existing planning and design standards and regulations would typically serve to address and minimize the associated potential impacts. In addition, project-specific technical studies would be required to reduce potential risks associated with individual projects. Nonetheless, given the extent of coastal land in the region, the diversity of site conditions, uncertainties regarding the future effects of climate change, and variability in regulatory enforcement, there exists a reasonably foreseeable potential for significant adverse environmental effects associated with sea level rise and tsunamis to occur under the Plan. As such, impacts are considered significant and thus mitigation measures must be considered.

SEICHES

Risks from seiches to future projects implemented under the Plan would only occur if a given project were located adjacent or in close proximity to an enclosed water body such as Big Bear Lake, Lake Arrowhead, Lake Casitas, Castaic Lake, Pyramid Lake, Lake Elsinore, Diamond Valley Lake, and the Salton Sea. However, similar to the flooding risks discussed above, projects would be largely located in areas that are within FMPs. In these areas, flood-prevention infrastructure is largely in place to manage flood flows in most waterways. Existing planning and

design standards and regulations would generally serve to address and minimize the associated potential impacts by restricting development adjacent to water bodies. In addition, project-specific technical studies would be required to address potential risks associated with individual projects and would be subject to the CEQA process. Lead agencies would review the location and design of these projects and would only approve such projects if designed to resist or avoid damage from seiches, which would reduce potential risks associated with the Plan.

Nonetheless, it is acknowledged that projects constructed in rural areas outside of a municipal jurisdiction may not consider the risk of being located within a seiche zone. Given that the specific locations and details of all projects under the Plan are not known at this time, there could be unforeseen circumstances that could result in some projects not being covered under previously discussed regulations. While not typical, there exists a reasonably foreseeable potential for significant adverse environmental effects associated with seiches to occur under the Plan. As such, impacts are considered significant requiring the consideration of mitigation measures.

SUMMARY

Based on the above analysis and compliance with the regulations outlined in Section 3.10.2, *Regulatory Framework*, projects implemented under the Plan would either not be located in flood hazard, tsunami, or seiche zones, or would be anticipated in most instances to be designed to reduce the risk of releasing of pollutants due to project inundation if located in such zones.

However, given that the specific locations and details of all projects under the Plan are not known at this time, there could be unforeseen circumstances that could result in some projects not being covered under previously discussed regulations. For example, projects constructed in rural areas outside of a municipal jurisdiction may not consider the risk of being located within a flood hazard, tsunami, or seiche zone. Such projects might not be designed to avoid inundation such that inundation could result in the release of pollutants. Therefore, to account for these circumstances, SCAG is proposing the mitigation measures described below.

MITIGATION MEASURES

SCAG MITIGATION MEASURE

See SMM HYD-1.

PROJECT-LEVEL MITIGATION MEASURE

PMM-HYD-4 In accordance with provisions of CEQA Guidelines Sections 15091(a)(2) and 15126.4(a)(1)(B), a Lead Agency for a project can and should consider mitigation measures capable of avoiding or reducing the potential impacts of locating structures that would impede or redirect flood flows, as applicable and feasible. Such measures may include the following or other comparable measures identified by the Lead Agency:

- a) Ensure that all roadbeds for new highway and rail facilities be elevated at least one foot above the 100-year base flood elevation. In areas affected by coastal flooding, new projects should be designed for resilience with 3.5 feet of sea-level rise, as per California Ocean Protection Council's strategic guidance. Since alluvial fan flooding is not often identified on FEMA flood maps, the risk of alluvial fan flooding should be evaluated and projects should be sited to avoid alluvial fan flooding. Delineation of floodplains and alluvial fan boundaries should attempt to account for future hydrologic changes caused by global climate change.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

As previously discussed, the Plan's Regional Planning Policies and Implementation Strategies (see Chapter 2, *Project Description*, and Section 3.0, *Introduction to the Analysis*) and compliance with existing laws and regulations would reduce impacts; however, given the regional scale of the analysis in this 2024 PEIR, it is not possible or feasible to determine if all impacts would be fully mitigated. Therefore, this 2024 PEIR identifies SCAG and project-level mitigation measures. At the project-level, lead agencies can and should consider the identified project-level mitigation measures during subsequent review of transportation and land use projects as appropriate and feasible. While the mitigation measures will reduce the impacts related to risking the release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones, due to the regional nature of the analysis, unknown site conditions and project-specific details, and SCAG's lack of land use authority over individual projects, SCAG finds that the impact could be **significant and unavoidable** even with mitigation.

