

2.8 **Geology, Soils, and Mineral Resources**

This section evaluates the potential impacts related to geology, soils, and mineral resources resulting from adoption and implementation of the proposed Cannabis Program. It includes a description of geology, soils, and mineral resources and analysis of potential environmental impacts.

No comment letters regarding geology, soils, or mineral resources were received in response to the notice of preparation (NOP) or during the scoping meeting. All comments received in response to the NOP are presented in Appendix A of this PEIR.

A summary of impacts evaluated in this section is provided in Table 2.8.1.

Table 2.8.1 Geology, Soils, and Mineral Resources Summary of Impacts

Issue Number	Issue Topic	Project Direct Impact	Project Cumulative Impact	Impact after Mitigation
1	Exposure to Seismic-Related Hazards	Alternative 1: No Impact Alternatives 2–5: Less than Significant	Alternative 1: No Impact Alternatives 2–5: Less than Significant	Alternative 1: No Impact Alternatives 2–5: Less than Significant
2	Soil Erosion or Topsoil Loss	Alternatives 1–5: Less than Significant	Alternatives 1–5: Less than Significant	Alternatives 1–5: Less than Significant
3	Soil Stability	Alternatives 1–5: Less than Significant	Alternatives 1–5: Less than Significant	Alternatives 1–5: Less than Significant
4	Expansive Soils	Alternative 1: No Impact Alternatives 2–5: Less than Significant	Alternative 1: No Impact Alternatives 2–5: Less than Significant	Alternative 1: No Impact Alternatives 2–5: Less than Significant
5	Unique Geologic Features	Alternative 1: No Impact Alternatives 2–5: Less than Significant	Alternative 1: No Impact Alternatives 2–5: Less than Significant	Alternative 1: No Impact Alternatives 2–5: Less than Significant

2.8.1 **Existing Conditions**

2.8.1.1 ***Regional Geology***

San Diego County is located along the Pacific Rim, which is an area characterized by island arcs with subduction zones forming deep oceanic trenches and mountain ranges on land with active volcanoes and earthquakes (County of San Diego 2009). As a result of this, there are 4 general rock types found within the county:

- (1) Cretaceous age crystalline rocks including granites, diorites, and gabbros and Upper Jurassic metavolcanics, which underlie most of the mountainous terrain in the central portion of the County,
- (2) Mesozoic Age metamorphic rocks include marble, schist, and gneiss outcrops that are found in the western foothills and mountains of the Peninsular Ranges and in the desert east of the mountains,

- (3) Tertiary Age sedimentary rocks include sandstone, conglomerate, and mudstone and are found in the western portion of the County, as well as in the eastern portion of the desert basin, and
- (4) Recent alluvium, including sand, gravel, silt, and clay are found in river and stream valleys, around lagoons, in intermountain valleys, and in the desert basins (San Diego County 2009).

San Diego County has 3 distinctive geographic regions, according to the County of San Diego General Plan Update (2009)—(1) low-lying coastal plain, (2) mountainous Peninsular Range, and (3) desert basin (Salton Trough)—which are discussed further below.

2.8.1.2 Local Geology and Topography

Coastal Plain

The coastal plain ranges in elevation from sea level to approximately 600 feet above mean sea level (amsl) and is characterized by marine and nonmarine sedimentary rock overlying metamorphic rock (County of San Diego 2009). The sedimentary units most common to the coastal plain region include sediments from ancient river courses, lagoonal and nonmarine terrace deposits, marine deposits, fluvial sedimentary rocks, and other rock formations (County of San Diego 2009).

Peninsular Range

The Peninsular Range is divided into a lower and upper area. The lower area spans an elevation from 600 feet to 2,000 feet amsl and is characterized by rolling to hilly uplands that contain narrow winding valleys and are traversed by several rivers. The foothills at the base of these rolling hills contain various urban, suburban, and rural land uses, including the communities of Bonsall, Fallbrook, Ramona, Lakeside, Crest/Dehesa, Valle de Oro, Spring Valley, and Otay (County of San Diego 2009). The upper area spans an elevation of 2,000 feet to 6,000 feet amsl and is characterized by steep mountains comprised of granitic boulders, chaparral vegetation, evergreen and temperate forests, and desert chaparral (County of San Diego 2009).

The Peninsular Range is substantially comprised of igneous rock formed from the cooling of magma deep within the earth's crust. Younger sedimentary rocks occur in various regions, along with alluvial and alluvial fan deposits in the intermountain valleys. The Peninsular Range region also includes sandstone, siltstone, and conglomerate; gravels; and metasedimentary rocks (County of San Diego 2009).

Desert Basin

The eastern area of the county is a desert climate, and elevations range from sea level to approximately 3,000 feet amsl, with the topography that includes mountains, alluvial fans, and desert (County of San Diego 2009). This area includes the Anza-Borrego Desert State Park, and development includes Borrego Springs, Ocotillo Wells, and Shelter Valley (County of San Diego 2009). The Salton Trough within the desert basin area is filled with sediments up to 5 miles in thickness and is comprised of conglomerate and alluvium (County of San Diego 2009).

2.8.1.3 Groundwater

The county overlies a complex groundwater system that varies throughout the region but generally has 3 categories of aquifers: fractured rock aquifers, and alluvial and sedimentary aquifers (County of San Diego 2009). The coastal zone is mostly supplied with imported water from member agencies of the San Diego County Water Authority, and the remaining portion of the county (approximately 65 percent) is dependent on groundwater resources (County of San Diego 2009). For further information regarding groundwater, see Section 2.11, "Hydrology and Water Quality," of this PEIR.

2.8.1.4 Subsidence

Land subsidence is the gradual settling or sinking of an area with very little horizontal motion. Subsidence can be induced by both natural and human phenomena. Natural phenomena include shifting of tectonic plates and dissolution of limestone, resulting in sinkholes. Subsidence related to human activity includes pumping groundwater, oil, and gas from underground reservoirs; collapse of underground mines; drainage of wetlands; and soil compaction.

The underlying geologic formations in the county are mostly granitic and thus have a very low potential of subsidence; Borrego Valley has recorded minor subsidence from groundwater depletion that has not caused damage (County of San Diego 2009).

2.8.1.5 Expansive Soils

Expansive soils (also known as shrink-swell soils) are soils that contain expansive clay minerals that can absorb significant amounts of water. The presence of these clay minerals makes the soil prone to large changes in volume in response to changes in water content. When an expansive soil becomes wet, water is absorbed and it increases in volume, and as the soil dries, it contracts and decreases in volume. This repeated change in volume over time can produce enough force and stress on buildings, underground utilities, and other structures to damage foundations, pipes, and walls.

Areas of highly expansive soils occur predominantly in the coastal plains and are also found in valleys and on slopes in the foothills, specifically near Ramona, Escondido, Rainbow, and northeast of Vista, as well as mountains of the Peninsular Range region, and to a lesser extent the desert. (County of San Diego 2009: Figure 2.6-4). Expansive soils in San Diego County are presented in Figure 2.8.1, which is presented at the end of this section.

2.8.1.6 Mass Wasting and Landslides

Mass wasting refers to the collective group of processes that characterize down-slope movement of rock and unconsolidated sediment overlying bedrock. These processes include landslides, slumps, rockfalls, flows, and creeps. Many factors contribute to the potential for mass wasting, including geologic conditions, as well as the drainage, slope, and vegetation of the site.

Along coastal bluffs, landslides have occurred within the incorporated areas of the county, and previous landslides and landslide-prone areas are mostly located in the western portion of the unincorporated county. Landslides have also occurred in the eastern part of the county,

although they are less prevalent (County of San Diego 2009). The county was screened to determine the risks of landslides in the Multi-Jurisdictional Hazard Mitigation Plan, the analysis of which indicated that high risk areas could potentially affect 11,000 people in urbanized areas, 3,000 people in rural areas, and less than 100 commercial buildings and other critical facilities. Areas susceptible to landslides in San Diego County are presented in Figure 2.8.2, which is presented at the end of this section. The analysis noted that this is not comparable to the numbers of people exposed to earthquake hazards (County of San Diego 2009).

2.8.1.7 Seismicity

Most earthquakes originate along fault lines. A fault is a fracture in the earth's crust along which rocks on one side are displaced relative to those on the other side due to shear and compressive crustal stresses. Most faults are the result of repeated displacement that may have taken place suddenly or by slow creep (Bryant and Hart 2007). The state of California has a classification system that designates faults as either active, potentially active, or inactive, depending on how recently displacement has occurred along them. Faults that show evidence of movement within the last 11,000 years (the Holocene geologic period) are considered active, and faults that have moved between 11,000 and 1.6 million years ago (comprising the later Pleistocene geologic period) are considered potentially active.

The seismicity of San Diego County is most prominently defined by the San Andreas Fault zone, which separates two tectonic plates of the earth's crust: the North American Plate and the Pacific Plate. The movement of these 2 plates shifting against one another is the driving force of fault ruptures on the west coast of California, the largest of which is the San Andreas Fault (County of San Diego 2009). According to the County General Plan Update EIR, a number of faults are parallel to the San Andreas, including the active San Jacinto, Elsinore, and Rose Canyon Fault zones, which each traverse through San Diego County and are shown in Figure 2.8.3, which is presented at the end of this section. These faults and other faults within southern California have resulted in a large potential for seismicity throughout most of Southern California (County of San Diego 2009). These faults are listed in Table 2.8.2, which is presented at the end of this section.

Seismic hazards resulting from earthquakes include surface fault rupture, ground shaking, and liquefaction. Each of these potential hazards is discussed below.

Surface Fault Rupture

Surface rupture is the surface expression of movement along a fault. Structures built over an active fault can be torn apart if the ground ruptures. The potential for surface rupture is based on the concepts of recency and recurrence. Surface rupture along faults is generally limited to a linear zone a few meters wide. The Alquist-Priolo Earthquake Fault Zoning Act (see the "Regulatory Framework" section below) was created to prohibit the location of structures designed for human occupancy across, or within 50 feet of, an active fault, thereby reducing the loss of life and property from an earthquake.

Faults with designated Alquist-Priolo Earthquake Fault Zones within the county are the Elsinore Fault, north of Pala, Palomar Mountain, Pauma Valley, Lake Henshaw, Julian, Banner Canyon, Mason Valley, Vallecito Valley, and Carrizo Valley; the Earthquake Valley Fault, in the San Felipe Valley and Sentenac Canyon; and the San Jacinto Fault/Coyote Creek Fault, in the Borrego Valley and Ocotillo Wells (County of San Diego 2009).

According to the County's General Plan Update EIR, the unincorporated urbanized areas of the county are located away from active fault zones, which are the San Jacinto Fault and Elsinore Fault (County of San Diego 2009).

Ground Shaking

The intensity of seismic shaking, or strong ground motion, during an earthquake is dependent on the distance and direction from the epicenter of the earthquake, the magnitude of the earthquake, and the geologic conditions of the surrounding area. Ground shaking could potentially result in the damage or collapse of buildings and other structures. Earthquake intensities are described in Table 2.8.3, which is presented at the end of this section.