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

Significant and Unavoidable Impact – Mitigation Required

WATER QUALITY CONTROL PLANS (BASIN PLANS)

As discussed in Section 3.10.1, *Environmental Setting*, there are six RWQCBs (either wholly or in part) that have jurisdiction within the SCAG region. The RWQCBs are responsible for the protection of the beneficial uses of waters within each county. In general, the RWQCB uses its planning, permitting, and enforcement authority to meet this responsibility and adopts a Water Quality Control Plan (basin plan) to implement plans, policies, and provisions for water quality management. The basin plan for each of the six SCAG counties is discussed in Section 3.10.2, *Regulatory Framework*, under the *Regional* subheading. In accordance with state policy for water quality control, the RWQCB employs a range of beneficial use definitions for surface waters, groundwater basins, marshes, and mudflats that serve as the basis for establishing water quality objectives and discharge conditions and prohibitions. The basin plan identifies existing and potential beneficial uses supported by the key surface water drainages throughout its jurisdiction. The basin plan also includes water quality objectives that are protective of the identified beneficial uses; the beneficial uses and water quality objectives collectively make up the water quality standards for a given region and basin plan.

As discussed above under Impacts HYD-1, HYD-2, HYD-3, and HYD-4, there are numerous laws, regulations, and policies, including Basin Plans, which regulate the use of surface water and groundwater throughout the SCAG region. These regulations include water quality goals to maintain the high quality of waters within the state of California. Future projects implemented under the Plan would, in general, be required to comply with these regulations. Under these circumstances, during construction, future projects of any size would be expected to comply with local LID requirements, as applicable, and required to comply with the state Construction General Permit and its required preparation and implementation of a SWPPP if they disturb an area greater than one acre in size. If properly implemented, the BMPs described in the SWPPP would ensure that water quality is not adversely affected by sediment or other pollutants during construction. During operations, the design of future projects would be required to comply with NPDES permits requirements, the MS4s or the Caltrans Stormwater Permit, depending on the location and nature of the project. These permits require that projects be designed to capture and treat stormwater prior to exiting the project site. Compliance with these permits would generally be expected to adequately protect water quality and would be consistent with the basin plans. However, as noted previously,

given the size of the SCAG region and variability in site conditions and regulatory enforcement, it is reasonably foreseeable that adverse impacts to water quality could occur on a widespread basis despite general compliance with existing MS4, LID, and Caltrans stormwater requirements for most projects, thereby resulting in conflicts with basin plan objectives. As such, impacts in this regard would be considered significant warranting the consideration of mitigation measures.

SUSTAINABLE GROUNDWATER MANAGEMENT PLANS

As discussed in Section 3.10.2, *Regulatory Framework*, under the *Regional* subheading, there are 27 medium and high priority groundwater basins that are required to implement GSPs to return the volume of groundwater use within the given groundwater basin to sustainable levels. In addition, there are 22 adjudicated groundwater basins that similarly are required by court orders to return the volume of groundwater use within the given groundwater basin to sustainable levels. Managers of each basin are required to quantify the amount of groundwater that can be sustainably pumped from each basin and require groundwater users to reduce groundwater withdrawals to achieve sustainable groundwater use. Compliance with SGMA and court-ordered adjudications would require sustainable groundwater use and would be consistent with Sustainable Groundwater Management Plans and the similar plans required for adjudicated basins. However, there could be instances where localized groundwater use not subject to GSPs or court adjudication occurs throughout the region that could collectively constitute a significant adverse impact to groundwater resources. In addition, implementation of Connect SoCal 2024 would increase impervious surfaces due to additional lane miles and conversion of greenfields to developed land for land use projects. An increase in impervious surfaces would increase water runoff and potentially affect groundwater recharge rates and water quality in the basins. As such, impacts are considered significant requiring the consideration of mitigation measures.

MITIGATION MEASURES

SCAG MITIGATION MEASURE

See SMM HYD-1.

PROJECT-LEVEL MITIGATION MEASURE

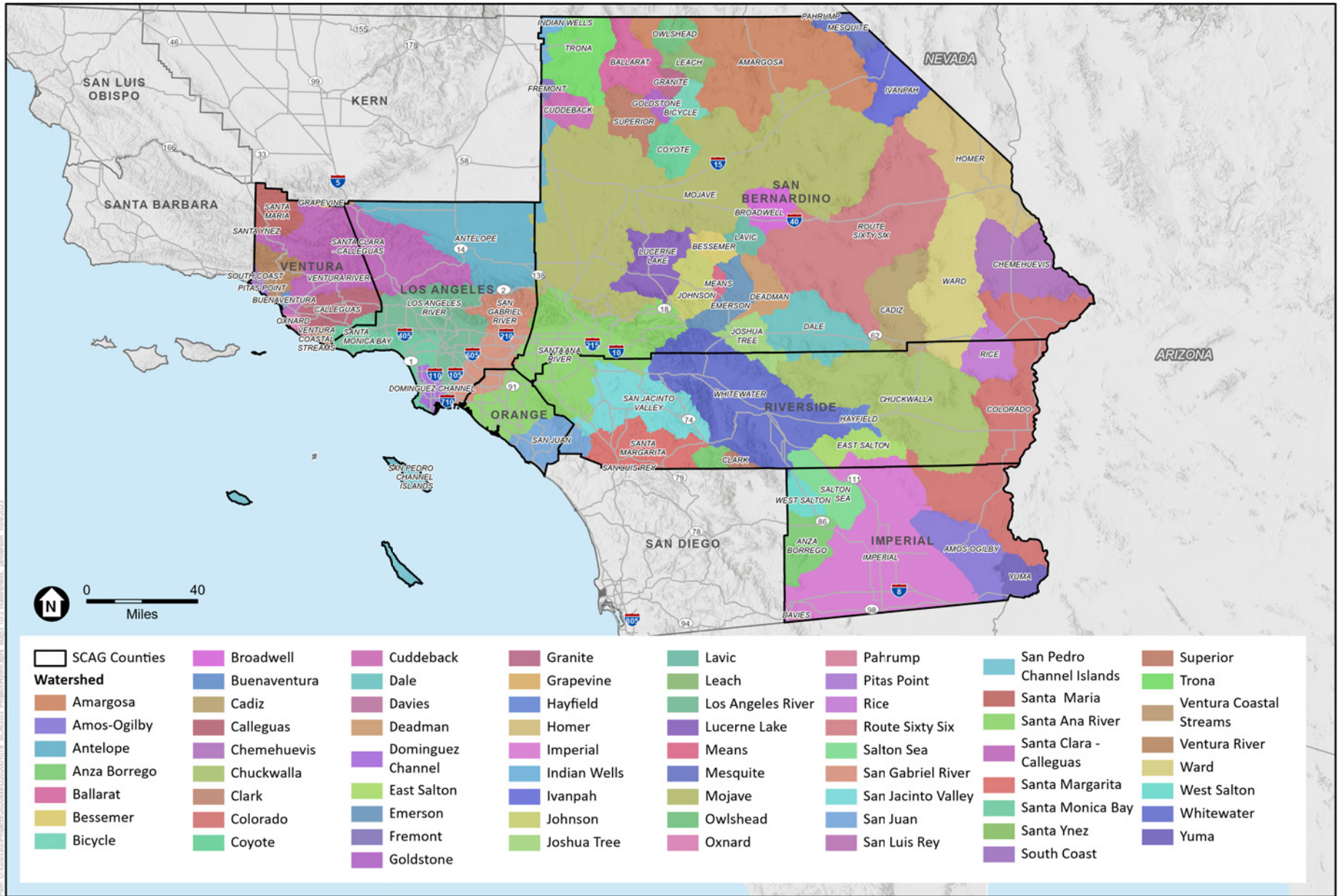
See PMM-HYD-2.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

As previously discussed, the Plan's Regional Planning Policies and Implementation Strategies (see Chapter 2, *Project Description*, and Section 3.0, *Introduction to the Analysis*) and compliance with existing laws and regulations would reduce impacts; however, given the regional scale of the analysis in this 2024 PEIR, it is not possible or feasible to determine if all impacts would be fully mitigated. Therefore, this 2024 PEIR identifies SCAG and project-level mitigation measures. At the project-level, lead agencies can and should consider the identified project-level mitigation measures during subsequent review of transportation and land use projects as appropriate and feasible. While the mitigation measures will reduce the impacts related to conflicting with or obstructing implementation of a water quality control plan or sustainable groundwater management plan, due to the regional nature of the analysis, unknown site conditions and project-specific details, and SCAG's lack of land use authority over individual projects, SCAG finds that the impact could be **significant and unavoidable** even with mitigation.