The California Building Code (CBC) categorizes different seismic design categories based on the building occupancy type and the severity of the probable earthquake ground shaking at the site (County of San Diego 2009). There are 6 seismic design categories, ranging from A through F (A being the category with the least seismic potential and F being the category with the highest seismic potential). All of San Diego County is located within seismic design categories E and F (County of San Diego 2009).

Liquefaction and Lateral Spreading

Liquefaction is a phenomenon in which loose, saturated, granular soil deposits lose a significant portion of their shear strength because of excess pore water pressure buildup. An earthquake typically causes an increase in pore water pressure and subsequent liquefaction. The soils behave like a liquid during seismic shaking and resolidify when shaking stops. The potential for liquefaction is highest in areas with high groundwater and loose, fine, sandy soils at depths of less than 50 feet.

As stated in the County General Plan Update EIR, liquefaction is not known to have occurred historically in the county, but liquefaction has occurred in Imperial Valley in earthquakes with a magnitude of 6 or higher, and there may be a potential for liquefaction to occur in areas with loose, sandy soils combined with a shallow groundwater table (typically associated with alluvial river valleys and floodplains). Primary areas for potential liquefaction include the lower San Dieguito, Sweetwater, and San Luis Rey River Valleys; Jacumba, Borrego Valley near the Borrego Sink; and part of Ramona. (County of San Diego 2009). Potential liquefaction zones in San Diego County are shown in Figure 2.8.4, which is presented at the end of this section.

Liquefaction may also lead to lateral spreading. Lateral spreading (also known as expansion) is the horizontal movement or spreading of soil toward an "open face," such as a streambank, the open side of fill embankments, or the sides of levees. It often occurs in response to liquefaction of soils in an adjacent area. The potential for failure from lateral spreading is highest in areas where there is a high groundwater table, where there are relatively soft and recent alluvial deposits, and where creek banks are relatively high.

2.8.1.8 *Mineral Resources*

The California Department of Conservation Division of Mines and Geology has developed guidelines for the classification and designation of mineral lands, known as Mineral Resource Zones (MRZs), and retains publications of the Surface Mining and Reclamation Act (SMARA) Mineral Land Classification Project dealing with mineral resources in California.

MRZ-1 areas are areas where adequate geologic information indicates that no significant mineral deposits are present or where there is little likelihood of their presence, and 6 areas in the unincorporated county are designated as MRZ-1: 5 are located in the North Metro Community Planning Area (CPA), just north of Escondido, and 1 is at the intersection of State Route (SR) 94 and SR 54, in the Rancho San Diego area of Valle de Oro CPA (County of San Diego 2009).

MRZ-2 areas are areas underlain by mineral deposits where geologic information shows that significant mineral resources are present and would typically include an operating mine; in 1982, over 20 areas in the unincorporated county had aggregate deposits, 19 of which are still economically extractable, and additional deposits have been classified or reclassified in the unincorporated area of the county since 1982 (County of San Diego 2009).

MRZ-3 areas are areas that contain known mineral deposits that could qualify as mineral resources, and most of the land in the Western San Diego Production-Consumption (P-C) Zone, which extends from the southern Camp Pendleton boundary south to the international border, and from the Pacific Ocean to an irregular boundary approximately one-third of the way across the county, is classified as MRZ-3 (County of San Diego 2009).

MRZ-4 areas are areas where geologic information is inconclusive on the presence or absence of mineral resources; in other words, lands classified as MRZ-4 do not imply that there is little likelihood for mineral resources but rather that there is a lack of knowledge regarding mineral resources (County San Diego 2009).

Uncategorized zones are the remaining lands in the county located outside the Western San Diego County P-C Zone. The Mineral Resource Zones in San Diego County are shown in Figure 2.8.5, which is presented at the end of this section.

The following general categories of mineral resources are important to the county:

- construction materials, including sand, gravel, and crushed rock;
- industrial and chemical mineral materials, including limestone, dolomite, and marble, specialty sands, clays, phosphate, borates and gypsum, feldspar, talc, building stone, and dimension stone; and
- metallic and rare minerals, including precious metals (silver, platinum), iron and other ferro-alloy metals, copper, lead, zinc gemstones and semiprecious materials, and optical-grade calcite.

These mineral resources serve various public, commercial, scientific, and recreational purposes used in both private and public development projects, and local extraction sites are valuable assets used to help facilitate the continual growth of the region (County of San Diego County 2009). Mineral resources in San Diego County are shown in Figure 2.8.6, which is presented at the end of this section.

2.8.2 Regulatory Framework

2.8.2.1 *Federal*

National Earthquake Hazards Reduction Act

In October 1977, US Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes in the United States. To accomplish this, the act established the National Earthquake Hazards Reduction Program (NEHRP). The mission of NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. The NEHRP designates the Federal Emergency Management Agency as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities.

2.8.2.2 *State*

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (Alquist-Priolo Act; Public Resources Code [PRC] Section 2621–2630) intends to reduce the risk to life and property from surface fault rupture during earthquakes by regulating construction in active fault corridors and by prohibiting the location of most types of structures intended for human occupancy across the traces of active faults. The act defines criteria for identifying active faults, giving legal support to terms such as “active” and “inactive,” and establishes a process for reviewing building proposals in Earthquake Fault Zones. Under the Alquist-Priolo Act, faults are zoned, and construction along or across these zones is strictly regulated if they are “sufficiently active” and “well-defined.” A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for purposes of the act as within the last 11,000 years). A fault is considered well-defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment (Bryant and Hart 2007). Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards.

Seismic Hazards Mapping Act

The intention of the Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) is to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including ground shaking, liquefaction, and seismically induced landslides. The act’s provisions are similar in concept to those of the Alquist-Priolo Act: The state is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones. Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development.

California Building Code

The CBC (California Code of Regulations, Title 24) is based on the International Building Code. The CBC has been modified from the International Building Code for California conditions with more detailed and more stringent regulations. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. The CBC identifies seismic factors that must be considered in structural design. Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, and Chapter 18A regulates construction on unstable soils, such as expansive soils and areas subject to liquefaction. Appendix J of the CBC regulates grading activities, including drainage and erosion control. The CBC contains a provision that provides for a preliminary soil report to be prepared to identify “the presence of critically expansive soils or other soil problems which, if not corrected, would lead to structural defects” (CBC Chapter 18, Section 1803.1.1.1).

State Water Code

On-site wastewater treatment systems (OWTS) are regulated by the State Water Code Section 13282, which allows the Regional Water Quality Control Board (RWQCB) to authorize a local public agency to issue permits for and to regulate OWTS to ensure that systems are adequately designed, located, sized, spaced, constructed, and maintained (County of San Diego 2009).

State Water Resources Control Board Regulations for Cannabis Cultivation

Permitting of waste discharges to surface waters from commercial cannabis cultivation is regulated under the State Water Resources Control Board (SWRCB) Cannabis Policy under Order WQ 2023-0102-DWQ, General Waste Discharge Requirements and Waiver of Waste Discharge Requirements for Discharges of Waste Associated with Cannabis Cultivation Activities. A summary of erosion and sediment control requirements is provided below. See Section 2.11, “Hydrology and Water Quality,” for additional details on this order.

The Cannabis General Order provides a statewide tiered approach for permitting discharges and threatened discharges of waste from commercial cannabis cultivation and associated activities. The 2 tiers are as follows:

- Tier 1 outdoor commercial cultivation activities disturb an area equal to or greater than 2,000 square feet and less than 1 acre (43,560 square feet).
- Tier 2 outdoor commercial cultivation activities disturb an area equal to or greater than 1 acre.

For the purposes of this regulation, land disturbances are areas where natural conditions have been modified in a way that may result in an increase in turbidity in water discharged from the site. Land disturbance includes all activities associated with developing or modifying land for commercial cannabis cultivation–related activities or access. Land disturbance activities include construction of roads, buildings, and water storage areas, as well as excavation, grading, and site clearing.

Tier 1 and Tier 2 enrollees must characterize the risk designation based on the slope of disturbed areas and the proximity to a water body. Enrollees must comply with the riparian

setback and slope limits associated with the following low-, moderate-, and high-risk classifications:

- Low risk: A commercial cannabis cultivation site is classified as low risk if no part of the disturbed area is located on a slope of 30 percent or greater. Commercial cannabis cultivators associated with low-risk sites shall register as low risk and submit a site management plan.
- Moderate risk: A commercial cannabis cultivation site is classified as moderate risk if any part of the disturbed area is located on a slope greater than 30 percent and less than 50 percent. Commercial cannabis cultivators associated with moderate-risk sites shall register as moderate risk and submit a site erosion and sediment control plan.
- High risk: A commercial cannabis cultivation site is classified as high risk if any part of the disturbed area exists within the riparian setback limits. Commercial cannabis cultivators associated with high-risk sites shall register as high risk, submit a disturbed area stabilization plan, and address the compliance issue as described below. Because such commercial cannabis cultivators pose a higher risk to water quality and will require a higher level of RWQCB oversight, they are subject to higher application and annual fees. When the commercial cannabis cultivation site is reconfigured to comply with the riparian setbacks, the commercial cannabis cultivator can request that the RWQCB reclassify the site to a lower risk level and allow a lower annual fee to be assessed.

To obtain coverage under the waiver or enroll under the general order, the discharger is required to submit an online application, application fee, and relevant technical reports. Technical report requirements are based on tier and risk level. Pursuant to SWRCB Order WQ 2023-0102-DWQ, moderate- and high-risk sites are required to provide the following plans to address soil erosion (SWRCB 2023).

Site Erosion and Sediment Control Plan

A site erosion and sediment control plan describes how the commercial cannabis cultivator will implement the site erosion and sediment control requirements listed in Attachment A of SWRCB Order WQ 2023-0102-DWQ. The report must include an analysis of slope stability and is subject to approval by the RWQCB. When required, the site erosion and sediment control plan is to be prepared by a qualified individual (i.e., a registered professional according to the cannabis policy requirements).

Disturbed Area Stabilization Plan

A disturbed area stabilization plan describes how best management practices (BMPs) will be implemented to achieve the goal of stabilizing the disturbed area to minimize the discharge of sediment off-site and complying with the riparian setback requirements. The report must be approved by the RWQCB executive officer before implementation. When required, the disturbed area stabilization plan shall be prepared by a qualified professional.

Wastewater Disposal Associated with Industrial Waste or Indoor Commercial Cannabis Cultivation

Term 27 of Attachment A of SWRCB Order WQ 2023-0102-DWQ prohibits discharges of wastewater from commercial cannabis manufacturing activities defined in Business and Professions Code Section 26100, indoor grow operations, and other industrial wastewater to

an on-site wastewater treatment system (e.g., septic tank and associated disposal facilities), to surface water, or to land.

SWRCB Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems

OWTS, commonly known as septic systems, primarily treat domestic wastewater and employ subsurface disposal. On June 19, 2012, SWRCB adopted Resolution No. 2012-0032, adopting the Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems (OWTS Policy). The OWTS Policy uses a risk-based, tiered approach for the regulation and management of OWTS installations and replacements and sets the level of performance and protection expected from OWTS. Most notably, the policy establishes a framework that promotes local agency management plans developed for local governments to implement.

Surface Mine Reclamation Act of 1975 (SMARA)

The Surface Mining and Reclamation Act of 1975 (SMARA, PRC, Sections 2710–2796) provides a comprehensive surface mining and reclamation policy for the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. SMARA also encourages the production, conservation, and protection of the state’s mineral resources.

2.8.2.3 Local

San Diego County General Plan

The San Diego County General Plan contains policies associated with geologic hazards and soils within its Safety Element, as well as policies associated with mineral resources within its Conservation and Open Space Element. The following policies are relevant to the Cannabis Program (County of San Diego 2021, 2011):

- **Policy S-8.1: Development Location.** Locate development in areas where the risk to people or resources is minimized. In accordance with the California Department of Conservation Special Publication 42, require development be located a minimum of 50 feet from active or potentially active faults, unless an alternative setback distance is approved based on geologic analysis and feasible engineering design measures adequate to demonstrate that the fault rupture hazard would be avoided.
- **Policy S-8.2: Engineering Measures to Reduce Risk.** Require all development to include engineering measures to reduce risk in accordance with the California Building Code, Uniform Building Code, and other seismic and geologic hazard safety standards, including design and construction standards that regulate land use in areas known to have or potentially have significant seismic and/or other geologic hazards.
- **Policy S-9.1: Landslide Risks.** Direct development away from areas with high landslide, mudslide, or rockfall potential when engineering solutions have been determined by the County to be infeasible.
- **Policy S-9.2: Risk of Slope Instability.** Prohibit development from causing or contributing to slope instability.

- **Policy COS-9.2: Impacts of Development.** Require development to minimize impacts to unique geological features from human related destruction, damage, or loss.
- **Policy COS-10.1: Siting of Development.** Encourage the conservation (i.e., protection from incompatible land uses) of areas designated as having substantial potential for mineral extraction. Discourage development that would substantially preclude the future development of mining facilities in these areas. Design development or uses to minimize the potential conflict with existing or potential future mining facilities. For purposes of this policy, incompatible land uses are defined by SMARA Section 3675.
- **Policy COS-10.2: Protection of State-Classified or Designated Lands.** Discourage development or the establishment of other incompatible land uses on or adjacent to areas classified or designated by the State of California as having important mineral resources (MRZ-2), as well as potential mineral lands identified by other government agencies. The potential for the extraction of substantial mineral resources from lands classified by the State of California as areas that contain mineral resources (MRZ-3) shall be considered by the County in making land use decisions.

San Diego County Special Studies Zones

The County has established special study zones that include late-Quaternary faults mapped by the California Division of Mines and Geology (now named California Geological Survey, or CGS) in the county (County of San Diego 2009). Late-Quaternary faults (movement during the past 700,000 years) were mapped based on geomorphic evidence similar to that of Holocene faults except that tectonic features are less distinct. As indicated by the CGS, these faults may be younger, but the lack of younger overlying deposits precludes more accurate age classification. Traces of faults within special study zones are treated by the County as active unless a fault investigation can prove otherwise, and before any construction is allowed, a geologic study must be conducted to determine if any active fault lines are located on or within the vicinity of a project site (County of San Diego 2009).

San Diego County Regulatory Code

Grading, Clearing, and Watercourses Ordinance, Sections 87.101–87.717

Chapter 4 of the County Grading, Clearing, and Watercourses Ordinance (which commences at Section 87.101 of the County Regulatory Code) includes requirements for the maximum slope allowed for cut and fill slopes, for drainage terraces on cut or fill slopes exceeding 40 feet in height, for expansive soil for cuts and fills, for minimum setbacks for buildings from cut or fill slopes, and for reporting, including a soil engineer's report and a final engineering geology report by an engineering geologist, which includes specific approval of the grading as affected by geological factors (County of San Diego 2009).

Plumbing Code and OWTS Ordinance, Sections 68.301–68.361

Section 68.301 of the County Regulatory Code is the OWTS Ordinance (Title 6, Division 8, Chapter 3), which establishes the requirements for OWTS in the county. It also makes it unlawful for any person to cause or allow the disposal of sewage, human excrement, or other liquid wastes in any place or manner except through and by means of an approved plumbing and drainage system and an approved sewage disposal system installed and maintained in accordance with the provisions of Division 3 of Title 5 of the County Plumbing Code and OWTS Ordinance.

Septic Tank and Cesspool Cleaners, Section 68.601

Section 68.601 of the County Regulatory Code (Title 6, Division 8, Chapter 6) pertains to septic tank and cesspool cleaners. This code section establishes processes, fees, and requirements for the examination, cleaning, and collection of sewage from septic tanks and cesspools (County of San Diego 2009).

San Diego County Zoning Ordinance Fault Displacement Area Regulations

The County Zoning Ordinance Sections 5400–5406 implement the requirements of the Alquist-Priolo Act, which outline the allowable development, permitting requirements, and construction limitations within Fault Rupture Zones, as designated by the Alquist-Priolo Act (County of San Diego 2009). For ministerial permits (such as building permits), the Department of Planning & Development Services, Building Division requires any above-surface structure to conform to the seismic requirements of the CBC and to incorporate design recommendations contained within the soils and geologic report as required per code (County of San Diego 2009). The County prohibits any buildings or structures to be used for human occupancy to be constructed over or within 50 feet of the trace of known fault (Zoning Ordinance Section 5406), and the County generally requires geologic reports for development proposed in Alquist-Priolo Earthquake Fault Zones (Zoning Ordinance Section 5406(b)) (County of San Diego 2009).

Other specific zoning ordinance sections do the following:

- Prohibit construction of essential facilities and high occupancy structures in special studies zones as defined under the Alquist-Priolo Act or in special studies zones defined by the County of San Diego (Zoning Ordinance Section 5404).
- Require a geologic report for other development proposed in special studies zones as defined under the Alquist-Priolo Act or in special studies zones defined by the County of San Diego (Zoning Ordinance Section 5406).
- Prohibit new construction of structures to be used for hazardous waste storage and/or human or animal occupancy over or within 50 feet of the trace of an active known fault, with the exception of single-family wood frame dwellings not exceeding 2 stories in height, built or located as part of a development of less than four dwellings and mobile homes wider than eight feet (Zoning Ordinance Sections 5406(c) and (d)).
- Delineate special studies zones along active faults as new geologic information becomes available. These special study zones shall be administered in the same manner as those delineated by the State of California.

2.8.3 Analysis of Project Effects and Determination of Significance

2.8.3.1 *Thresholds of Significance*

According to Appendix G of the State CEQA Guidelines, a geology and soils impact is considered significant if implementation of the Cannabis Program would do any of the following:

- directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving the rupture of a known earthquake fault; strong seismic shaking; seismic-related ground failure, including liquefaction; or landslides;

- result in substantial soil erosion or the loss of topsoil;
- locate project facilities on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- locate project facilities on expansive soil, creating substantial direct or indirect risks to property;
- have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water; or
- directly or indirectly destroy a unique geologic feature.

A mineral resources impact is considered significant if implementation of the Cannabis Program would do any of the following:

- result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or
- result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

2.8.3.2 *Issues Not Discussed Further*

Septic Systems

Project-specific analyses would be required for future cannabis sites to determine if the site is capable of supporting an OWTS. Future cannabis sites would be required to comply with all applicable federal, state, and local regulations related to septic tanks and wastewater disposal. Term 27 of Attachment A of SWRCB Order WQ 2023-0102-DWQ prohibits discharges of wastewater from commercial cannabis manufacturing activities defined in Business and Professions Code Section 26100, indoor grow operations, and other industrial wastewater to an OWTS (e.g., septic tank and associated disposal facilities), to surface water, or to land. The San Diego County OWTS Ordinance is described in Section 68.301 of the San Diego County Regulatory Code. Compliance with such regulations would reduce the potential for septic systems to be located in soils incapable of supporting such systems. Therefore, no impacts associated with septic systems would occur, and this issue is not evaluated further.

Mineral Resources

San Diego County contains a variety of mineral resources, with minerals playing an important role in the county's economy. However, commercial cannabis operations are similar to agricultural activities that would not render the locations on which they occur unavailable for future mineral extraction (i.e., conversion of land area with paved roadways, residences, and other structures that commit the land to a developed condition). Mining extraction and new licensed commercial cannabis cultivation could occur on the same or contiguous parcels. Implementation of the Cannabis Program would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of that state and would not result in the loss of availability of a locally important mineral resource recovery site

delineated on a local general plan, specific plan, or other land use plan. Therefore, no impacts associated with mineral resources would occur, and this issue is not evaluated further.

2.8.3.3 Approach to Analysis

The following program-level analysis is based on generalized geology, soils, and mineral resources mapping and available data. The footprint and design details of any site-specific commercial cannabis projects are not known at this time. Specific requirements of existing laws and regulations described in Section 2.8.2, "Regulatory Framework," are assessed for their ability to avoid or reduce the exposure of people or structures to substantial adverse effects. The examination of geology, soils, and mineral resources is based on information obtained from reviews of:

- available literature, including documents published by the County, state, and federal agencies, and published information dealing with geotechnical conditions in the San Diego area and
- applicable elements from the County General Plan.

2.8.3.4 Issue 1: Exposure to Seismic-Related Hazards

Guidelines for Determination of Significance

According to Appendix G of the State CEQA Guidelines and the *County of San Diego Guidelines for Determining Significance: Geologic Hazards*, the proposed Cannabis Program would have a significant impact if it would expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist or based on other substantial evidence of a known fault; strong seismic ground shaking; seismic-related ground failure, including liquefaction or landslides.

Specifically, the project would result in a significant impact from fault rupture if:

- a. The project proposes any building or structure to be used for human occupancy over or within 50 feet of the trace of an Alquist-Priolo Fault or County Special Study Zone Fault.
- b. The project proposes the following uses within an Alquist-Priolo Zone which are prohibited by the County:
 - i. Uses containing structures with a capacity of 300 people or more. Any use having the capacity to serve, house, entertain, or otherwise accommodate 300 or more persons at any one time.
 - ii. Uses with the potential to severely damage the environment or cause major loss of life. Any use having the potential to severely damage the environment or cause major loss of life if destroyed, such as dams, reservoirs, petroleum storage facilities, and electrical power plants powered by nuclear reactors.
 - iii. Specific civic uses. Police and fire stations, schools, hospitals, rest homes, nursing homes, and emergency communication facilities.

The project would also result in a significant impact from ground shaking if the project site is located within Seismic Design Category E and F of the CBC and the project does not conform to the CBC.

The project would have the potential to expose people or structures to substantial adverse effects from liquefaction if:

- a. The project site contains potentially liquefiable soils;
- b. The potentially liquefiable soils are saturated or have the potential to become saturated; or
- c. In-situ soil densities are not sufficiently high to preclude liquefaction.