CUMULATIVE IMPACTS

Connect SoCal 2024 is a regional-scale Plan comprising policies and strategies, a regional growth forecast and land use pattern, and individual projects and investments. At this regional-scale, a cumulative or related project to the Plan is another regional-scale plan (such as Air Quality Management Plans within the region) and similar regional plans for adjacent regions. Because the Plan, in and of itself, would result in significant adverse environmental impacts with respect to hydrology, these impacts would add to the environmental impacts of other cumulative or related projects. Mitigation measures that reduce the Plan's impacts would similarly reduce the Plan's contribution to cumulative impacts.

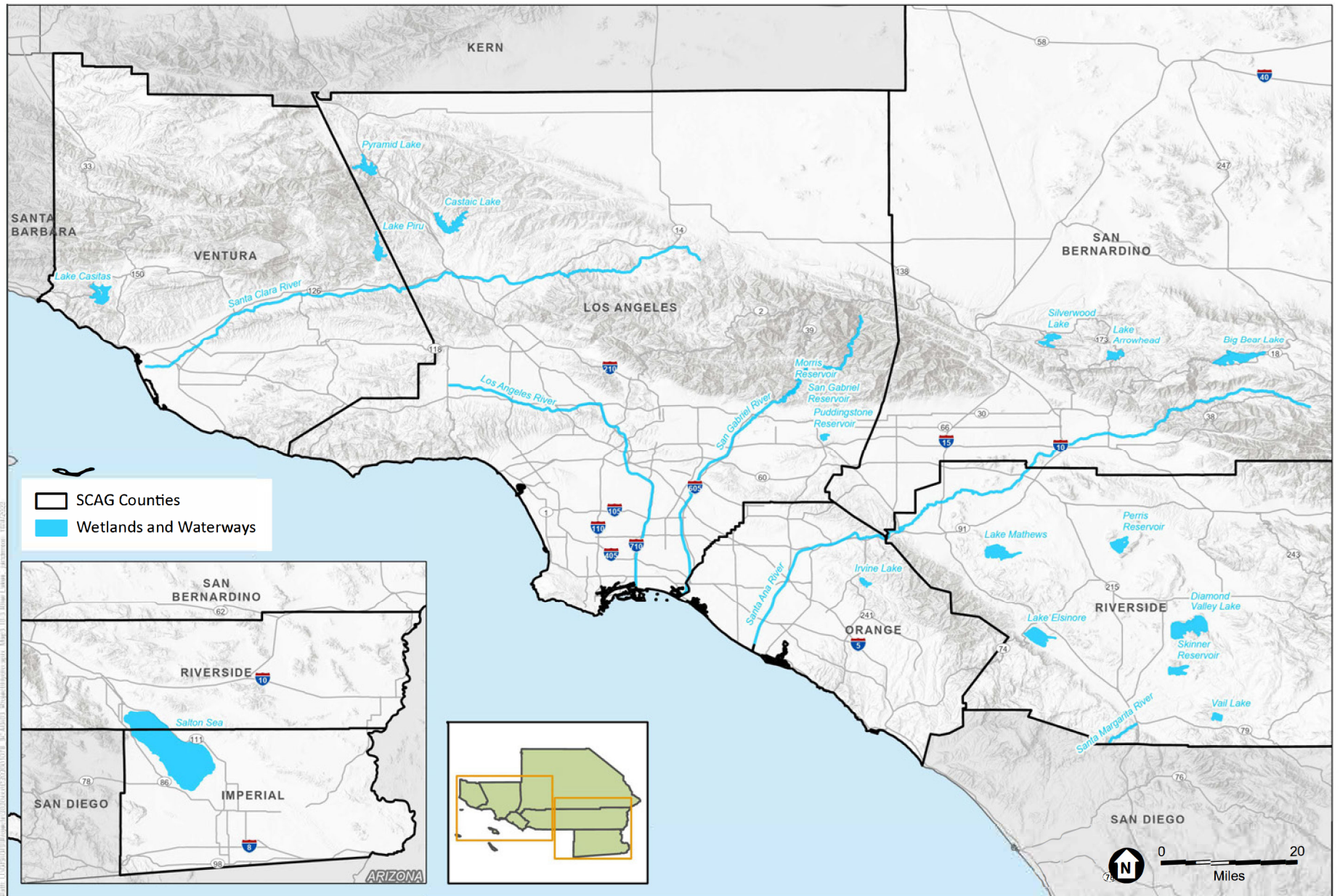


SOURCE: State Water Resources Control Board, 2016