The project would result in a significant impact from landslide risk if:

- a. The project site would expose people or structures to substantial adverse effects, including the risk of loss, injury, or death involving landslides;
- b. The project is located on a geologic unit or soil that is unstable, or would become unstable as a result of the project, potentially resulting in an on- or off-site landslide; or
- c. The project site lies directly below or on a known area subject to rockfall which would result in collapse of structures.

Impact Analysis

As described in Section 1.6.1, "Project Components," the proposed Cannabis Program would allow for the development of the following commercial cannabis uses in select areas of the unincorporated county: storefront, non-storefront retail, and consumption lounges; cultivation facilities; distribution facilities; manufacturing facilities; microbusinesses; testing laboratories; and temporary events.

Natural geologic processes that represent a hazard to life, health, or property are considered geologic hazards. Natural geologic hazards that affect people and property in San Diego County include earthquakes, which can cause surface fault rupture, ground shaking, landslides and liquefaction. As discussed below, these seismic hazards pose a high potential for causing widespread damage. Future cannabis projects under the Cannabis Program must address seismic hazards. Seismic hazard regulations are in place at the state and County levels that reduce risks associated with seismic-related hazards through avoidance or building standards. These adopted guidelines include the Alquist-Priolo Earthquake Fault Zoning Act, as described above in Section 2.8.2, "Regulatory Framework." The CBC contains specific provisions for structures located in seismic zones. To ensure that these safety measures are met, the CBC employs a permit system based on hazard classification. Buildings within San Diego County must conform to the Seismic Design Category E and F requirements of the CBC, which are the requirements for the most active seismic zone.

In addition, it is important to note that environmental impact analyses under CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents unless the proposed project might cause or risk exacerbating environmental hazards or conditions that already exist (State CEQA Guidelines, Section 15126.2(a)). In those specific instances, it is the project's impact on the environment and not the environment's impact on the project that compels an evaluation of how future residents or users may be

affected by exacerbated conditions (*California Building Industry Association v. Bay Area Air Quality Management District* [2015] 62 Cal.4th 369).

New commercial cannabis activities permitted and licensed under the proposed Cannabis Program may include new structures and additional people in a region of existing seismic hazards, such as fault rupture. However, new buildings associated with these commercial cannabis cultivation activities would be constructed in accordance with the seismic design requirements of the most recent CBC, Alquist-Priolo Act, and County standards. The CBC standards require the design of structures to consider seismic hazards present at the site and the intended use, or nature of occupancy, of the structure. For example, Chapter 16, “Structural Design,” of the most recent CBC identifies both general building structural design requirements and specific seismic safety design requirements.

The Alquist-Priolo Act requires that buildings intended for human occupancy are located at least 50 feet away from an active fault trace. Requirements associated with the CBC, Alquist-Priolo Act, County Special Studies Zones, County Zoning Ordinance for Fault Displacement Area Regulations, and any other applicable standards contain building specification and siting requirements that avoid the risks of loss, injury, or death resulting from seismic hazards, such as fault rupture and seismic ground shaking. In addition, commercial cannabis uses are not intended for human occupancy, such as residential housing, which might otherwise increase on-site risks if located within 50 feet of an active fault trace. Construction of commercial cannabis cultivation uses would not be expected to exceed 20 feet in depth. For these reasons, new licensed commercial cannabis site construction and operations would not create new seismic events or exacerbate existing seismic hazards because limited ground disturbance associated with commercial cannabis uses would not alter seismic and fault conditions in the region.

Compliance with these standards is consistent with San Diego County General Plan Policies S-8.1 and S-8.2, which require minimum setbacks from active known fault lines and engineering measures by requiring all new buildings and structures to comply with the uniform construction codes and to be located, designed, constructed, and managed to minimize geologic-related hazards, such as seismic-related hazards.

Alternative 1: No Project—Retention of Current Cannabis Regulations

Under Alternative 1, the Cannabis Program would not be adopted. The existing 5 commercial cannabis facilities in the unincorporated areas of El Cajon, Escondido, and Ramona would be allowed to continue to operate under the existing ordinances as well as expand their existing facilities and operations to a total of up to 50,000 square feet of total building area between the five facilities. Because there would be no changes to existing conditions, this alternative would not expose people or structures to seismic-related hazards.

There would be no impact associated with seismic hazards under Alternative 1.

Alternative 2: Proposed Project—Cannabis Program Consistent with State Requirements

The Cannabis Program under Alternative 2 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, “Project Description, Location, and Environmental Setting,” for a full list of development assumptions). Alternative 2 would include 600-foot buffers between cannabis uses and certain state-defined sensitive uses, including schools, daycares, and youth centers.

New buildings would be constructed in accordance with the seismic design requirements of the most recent CBC, Alquist-Priolo Act, and County standards. The CBC standards require the design of structures to consider seismic hazards present at the site and the intended use, or nature of occupancy, of the structure. The Alquist-Priolo Act requires that buildings intended for human occupancy are located at least 50 feet away from an active fault trace.

Requirements associated with the most recent CBC, Alquist-Priolo Act, and County standards contain building specification and siting requirements that avoid the risks of loss, injury, or death resulting from seismic hazards. New licensed commercial cannabis site construction and operations would not create new seismic events or exacerbate existing seismic hazards because limited ground disturbance associated with commercial cannabis cultivation would not alter seismic and fault conditions in the region.

This impact would be less than significant under Alternative 2.

Alternative 3: Cannabis Program with Expanded County Regulations

The Cannabis Program under Alternative 3 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, "Project Description, Location, and Environmental Setting," for a full list of development assumptions). Alternative 3 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities. Advertising of cannabis on billboards would also be prohibited within 1,000 feet of the expanded sensitive uses.

As identified under Alternative 2, new buildings would be constructed in accordance with the seismic design requirements of the most recent CBC, Alquist-Priolo Act, and County standards. Requirements associated with the most recent CBC, Alquist-Priolo Act, and County standards contain building specification and siting requirements that avoid the risks of loss, injury, or death resulting from seismic hazards. New licensed commercial cannabis site construction and operations would not create new seismic events or exacerbate existing seismic hazards because the limited ground disturbance associated with commercial cannabis cultivation would not alter seismic and fault conditions in the region.

This impact would be less than significant under Alternative 3.

Alternative 4: Cannabis Program with Outdoor Cannabis Cultivation Prohibition

The Cannabis Program under Alternative 4 is anticipated to accommodate up to 212 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, "Project Description, Location, and Environmental Setting," for a full list of development assumptions). Alternative 4 would allow mixed-light and indoor cannabis cultivation only when contained within a building. Alternative 4 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities.

As identified under Alternative 2, new buildings would be constructed in accordance with the seismic design requirements of the most recent CBC, Alquist-Priolo Act, and County standards. Requirements associated with the most recent CBC, Alquist-Priolo Act, and County standards contain building specification and siting requirements that avoid the risks of loss, injury, or death resulting from seismic hazards. New licensed commercial cannabis site construction and operations would not create new seismic events or exacerbate existing

seismic hazards because the limited ground disturbance associated with commercial cannabis cultivation would not alter seismic and fault conditions in the region.

This impact would be less than significant under Alternative 4.

Alternative 5: Cannabis Program with Maximum 1 Acre of Outdoor Cannabis Cultivation Canopy

The Cannabis Program under Alternative 5 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, "Project Description, Location, and Environmental Setting," for a full list of development assumptions). Alternative 5 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities. Alternative 5 also limits the size of outdoor cannabis cultivation canopy to 1 acre.

As identified under Alternative 2, new buildings would be constructed in accordance with the seismic design requirements of the most recent CBC, Alquist-Priolo Act, and County standards. Requirements associated with the most recent CBC, Alquist-Priolo Act, and County standards contain building specification and siting requirements that avoid the risks of loss, injury, or death resulting from seismic hazards. New licensed commercial cannabis site construction and operations would not create new seismic events or exacerbate existing seismic hazards because the limited ground disturbance associated with commercial cannabis cultivation would not alter seismic and fault conditions in the region.

This impact would be less than significant under Alternative 5.

2.8.3.5 Issue 2: Soil Erosion or Topsoil Loss

Guidelines for Determination of Significance

According to Appendix G of the State CEQA Guidelines, the Cannabis Program would have a significant impact if it would result in substantial soil erosion or the loss of topsoil.

Impact Analysis

Topsoil is the uppermost layer of soil, usually comprised of the top 6–8 inches below the ground surface, and topsoil erosion can be a concern because its loss disrupts the food chain and local ecosystem and erosion can increase the rate of pollutants delivered to watersheds (County of San Diego 2009).

Construction of new commercial cannabis cultivation activities permitted and licensed under the proposed Cannabis Program could involve earthwork activities that have the potential to remove topsoil and increase the potential for soil erosion. These activities may include grading, placement of fill, and excavation. New licensed commercial cannabis sites could also include construction of new facilities and would likely include clearing, grading, and excavation for new facilities, which may relate to the construction of foundations, roads and driveways, and utility trenches. New cannabis projects would be restricted to zoning districts that allow for cannabis uses. However, ultimately, these types of land-disturbance activities could create accelerated erosion and sedimentation.

New commercial cannabis activities would be subject to the County's Grading, Clearing, and Watercourses Ordinance, which includes requirements for cut and fill slopes, drainage terracing, setbacks for buildings from cut or fill slopes, and reporting requirements, including a soil engineer's report and final engineering geology report for approval of grading as affected by geological factors, as well as be subject to SWRCB Order WQ 2023-0102-DWQ, which contains requirements for soil erosion and sedimentation controls (BMPs) for soil stability and the implementation of a site erosion and sediment control plan and a disturbed area stabilization plan for higher risk sites. Examples of BMPs for soil erosion control that may be used include the use of ground cover vegetation (grasses), detention/water quality control basins, drainage control features that are rock lined and that reduce stormwater flow velocities, and other similar features. New commercial cannabis activities would also be subject to Appendix J, "Grading," of the most recent CBC, which regulates grading activities, including drainage and erosion control. Compliance with these standards is consistent with San Diego County General Plan Policy S-8.2, which requires all new buildings and structures to comply with the uniform construction codes and to be located, designed, constructed, and managed to minimize geologic-related hazards, such as soil erosion and loss of topsoil. As appropriate, geologic and soil engineering information would be required to evaluate, locate, and design development to minimize geologic hazards.

Alternative 1: No Project—Retention of Current Cannabis Regulations

Under Alternative 1, the Cannabis Program would not be adopted. The existing 5 commercial cannabis facilities in the unincorporated areas of El Cajon, Escondido, and Ramona would be allowed to continue to operate under the existing ordinances as well as expand their existing facilities and operations to a total of up to 50,000 square feet of total building area between the 5 facilities. Commercial cannabis cultivation activities would be subject to SWRCB Order WQ 2023-0102-DWQ, which contains requirements for soil erosion and sedimentation controls (BMPs) for soil stability. In addition, the County's Grading Ordinance includes requirements for cut and fill slopes, drainage terracing, setbacks for buildings from cut or fill slopes, and reporting requirements. Finally, Appendix J, "Grading," of the CBC, regulates grading activities, including drainage and erosion control.

This impact would be less than significant under Alternative 1.

Alternative 2: Proposed Project—Cannabis Program Consistent with State Requirements

The Cannabis Program under Alternative 2 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, "Project Description, Location, and Environmental Setting," for a full list of development assumptions). Alternative 2 would include 600-foot buffers between cannabis uses and certain state-defined sensitive uses, including schools, daycares, and youth centers.

Under Alternative 2, new commercial cannabis cultivation activities would be subject to SWRCB Order WQ 2023-0102-DWQ, which contains requirements for soil erosion and sedimentation controls (BMPs) for soil stability. In addition, the County's Grading Ordinance includes requirements for cut and fill slopes, drainage terracing, setbacks for buildings from cut or fill slopes, and reporting requirements. Finally, Appendix J, "Grading," of the CBC, regulates grading activities, including drainage and erosion control. Compliance with these standards would be consistent with San Diego County General Plan Policy S-8.2, which requires all new buildings and structures to comply with the uniform construction codes to minimize geologic-

related hazards. Because future licensed commercial cannabis sites would be subject to the requirements of SWRCB Order WQ 2023-0102-DWQ, the County's Grading Ordinance, and the CBC, geologic-related hazards, such as soil erosion and loss of topsoil, would be minimized.

This impact would be less than significant under Alternative 2.

Alternative 3: Cannabis Program with Expanded County Regulations

The Cannabis Program under Alternative 3 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, "Project Description, Location, and Environmental Setting," for a full list of development assumptions). Alternative 3 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities. Advertising of cannabis on billboards would also be prohibited within 1,000 feet of the expanded sensitive uses.

As discussed under Alternative 2, future licensed commercial cannabis sites would be subject to the requirements of SWRCB Order WQ 2023-0102-DWQ, the County's Grading Ordinance, and the most recent CBC, which would ensure that geologic-related hazards, such as soil erosion and loss of topsoil, would be minimized.

This impact would be less than significant under Alternative 3.

Alternative 4: Cannabis Program with Outdoor Cannabis Cultivation Prohibition

The Cannabis Program under Alternative 4 is anticipated to accommodate up to 212 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, "Project Description, Location, and Environmental Setting," for a full list of development assumptions). Alternative 4 would allow mixed-light and indoor cannabis cultivation only when contained within a building. Alternative 4 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities.

Because no outdoor cannabis cultivation uses would be allowed, potential impacts would be limited to the development of new permanent buildings to support indoor cannabis cultivation or noncultivation uses. If new cannabis uses involve development of new buildings, construction and development plans would be subject to the County's Grading Ordinance and the most recent CBC. These requirements would ensure that geologic-related hazards, such as soil erosion and loss of topsoil, would be minimized.

This impact would be less than significant under Alternative 4.

Alternative 5: Cannabis Program with Maximum 1 Acre of Outdoor Cannabis Cultivation Canopy

The Cannabis Program under Alternative 5 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, "Project Description, Location, and Environmental Setting," for a full list of development assumptions). Alternative 5 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities. Alternative 5 also limits the size of outdoor cannabis cultivation canopy to 1 acre.

As discussed under Alternative 2, future licensed commercial cannabis sites would be subject to the requirements of SWRCB Order WQ 2023-0102-DWQ, the County's Grading Ordinance, and the most recent CBC, which would ensure that geologic-related hazards, such as soil erosion and loss of topsoil, would be minimized.

This impact would be less than significant under Alternative 5.

2.8.3.6 Issue 3: Soil Stability

Guidelines for Determination of Significance

According to Appendix G of the State CEQA Guidelines and the *County of San Diego Guidelines for Determining Significance: Geologic Hazards*, the Cannabis Program would have a potentially significant impact if it would be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

Impact Analysis

As discussed above in Section 2.8.1, "Existing Conditions," the County has encountered landslides within incorporated areas along coastal bluffs, and most landslides-prone areas are located in the western portion of the county and less prevalent in the eastern part of the county. Liquefaction and lateral spreading are not known to have occurred in the county. However, the San Diego County General Plan Update EIR states that primary areas for potential liquefaction include the lower San Dieguito, Sweetwater, and San Luis Rey River Valleys; Jacumba, Borrego Valley near the Borrego Sink; and part of Ramona (County of San Diego 2009). Subsidence is considered to have a very low potential within the county because the underlying geologic formations of the county are mostly granitic and thus have a very low potential for subsidence; Borrego Valley has recorded minor subsidence from groundwater depletion, which has not caused damage.

Construction of new commercial cannabis sites permitted and licensed under the proposed Cannabis Program could involve earthwork activities that have the potential to result in soil instability. These activities may include grading, placement of fill, and excavation. New licensed commercial cannabis sites could also include construction of new facilities and would likely include clearing, grading, and excavation for new facilities, which may involve the construction of foundations, roads and driveways, and utility trenches. These cannabis projects would be restricted to zoning districts that allow for cannabis uses. However, ultimately, these types of land disturbance activities could result in accelerated erosion, sedimentation, and soil instability.

As discussed above in Section 2.8.3.5, "Issue 2: Soil Erosion or Topsoil Loss," new commercial cannabis cultivation activities would be subject to the County's Grading Ordinance, which includes requirements for cut and fill slopes, drainage terracing, setbacks for buildings from cut or fill slopes, and reporting requirements, including a soil engineer's report and final engineering geology report for approval of grading as affected by geological factors, as well as be subject to SWRCB Order WQ 2023-0102-DWQ, which contains requirements for soil erosion and sedimentation controls (BMPs) for soil stability and the implementation of a site erosion and sediment control plan and a disturbed area stabilization plan for higher risk sites. Examples of BMPs for soil erosion control that may be used include the use of ground cover

vegetation (grasses), detention/water quality control basins, drainage control features that are rock lined and that reduce stormwater flow velocities, and other similar features. New commercial cannabis uses would also be subject to the CBC, Chapter 18A, “Soils and Foundations,” which regulates the excavation of foundations and construction on unstable soils and areas subject to liquefaction. Compliance with these standards is consistent with San Diego County General Plan Policy S-8.2, which requires all new buildings and structures to comply with the uniform construction codes and to be located, designed, constructed, and managed to minimize geologic-related hazards, such as soil instability. As appropriate, geologic and soil engineering information would be required to evaluate, locate, and design development to minimize geologic hazards.

Alternative 1: No Project—Retention of Current Cannabis Regulations

Under Alternative 1, the Cannabis Program would not be adopted. The existing 5 commercial cannabis facilities in the unincorporated areas of El Cajon, Escondido, and Ramona would be allowed to continue to operate under the existing ordinances as well as expand their existing facilities and operations to a total of up to 50,000 square feet of total building area between the 5 facilities. Commercial cannabis cultivation activities would be subject to SWRCB Order WQ 2023-0102-DWQ, which contains requirements for soil erosion and sedimentation controls (BMPs) for soil stability. In addition, the County’s Grading Ordinance includes requirements for cut and fill slopes, drainage terracing, setbacks for buildings from cut or fill slopes, and reporting requirements. Finally, Appendix J, “Grading,” of the CBC, regulates grading activities, including drainage and erosion control.

This impact would be less than significant under Alternative 1.

Alternative 2: Proposed Project— Cannabis Program Consistent with State Requirements

The Cannabis Program under Alternative 2 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, “Project Description, Location, and Environmental Setting,” for a full list of development assumptions). Alternative 2 would include 600-foot buffers between cannabis uses and certain state-defined sensitive uses, including schools, daycares, and youth centers.

Under Alternative 2, new commercial cannabis cultivation activities would be subject to SWRCB Order WQ 2023-0102-DWQ, which contains requirements for soil erosion and sedimentation controls (BMPs) for soil stability. In addition, the County’s Grading Ordinance includes requirements for cut and fill slopes, drainage terracing, setbacks for buildings from cut or fill slopes, and reporting requirements. Finally, Appendix J, “Grading,” of the CBC, regulates grading activities, including drainage and erosion control. Compliance with these standards would be consistent with San Diego County General Plan Policy S-8.2, which requires all new buildings and structures to comply with the uniform construction codes to minimize geologic-related hazards. Because future licensed commercial cannabis sites would be subject to the requirements of SWRCB Order WQ 2023-0102-DWQ, the County’s Grading Ordinance, and the most recent CBC, impacts associated with soil stability would be minimized.

This impact would be less than significant under Alternative 2.

Alternative 3: Cannabis Program with Expanded County Regulations

The Cannabis Program under Alternative 3 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in

Chapter 1, “Project Description, Location, and Environmental Setting,” for a full list of development assumptions). Alternative 3 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities. Advertising of cannabis on billboards would also be prohibited within 1,000 feet of the expanded sensitive uses.

As discussed under Alternative 2, future licensed commercial cannabis sites would be subject to the requirements of SWRCB Order WQ 2023-0102-DWQ, the County’s Grading Ordinance, and the most recent CBC. These requirements would ensure impacts associated with soil stability would be minimized.

This impact would be less than significant under Alternative 3.

Alternative 4: Cannabis Program with Outdoor Cannabis Cultivation Prohibition

The Cannabis Program under Alternative 4 is anticipated to accommodate up to 212 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, “Project Description, Location, and Environmental Setting,” for a full list of development assumptions). Alternative 4 would allow mixed-light and indoor cannabis cultivation only when contained within a building. Alternative 4 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities.

Because no outdoor cannabis cultivation uses would be allowed, potential impacts would be limited to the development of new permanent buildings to support indoor cannabis or noncultivation uses. While it is considered unlikely that new cannabis uses would involve development of new buildings, construction and development plans would be subject to the County’s Grading Ordinance and the most recent CBC. These requirements would ensure that impacts associated with soil stability would be minimized.

This impact would be less than significant under Alternative 4.

Alternative 5: Cannabis Program with Maximum 1 Acre of Outdoor Cannabis Cultivation Canopy

The Cannabis Program under Alternative 5 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, “Project Description, Location, and Environmental Setting,” for a full list of development assumptions). Alternative 5 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities.

Alternative 5 also limits the size of outdoor cannabis cultivation canopy to 1 acre. As discussed under Alternative 2, future licensed commercial cannabis sites would be subject to the requirements of SWRCB Order WQ 2023-0102-DWQ, the County’s Grading Ordinance, and the most recent CBC. These requirements would ensure impacts associated with soil stability would be minimized.

This impact would be less than significant under Alternative 5.

2.8.3.7 *Issue 4: Expansive Soils*

Guidelines for Determination of Significance

According to Appendix G of the State CEQA Guidelines and the *County of San Diego Guidelines for Determining Significance: Geologic Hazards*, the Cannabis Program would have a significant impact if it would be located on expansive soil, as defined in Section 1802A.3.2 of the CBC, creating substantial risks to life or property.