Connect SoCal 2024 PEIR

Map 3.10-2
Watersheds in the SCAG Region



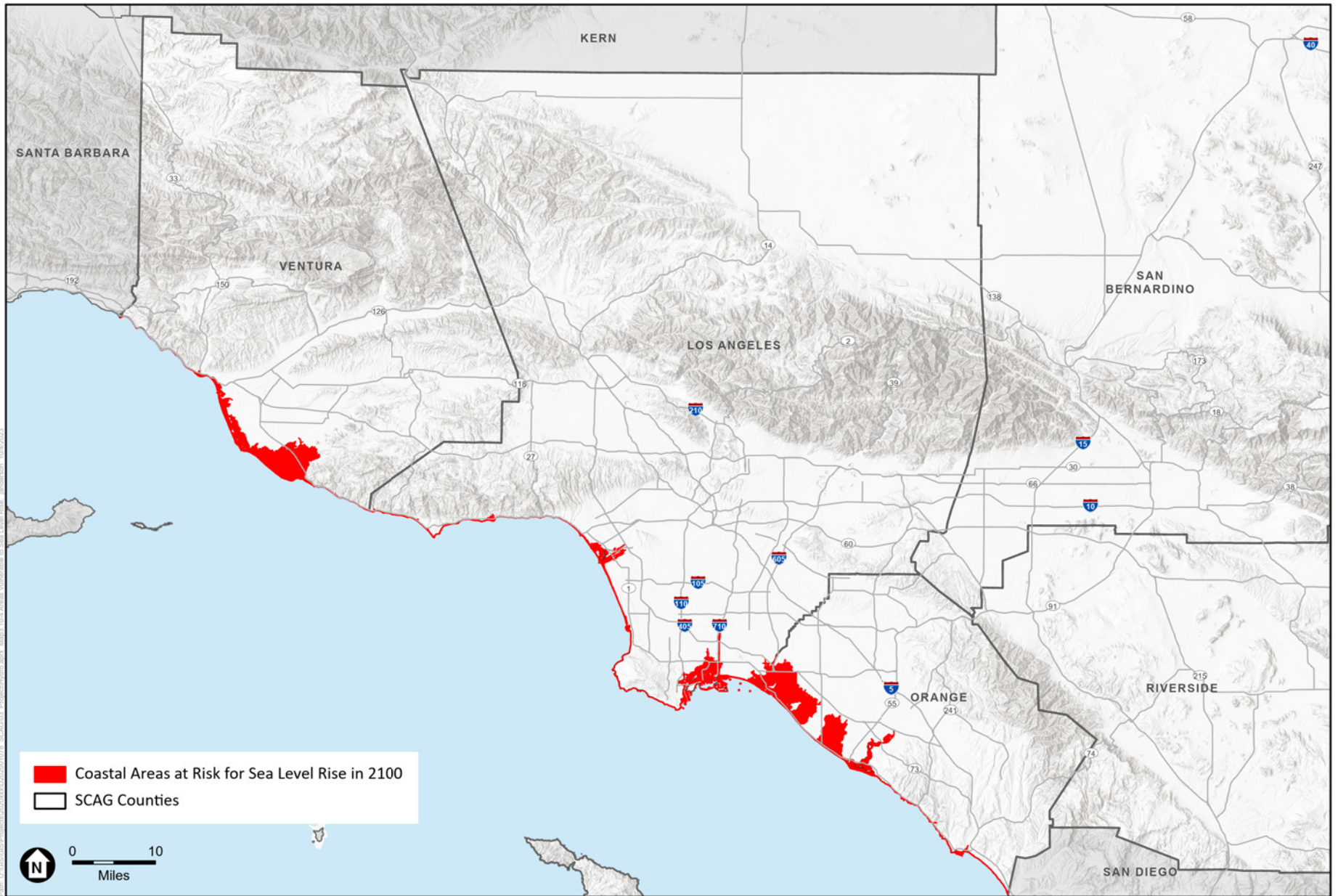


SOURCE: National Hydrography Dataset, 2022

Connect SoCal 2024 PEIR

Map 3.10-3
 Federally Protected Wetlands and Waterways within the SCAG Region

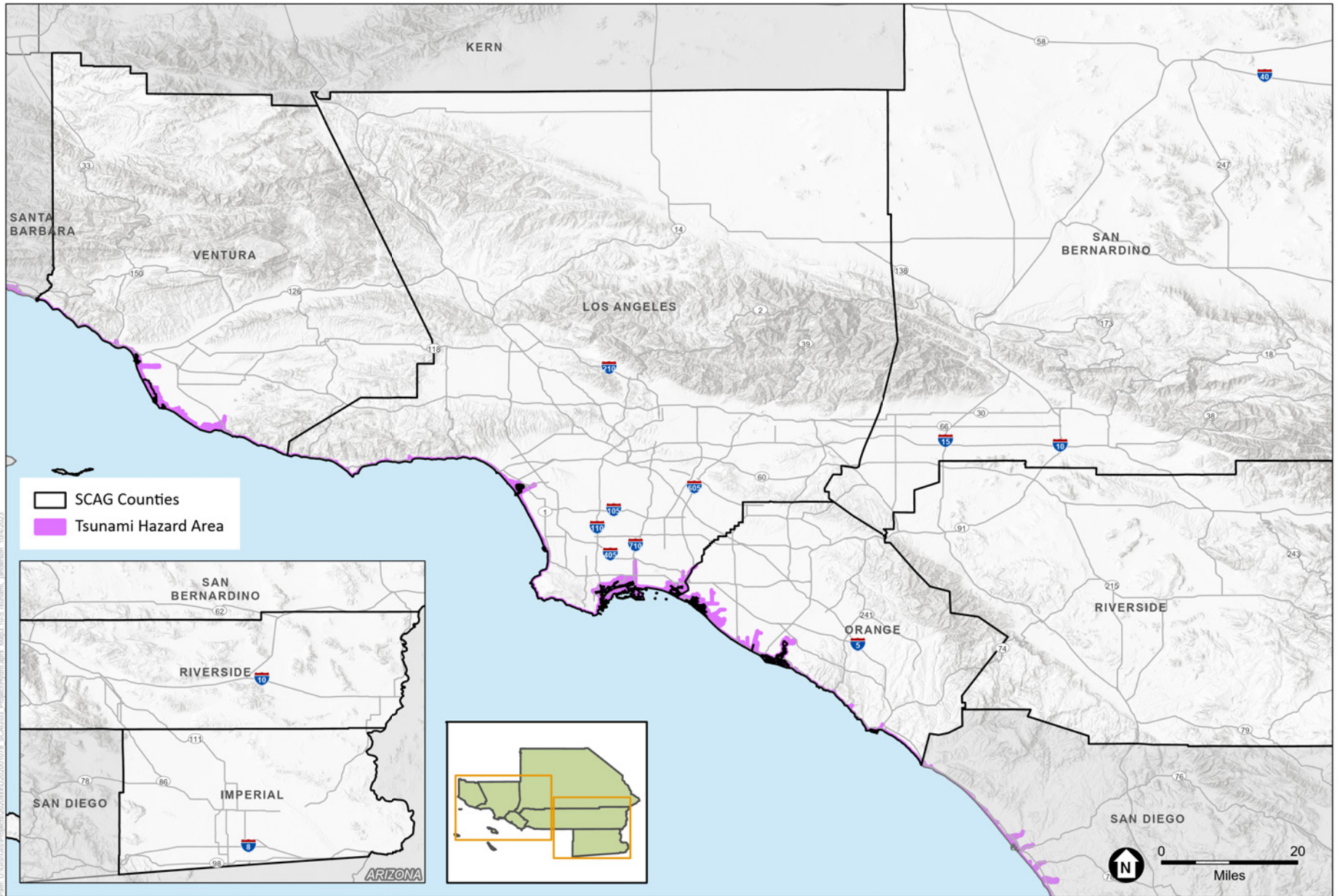




SOURCE: Pacific Institute, 2009

Connect SoCal 2024 PEIR

Map 3.10-4