Impact Analysis

Areas of highly expansive soils occur predominantly in the coastal plains and are also found in valleys and on slopes in the foothills, specifically near Ramona, Escondido, Rainbow, and northeast of Vista, as well as mountains of the Peninsular Ranges Region and to a lesser extent the desert (County of San Diego 2009: Figure 2.6-4). However, site-specific conditions related to topography, slope, and soil conditions could result in the development of commercial cannabis cultivation activities on expansive soils, in the absence of grading and development conducted with proper engineering and design. New licensed commercial cannabis sites are anticipated to require soil disturbance, such as clearing and grading, through the construction of supporting uses (i.e., roads, water storage, and accessory structures, such as storage sheds) and of greenhouses and agricultural shade or crop structures.

The County Grading Ordinance, commencing at Section 87.101 of the County Regulatory Code, includes requirements for expansive soils for cuts and fills and includes requirements for a soil engineer's report and final engineering report by an engineering geologist to include specific approval of grading as affected by geological factors. In addition, Chapter 18A, "Soils and Foundations," of the CBC, regulates construction on unstable soils, such as expansive soils.

Future new commercial cannabis cultivation activities permitted and licensed under the proposed Cannabis Program may be located on expansive soils. Construction activities may involve preparation of level surfaces, such as grading, excavation, and placement of fill during construction and other earthwork activities for site improvements. New commercial cannabis sites would be subject to SWRCB Order WQ 2023-0102-DWQ, the County's Grading Ordinance, and the CBC Chapter 18A, "Soils and Foundations," which regulates the excavation of foundations on expansive soils. The SWRCB Order establishes requirements that address site erosion and sediment control, disturbed areas stabilization, site closure procedures, and monitoring and reporting requirements. In addition, the SWRCB order contains requirements for land development maintenance, erosion control, drainage features, stream crossing installation and maintenance, soil disposal and spoils management, and roadway design and maintenance. The SWRCB order also requires the use of soil stability controls for soil stability and the implementation of a site erosion and sediment control plan and a disturbed area stabilization plan for higher risk sites. Examples of BMPs for soil erosion control that may be used include the use of ground cover vegetation (grasses), detention/water quality control basins, and drainage control features that are rock lined and that reduce stormwater flow velocities. Adhering to these established regulations and engineering practices would reduce or eliminate potential expansive soil-related impacts.

Alternative 1: No Project—Retention of Current Cannabis Regulations

Under Alternative 1, the Cannabis Program would not be adopted. The existing 5 commercial cannabis facilities in the unincorporated areas of El Cajon, Escondido, and Ramona would be

allowed to continue to operate under the existing ordinances as well as expand their existing facilities and operations to a total of up to 50,000 square feet of total building area between the 5 facilities. However, these sites have already been graded and developed and have addressed soil expansion issues as part of site development.

There would be no impact associated with expansive soils under Alternative 1.

Alternative 2: Proposed Project—Cannabis Program Consistent with State Requirements

The Cannabis Program under Alternative 2 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, “Project Description, Location, and Environmental Setting,” for a full list of development assumptions). Alternative 2 would include 600-foot buffers between cannabis uses and certain state-defined sensitive uses, including schools, daycares, and youth centers.

Under Alternative 2, new commercial cannabis cultivation activities would be subject to SWRCB Order WQ 2023-0102-DWQ, which establishes requirements that address site erosion and sediment control, disturbed areas stabilization, site closure procedures, and monitoring and reporting requirements. In addition, the SWRCB order contains requirements for land development maintenance, erosion control, drainage features, stream crossing installation and maintenance, soil disposal and spoils management, and roadway design and maintenance. The SWRCB order also requires the use of soil stability controls (discussed under Section 2.8.2, “Regulatory Framework”) and the implementation of a site erosion and sediment control plan and a disturbed area stabilization plan for higher risk sites. In addition, the County’s Grading Ordinance includes requirements for cut and fill slopes, drainage terracing, setbacks for buildings from cut or fill slopes, and reporting requirements. Finally, Appendix J, “Grading,” of the CBC, regulates grading activities, including drainage and erosion control. Compliance with these standards would be consistent with San Diego County General Plan Policy S-8.2, which requires all new buildings and structures to comply with the uniform construction codes to minimize geologic-related hazards. Because future licensed commercial cannabis sites would be subject to the requirements of SWRCB Order WQ 2023-0102-DWQ, the County’s Grading Ordinance, and the most recent CBC, impacts associated with expansive soils would be minimized.

This impact would be less than significant under Alternative 2.

Alternative 3: Cannabis Program with Expanded County Regulations

The Cannabis Program under Alternative 3 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, “Project Description, Location, and Environmental Setting,” for a full list of development assumptions). Alternative 3 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities. Advertising of cannabis on billboards would also be prohibited within 1,000 feet of the expanded sensitive uses.

As discussed under Alternative 2, future licensed commercial cannabis sites would be subject to the requirements of SWRCB Order WQ 2023-0102-DWQ, the County’s Grading Ordinance, and the most recent CBC. These requirements would ensure impacts associated with soil stability would be minimized.

This impact would be less than significant under Alternative 3.

Alternative 4: Cannabis Program with Outdoor Cannabis Cultivation Prohibition

The Cannabis Program under Alternative 4 is anticipated to accommodate up to 212 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, “Project Description, Location, and Environmental Setting,” for a full list of development assumptions). Alternative 4 would allow mixed-light and indoor cannabis cultivation only when contained within a building. Alternative 4 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities.

Because no outdoor cannabis cultivation uses would be allowed, potential impacts would be limited to development of new permanent buildings to support indoor cannabis or noncultivation uses. While it is considered unlikely that new cannabis uses would involve development of new buildings, construction and development plans would be subject to the County’s Grading Ordinance and the most recent CBC. These requirements would ensure that impacts associated with soil stability would be minimized.

This impact would be less than significant under Alternative 4.

Alternative 5: Cannabis Program with Maximum 1 Acre of Outdoor Cannabis Cultivation Canopy

The Cannabis Program under Alternative 5 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, “Project Description, Location, and Environmental Setting,” for a full list of development assumptions). Alternative 5 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities. Alternative 5 also limits the size of outdoor cannabis cultivation canopy to 1 acre.

As discussed under Alternative 2, future licensed commercial cannabis sites would be subject to the requirements of SWRCB Order WQ 2023-0102-DWQ, the County’s Grading Ordinance, and the most recent CBC. These requirements would ensure impacts associated with soil stability would be minimized.

This impact would be less than significant under Alternative 5.

2.8.3.8 *Issue 5: Unique Geologic Features*

Guidelines for Determination of Significance

According to Appendix G of the State CEQA Guidelines and the *County of San Diego Guidelines for Determining Significance: Unique Geology*, the Cannabis Program would have a significant impact if it would directly or indirectly destroy a unique geologic feature. Specifically, the Cannabis Program would result in significant impact if it would materially impair a unique geologic feature by destroying or altering those physical characteristics that convey the uniqueness of the resource. A geologic feature is unique if it meets one of the following criteria:

- a. Is the best example of its kind locally or regionally;

- b. Embodies the distinctive characteristics of a geologic principle that is exclusive locally or regionally;
- c. Provides a key piece of geologic information important in geology or geologic history;
- d. Is a “type locality” of a formation;
- e. Is a geologic formation that is exclusive locally or regionally;
- f. Contains a mineral that is not known to occur elsewhere in the County; or
- g. Is used repeatedly as a teaching tool.

Impact Analysis

Unique geologic features are those that are locally or regionally unique in the context of the geologic history of California and may include particular rocks or strata that explain or result from geologic processes that have affected the county and that lend themselves to scientific study (County of San Diego 2011). The County specifically defines “unique geologic features” as sites that exhibit distinctive characteristics that are exclusive to the region or provide a key piece of geologic information important to the study of geology or geologic history, and examples may include unique rock outcrops (e.g., natural bridges), type localities of named geologic formations (e.g., type locality of Scripps Formation in the sea cliffs north of Scripps Institute of Oceanography), information-risk geologic exposures (e.g., cliff face exposing faulted sedimentary layers), and unique landforms (e.g., Round Mountain in Jacumba Valley, which represents a volcanic plug) (County of San Diego 2011).

The County General Plan Update EIR states that nearly all of the known unique geologic features are located in areas that would not be disturbed by new development, for example open space, parks, roadway rights-of-way) (see Table 2.8.4, which is presented at the end of this section).

New commercial cannabis sites permitted and licensed under the proposed Cannabis Program could include soil-disturbing activities, such as site preparation, grading, and excavation, which have the potential to damage or destroy unique geologic features. However, new commercial cannabis sites developed under the project would be required to comply with the County General Plan Policy COS-9.2, which requires development to minimize impacts to unique geologic features from human-related destruction, damage, or loss. The siting and location of new commercial cannabis sites would be evaluated on a project-specific, case-by-case basis.

Therefore, adherence to the General Plan and standard practice would ensure that ground-moving activities associated with future licensed sites would not result in the destruction of a unique geologic feature.

Alternative 1: No Project–Retention of Current Cannabis Regulations

Under Alternative 1, the Cannabis Program would not be adopted. The existing 5 commercial cannabis facilities in the unincorporated areas of El Cajon, Escondido, and Ramona would be allowed to continue to operate under the existing ordinances as well as expand their existing facilities and operations to a total of up to 50,000 square feet of total building area between the 5 facilities. However, these sites have already been graded and developed and no unique geologic features exist on the sites based on review of satellite imagery.

There would be no impact on unique geologic features under Alternative 1.

Alternative 2: Proposed Project—Cannabis Program Consistent with State Requirements

The Cannabis Program under Alternative 2 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, “Project Description, Location, and Environmental Setting,” for a full list of development assumptions). Alternative 2 would include 600-foot buffers between cannabis uses and certain state-defined sensitive uses, including schools, daycares, and youth centers.

New commercial cannabis sites permitted and licensed under the proposed Cannabis Program could include soil-disturbing activities, such as site preparation, grading, and excavation, which have the potential to damage or destroy unique geologic features. However, new commercial cannabis sites would be required to comply with the County General Plan Policy COS-9.2, which requires development to minimize impacts to unique geologic features from human-related destruction, damage, or loss. This is accomplished through discretionary review, such as CEQA, and through the permitting process. Compliance with Policy COS-9.2 would ensure that ground-moving activities associated with commercial cannabis sites would not result in the destruction of unique geologic features.

This impact would be less than significant under Alternative 2.

Alternative 3: Cannabis Program with Expanded County Regulations

The Cannabis Program under Alternative 3 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, “Project Description, Location, and Environmental Setting,” for a full list of development assumptions). Alternative 3 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities. Advertising of cannabis on billboards would also be prohibited within 1,000 feet of the expanded sensitive uses.

As discussed under Alternative 2, future licensed commercial cannabis sites would be subject to County General Plan Policy COS-9.2, which requires development to minimize impacts to unique geologic features from human-related destruction, damage, or loss. Compliance with Policy COS-9.2 would ensure that ground-moving activities associated with commercial cannabis sites would not result in the destruction of unique geologic features.

This impact would be less than significant under Alternative 3.

Alternative 4: Cannabis Program with Outdoor Cannabis Cultivation Prohibition

The Cannabis Program under Alternative 4 is anticipated to accommodate up to 212 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, “Project Description, Location, and Environmental Setting,” for a full list of development assumptions). Alternative 4 would allow mixed-light and indoor cannabis cultivation only when contained within a building. Alternative 4 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities.

Because no outdoor cannabis cultivation uses would be allowed, potential impacts would be limited to development of new permanent buildings to support indoor cannabis or

noncultivation uses. While it is considered unlikely that new cannabis uses would involve development of new buildings, construction and development plans would be subject to County General Plan Policy COS-9.2, which requires development to minimize impacts to unique geologic features from human-related destruction, damage, or loss. Compliance with Policy COS-9.2 would ensure that ground-moving activities associated with commercial cannabis sites would not result in the destruction of unique geologic features.

This impact would be less than significant under Alternative 4.

Alternative 5: Cannabis Program with Maximum 1 Acre of Outdoor Cannabis Cultivation Canopy

The Cannabis Program under Alternative 5 is anticipated to accommodate up to 372 cultivation and 170 noncultivation sites/licenses within the county through 2044 (refer to Table 1.4 in Chapter 1, "Project Description, Location, and Environmental Setting," for a full list of development assumptions). Alternative 5 additionally prohibits the development of cannabis facilities within 1,000 feet of expanded sensitive uses, including other cannabis facilities. Alternative 5 also limits the size of outdoor cannabis cultivation canopy to 1 acre.

As discussed under Alternative 2, future licensed commercial cannabis sites would be subject to County General Plan Policy COS-9.2, which requires development to minimize impacts to unique geologic features from human-related destruction, damage, or loss. Compliance with Policy COS-9.2 would ensure that ground-moving activities associated with commercial cannabis sites would not result in the destruction of unique geologic features.

This impact would be less than significant under Alternative 5.

2.8.4 Cumulative Impacts

The geographic scope of the cumulative impact analysis for geology and soils is site-specific and limited to the immediate area of the geologic constraint, with the exception of some geologic impacts that are regional, such as earthquake risk. As discussed in Section 2.8.3, none of the alternatives would result in loss of access to known mineral resources in the county.

Cumulative projects located within the geographic scope for cumulative geology and soils impacts would be subject to the most recent CBC, the County General Plan, the County Grading Ordinance, SWRCB Order WQ 2023-0102-DWQ, and any other applicable city, state, and County regulations in place.

2.8.4.1 Issue 1: Exposure to Seismic-Related Hazards

The San Diego County General Plan Update EIR identified no cumulatively considerable impacts associated with seismic-related hazards from implementation of the General Plan (County of San Diego 2009).

Alternative 1 would involve potential expansion of existing cannabis facilities, there would be no contribution to cumulative seismic-related impacts.

New commercial cannabis sites licensed and permitted through the project would be subject to the seismic design requirements of the most recent CBC, the Alquist-Priolo Act, County Special Study Zones, County Zoning Ordinance for Fault Displacement Area Regulations, and

other applicable standards that contain building siting and design requirements that would reduce the risks of loss, injury, or death resulting from seismic-related ground shaking. Cumulative projects would, as applicable, also be subject to these building siting and design requirements.

In addition, the Cannabis Program, as proposed, would not create new seismic events or exacerbate existing seismic hazards because limited ground disturbance associated with commercial cannabis cultivation activities would not alter existing seismic and fault conditions in the San Diego County region. Therefore, the incremental effects of the project related to seismic activity would not combine with the effects of cumulative projects to create significant cumulative impacts. The Cannabis Program's incremental effects would not be cumulatively significant, and the project's contributions to these seismic-related hazards would not be cumulatively considerable such that a new cumulatively significant impact would occur. Therefore, the proposed Cannabis Program, in combination with the identified cumulative projects, would not have the potential to result in a significant cumulative impact associated with seismic hazards under Alternatives 2, 3, 4, and 5.

2.8.4.2 Issue 2: Soil Erosion or Topsoil Loss

The San Diego County General Plan Update EIR identified no cumulatively considerable impacts associated with soil erosion or topsoil loss from implementation of the General Plan (County of San Diego 2009).

The Cannabis Program encompasses varying terrain throughout the whole of unincorporated areas in San Diego County, parts of which contain Coastal Plain, Peninsular Range, and Desert Basin. Thus, the San Diego County region has varying levels of topography and development, with the most urbanized and densely populated areas located in the western half. Existing commercial cannabis, expanded existing commercial cannabis, and new commercial cannabis sites permitted and licensed through the Cannabis Program would be subject to the requirements of the County Grading Ordinance, which includes requirements for cut and fill slopes, drainage and terracing, setbacks for buildings from cut or fill slopes, and reporting requirements, including a soil engineer's report and final engineering geology report for approval of grading as affected by geological factors. In addition, these cannabis sites would also be subject to the requirements of SWRCB Order WQ 2023-0102-DWQ, which addresses site erosion and sediment control, disturbed areas stabilization, site closure procedures, monitoring and reporting requirements, maintenance, stream crossing installation and maintenance, soil disposal and spoils management, roadway design and maintenance, the implementation of a Site Erosion and Sediment Control Plan, and a Disturbed Area Stabilization Plan for high risk sites, all of which would reduce the project's associated soil erosion and topsoil loss to a less-than-significant level. Cumulative projects would also be subject to these regulatory compliance measures, as applicable, which would serve to offset contributions to cumulative impacts related to soil erosion and topsoil loss.

Therefore, the incremental effects of the Cannabis Program on soil erosion or topsoil loss would not combine with the effects of cumulative projects to create significant cumulative impacts. The project's incremental effects would not be cumulatively significant, and the project's contributions to these geology and soils impacts would not be cumulatively considerable such that a new cumulatively significant impact would occur. Therefore, the proposed Cannabis Program, in combination with the identified cumulative projects, would not

have the potential to result in a significant cumulative impact associated with soil erosion and topsoil loss for Alternatives 1, 2, 3, 4, and 5.

2.8.4.3 Issue 3: Soil Stability

The San Diego County General Plan Update EIR identified no cumulatively considerable impacts associated with soil stability from implementation of the General Plan (County of San Diego 2009).

As discussed in Section 2.8.1, “Existing Conditions,” the county has encountered landslides most prevalently along the incorporated areas of the coastal bluffs and western portion of the county, with few areas in the eastern part of the county. Liquefaction and lateral spreading are not known to occur in the county, but there are areas of the county that may have the potential for liquefaction (lower San Dieguito, Sweetwater, and San Luis Rey River Valleys; Jacumba; Borrego Valley near the Borrego Sink; and part of Ramona) (County of San Diego 2009). The only subsidence recorded in the county is minor subsidence in Borrego Valley associated with groundwater depletion, which has not caused any damage.

New commercial cannabis sites licensed and permitted through the Cannabis Program would be subject to the County’s Grading Ordinance, SWRCB Order WQ-0102-DWQ, Chapter 18A of the CBC, and other applicable standards that contain requirements that would reduce impacts associated with soil stability. Cumulative projects would also be subject to these regulatory compliance measures, as applicable, which would serve to offset cumulative impacts related to soil stability.

Therefore, the incremental effects of the Cannabis Program on soil stability would not combine with the effects of cumulative projects to create significant cumulative impacts. The project’s incremental effects would not be cumulatively significant, and the project’s contributions to these geology and soils impacts would not be cumulatively considerable such that a new cumulatively significant impact would occur. Therefore, the proposed Cannabis Program, in combination with the identified cumulative projects, would not have the potential to result in a significant cumulative impact associated with soil stability under Alternatives 1, 2, 3, 4, and 5.

2.8.4.4 Issue 4: Expansive Soils

The San Diego County General Plan Update EIR identified no cumulatively considerable impacts associated with expansive soils from implementation of the General Plan (County of San Diego County 2009).

The 5 existing facilities included in Alternative 1 have already been graded and developed and have addressed soil expansion issues as part of site development; thus, there would be no contribution to cumulative expansive soils impacts.

Areas of expansive soils in the county occur predominantly in the coastal plains, valleys, and slopes in the foothills, the mountains of the Peninsular Ranges, and to a lesser extent the desert. New commercial cannabis sites permitted and licensed through the project would be required to comply with the County’s Grading Ordinance, which includes requirements for expansive soils for cut and fills and would also be subject to Chapter 18A of the CBC, which regulates construction on unstable soils, such as expansive soils. Cumulative projects would

also be subject to these regulatory compliance measures, as applicable, which would serve to offset cumulative impacts related to expansive soils.

Therefore, the incremental effects of the Cannabis Program on expansive soils would not combine with the effects of cumulative projects to create significant cumulative impacts. The project's incremental effects would not be cumulatively significant, and the project's contributions to these geology and soils impacts would not be cumulatively considerable such that a new cumulatively significant impact would occur. Therefore, the proposed Cannabis Program, in combination with the identified cumulative projects, would not have the potential to result in a significant cumulative impact associated with expansive soils under Alternatives 2, 3, 4, and 5.

2.8.4.5 Issue 5: Unique Geologic Features

The San Diego County General Plan Update EIR identified no cumulatively considerable impacts associated with unique geologic features from implementation of the General Plan (County of San Diego 2009).

The 5 existing facilities included in Alternative 1 have already been graded and developed and no unique geologic features exist on the sites based on review of satellite imagery; thus, there would be no contribution to cumulative unique geologic feature impacts.

The County General Plan Update EIR states that nearly all of the known unique geologic features are located in areas that would not be disturbed by new development, for example, open space, parks, roadway rights-of-way (see Table 2.8.4). Therefore, it is not anticipated that commercial cannabis sites permitted and licensed through the Cannabis Program would be located on sites with unique geologic features.

Therefore, the incremental effects of the Cannabis Program on unique geologic features would not combine with the effects of cumulative projects to create significant cumulative impacts. The project's incremental effects would not be cumulatively significant, and the project's contributions to these geology and soils impacts would not be cumulatively considerable such that a new cumulatively significant impact would occur. Therefore, the proposed Cannabis Program, in combination with the identified cumulative projects, would not have the potential to result in a significant cumulative impact associated with unique geologic features under Alternatives 2, 3, 4, and 5.

2.8.5 Significance of Impacts Prior to Mitigation

2.8.5.1 Issue 1: Exposure to Seismic-Related Hazards

The Cannabis Program would have no direct impacts to seismic hazards under Alternative 1. The proposed Cannabis Program would result in less-than-significant direct impacts to seismic hazards under Alternatives 2 through 5. Project impacts would not be cumulatively considerable such that new cumulative impacts associated with seismic hazards would occur.

2.8.5.2 Issue 2: Soil Erosion or Topsoil Loss

The proposed Cannabis Program would result in less-than-significant direct impacts to soil erosion or loss under Alternatives 1 through 5. Project impacts would not be cumulatively considerable such that new cumulative impacts associated soil erosion or loss would occur.

2.8.5.3 Issue 3: Soil Stability

The Cannabis Program would have no direct impacts to soil stability under Alternative 1. The proposed Cannabis Program would result in less-than-significant direct impacts to soil stability under Alternatives 1 through 5. Project impacts would not be cumulatively considerable such that new cumulative impacts associated with soil stability would occur.