Areas Vulnerable to Sea Level Rise

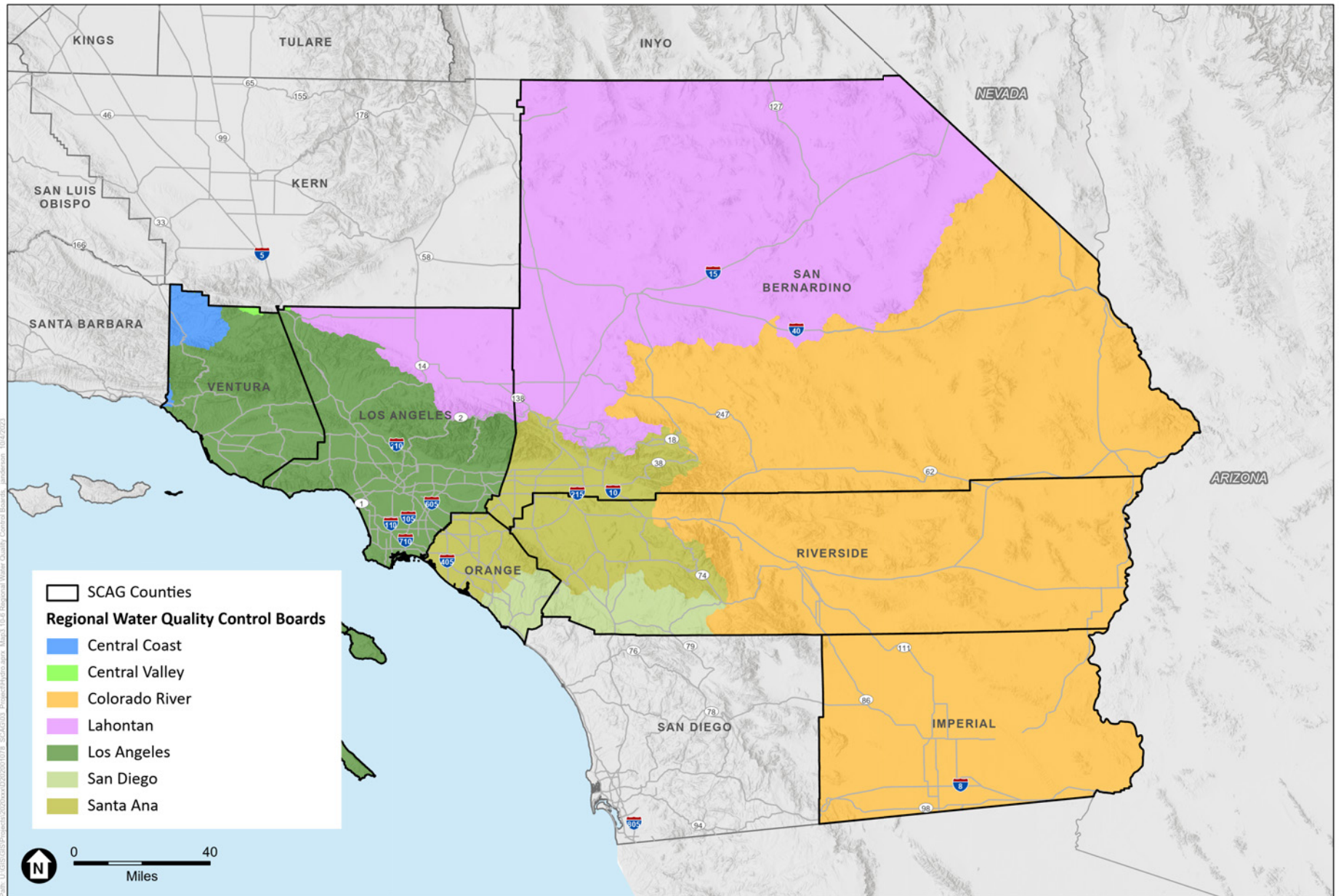


SOURCE: CGS, 2022

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Map 3.10-5
Areas Susceptible to Tsunamis





SOURCE: State Water Resources Control Board, 2019

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Map 3.10-6
Regional Water Quality Control Boards



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