2.8.5.4 Issue 4: Expansive Soils

The Cannabis Program would have no direct impacts associated with expansive soils under Alternative 1. The proposed Cannabis Program would result in less-than-significant direct impacts associated with expansive soils under Alternatives 2 through 5. Project impacts would not be cumulatively considerable such that new cumulative impacts associated with expansive soils would occur.

2.8.5.5 Issue 5: Unique Geologic Features

The Cannabis Program would have no direct impacts to unique geologic features under Alternative 1. The proposed Cannabis Program would result in less-than-significant direct impacts to unique geologic features under Alternatives 2 through 5. Project impacts would not be cumulatively considerable such that new cumulative impacts associated with unique geologic features would occur.

2.8.6 Mitigation**2.8.6.1 Issue 1: Exposure to Seismic-Related Hazards**

No mitigation is required.

2.8.6.2 Issue 2: Soil Erosion or Topsoil Loss

No mitigation is required.

2.8.6.3 Issue 3: Soil Stability

No mitigation is required.

2.8.6.4 Issue 4: Expansive Soils

No mitigation is required.

2.8.6.5 Issue 5: Unique Geologic Features

No mitigation is required.

2.8.7 Conclusion

The discussion below provides a synopsis of the conclusion reached in each of the above impact analyses.

2.8.7.1 Issue 1: Exposure to Seismic-Related Hazards

The Cannabis Program would have no direct impacts associated with seismic-related hazards under Alternative 1. Future licensed commercial cannabis sites under Alternatives 2, 3, 4, and 5 would be required to comply with the most recent CBC, Alquist-Priolo Act, and County building standards to reduce the potential for adverse impacts related to seismic hazards. Furthermore, commercial cannabis sites would not create new seismic events or exacerbate existing seismic hazards. For these reasons, the impacts associated with seismic hazards would be less than significant for Alternatives 2, 3, 4, and 5. In addition, the proposed Cannabis Program would not contribute to a significant cumulative impact.

2.8.7.2 Issue 2: Soil Erosion or Topsoil Loss

The Cannabis Program would have no direct impacts associated with soil erosion or topsoil loss under Alternative 1 potential site expansions. Future licensed commercial cannabis sites under Alternatives 2, 3, 4, and 5 have the potential to increase soil erosion and the loss of topsoil. However, adherence to SWRCB Order WQ 2023-0102-DWQ (including the site erosion and sediment control plan), the County's Grading Ordinance, and General Plan policies would ensure that impacts associated with soil erosion and the loss of topsoil would be less than significant for Alternatives 2, 3, 4, and 5. In addition, the proposed Cannabis Program would not contribute to a significant cumulative impact.

2.8.7.3 Issue 3: Soil Stability

The Cannabis Program would have no direct impacts associated with soil stability under Alternative 1 potential site expansions. Future licensed commercial cannabis sites under Alternatives 2, 3, 4, and 5 have the potential to increase soil erosion and the loss of topsoil. However, adherence to SWRCB Order WQ 2023-0102-DWQ (including the site erosion and sediment control plan), the County's Grading Ordinance, and General Plan policies would ensure that impacts associated with soil instability would be less than significant for Alternatives 2, 3, 4, and 5. In addition, the proposed Cannabis Program would not contribute to a significant cumulative impact.

2.8.7.4 Issue 4: Expansive Soils

The Cannabis Program would have no direct impacts associated with expansive soils under Alternative 1. Future licensed commercial cannabis sites under Alternatives 2, 3, 4, and 5 have the potential to be located on soils prone to expansion. However, adherence to the most recent CBC, the County Grading Ordinance, and SWRCB Order WQ 2023-0102-DWQ would ensure that impacts associated with expansive soils would be less than significant for Alternatives 2,

3, 4 and 5. In addition, the proposed Cannabis Program would not contribute to a significant cumulative impact.

2.8.7.5 Issue 5: Unique Geologic Features

The Cannabis Program would have no direct impacts associated with unique geologic features under Alternative 1. New commercial cannabis sites under Alternative 2, 3, 4, and 5 have the potential to disturb unique geologic features during soil-disturbing construction activities, such as grading and excavation. Compliance with, and adherence to, the County's General Plan would ensure that construction earthwork activities associated with the development of new commercial cannabis sites would not result in the destruction of unique geologic features. This impact would be less than significant for Alternative 2, 3, 4, and 5. In addition, the proposed Cannabis Program would not contribute to a significant cumulative impact.

Table 2.8.2 Active Faults in and Adjacent to San Diego County

Fault Name	General Information	Most Recent Activity
San Jacinto Fault Zone	130.5 miles in length and extends through the Borrego Springs and Ocotillo Wells areas. Right-lateral strike-slip fault, minor right reverse. Most recent surface rupture was on the Coyote Creek fault, discussed above. Slip rate is typically between 7 and 17 millimeters per year (mm/yr), and the interval between surface ruptures is 100 to 300 years per segment.	April 9, 1968; Magnitude 6.5 on Coyote Creek Segment
Coyote Creek Fault	Right-lateral strike-slip fault extending 50 miles through Borrego Springs, Borrego, and Ocotillo Wells. Most recent surface rupture was on April 8, 1968, on the southern half. Slip rate is between 2 and 6 mm/yr.	April 9, 1968; Magnitude 6.5 on southern half
Elsinore Fault Zone	About 112 miles in length, extending through Julian in San Diego County, and north of the County through the Temecula and Lake Elsinore areas. The Elsinore fault is one of the largest in southern California. Last major rupture was May 15, 1910, with an interval of roughly 250 years between major ruptures. Slip rate category: 4.0 mm/yr. At its southern end, the Elsinore fault is cut by the Yuha Wells Fault. The continuation of the Elsinore Fault, south of the Yuha Wells Fault, is known as the Laguna Salada Fault.	May 15, 1910; Magnitude 6, no surface rupture found
Rose Canyon Fault Zone	About 19 miles in length and extends through from the city of Coronado across San Diego Bay to the city of San Diego, La Jolla, and Linda Vista communities. Slip rate category: 1.1 mm/yr; could be greater if unmeasured parallel segments carry a significant amount of slip. The faults in this zone typically dip to the east.	Holocene, in part; mostly Quaternary; probable magnitudes estimated between 6 and 7.2
Earthquake Valley Fault	About 16 miles in length, extending through San Felipe and Julian. Right-lateral strike slip fault with a slip rate of between 1 and 3 mm/yr.	Holocene; probable magnitudes estimated between 6 and 7
San Andreas Fault Zone	Right-lateral strike-slip fault, 746 miles in length, extending generally north-south through the length of California, terminating in Southern California, east of San Diego County, near the Salton Sea. Last major rupture was January 9, 1857, on the northern segment of the fault and slip rate is about 20 to 35 mm/yr.	January 9, 1857 (Mojave segment), April 18, 1906 (northern segment); magnitudes estimated between 6.8 and 8

Sources: San Diego County 2009; California Institute of Technology 2024.

Table 2.8.3 The Modified Mercalli Scale of Earthquake Intensities

If most of these effects are observed	Then the intensity is
Earthquake shaking not felt, but people may observe marginal effects of large distance earthquakes without identifying these effects as earthquake-caused—among them trees, liquids, bodies of water sway slowly, or doors swing slowly.	I
Effect on people: Shaking felt by those at rest, especially if they are indoors, and by those on upper floors.	II
Effect on people: Felt by most people indoors. Some can estimate duration of shaking but many may not recognize shaking of building as caused by an earthquake; the shaking is like that caused by the passing of light trucks.	III
Other effects: Hanging objects swing. Structural effects: Windows or doors rattle. Wooden walls and frames creak.	IV
Effect on people: Felt by everyone indoors and by most people outdoors. Many now estimate not only the duration of shaking but also its direction and have no doubt as to its cause. Sleepers wakened. Other effects: Hanging objects swing. Standing autos rock. Crockery clashes, dishes rattle, or glasses clink. Structural effects: Doors close, open, or swing. Windows rattle.	V
Effect on people: Felt by everyone indoors and by most people outdoors. Many now estimate not only the duration of shaking but also its direction and have no doubt as to its cause. Sleepers wakened. Other effects: Hanging objects swing. Shutters or pictures move. Pendulum clocks stop, start, or change rate. Standing autos rock. Crockery clashes, dishes rattle, or glasses clink. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Structural effects: Weak plaster and Masonry D* crack. Windows break. Doors close, open, or swing.	VI
Effect on people: Felt by everyone. Many are frightened and run outdoors. People walk unsteadily. Other effects: Small church or school bells ring. Pictures thrown off walls, knickknacks and books off shelves. Dishes or glasses broken. Furniture moved or overturned. Trees and bushes shaken visibly or heard to rustle. Structural effects: Masonry D* damaged; some cracks in Masonry C*. Weak chimneys break at roof line. Plaster, loose bricks, stones, tiles, cornices, unbraced parapets, and architectural ornaments fall. Concrete irrigation ditches damaged.	VII
Effect on people: Difficult to stand. Shaking noticed by auto drivers. Other effects: Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Furniture broken. Hanging objects quiver. Structural effects: Masonry D* heavily damaged; Masonry C* damaged, partially collapses in some cases; some damage to Masonry B*; none to Masonry A*. Stucco and some masonry walls fall. Chimneys, factory stacks, monuments, towers, and elevated tanks twist or fall. Frame houses move on foundation if not bolted down; loose panel walls thrown out. Decayed piling broken off.	VIII

If most of these effects are observed	Then the intensity is
<p>Effect on people: General fright. People thrown to ground.</p> <p>Other effects: Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes. Steering of autos affected. Branches broken from trees.</p> <p>Structural effects: Masonry D* destroyed; Masonry C* heavily damaged, sometimes with complete collapse; Masonry B* is seriously damaged. General damage to foundations. Frame structures, if not bolted, shifted off foundations. Frames cracked. Reservoirs seriously damaged. Underground pipes broken.</p>	IX
<p>Effect on people: General panic.</p> <p>Other effects: Conspicuous cracks in ground. In areas of soft ground, sand is ejected through holes and piles up into a small cone, and in muddy areas, water fountains are formed.</p> <p>Structural effects: Most masonry and frame structures destroyed along with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, and embankments. Railroads bent slightly.</p>	X
<p>Effect on people: General panic.</p> <p>Other effects: Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land.</p> <p>Structural effects: General destruction of buildings. Underground pipelines completely out of service. Railroads bent greatly.</p>	XI
<p>Effect on people: General panic.</p> <p>Other effects: Same as for Intensity X.</p> <p>Structural effects: Damage nearly total, the ultimate catastrophe.</p> <p>Other effects: Large rock masses displaced. Lines of sight and level distorted. Objects thrown into air.</p>	XII

Notes:

- * Masonry A: Good workmanship and mortar, reinforced, designed to resist lateral forces.
- * Masonry B: Good workmanship and mortar, reinforced.
- * Masonry C: Good workmanship and mortar, unreinforced.
- * Masonry D: Poor workmanship and mortar and weak materials, like adobe.

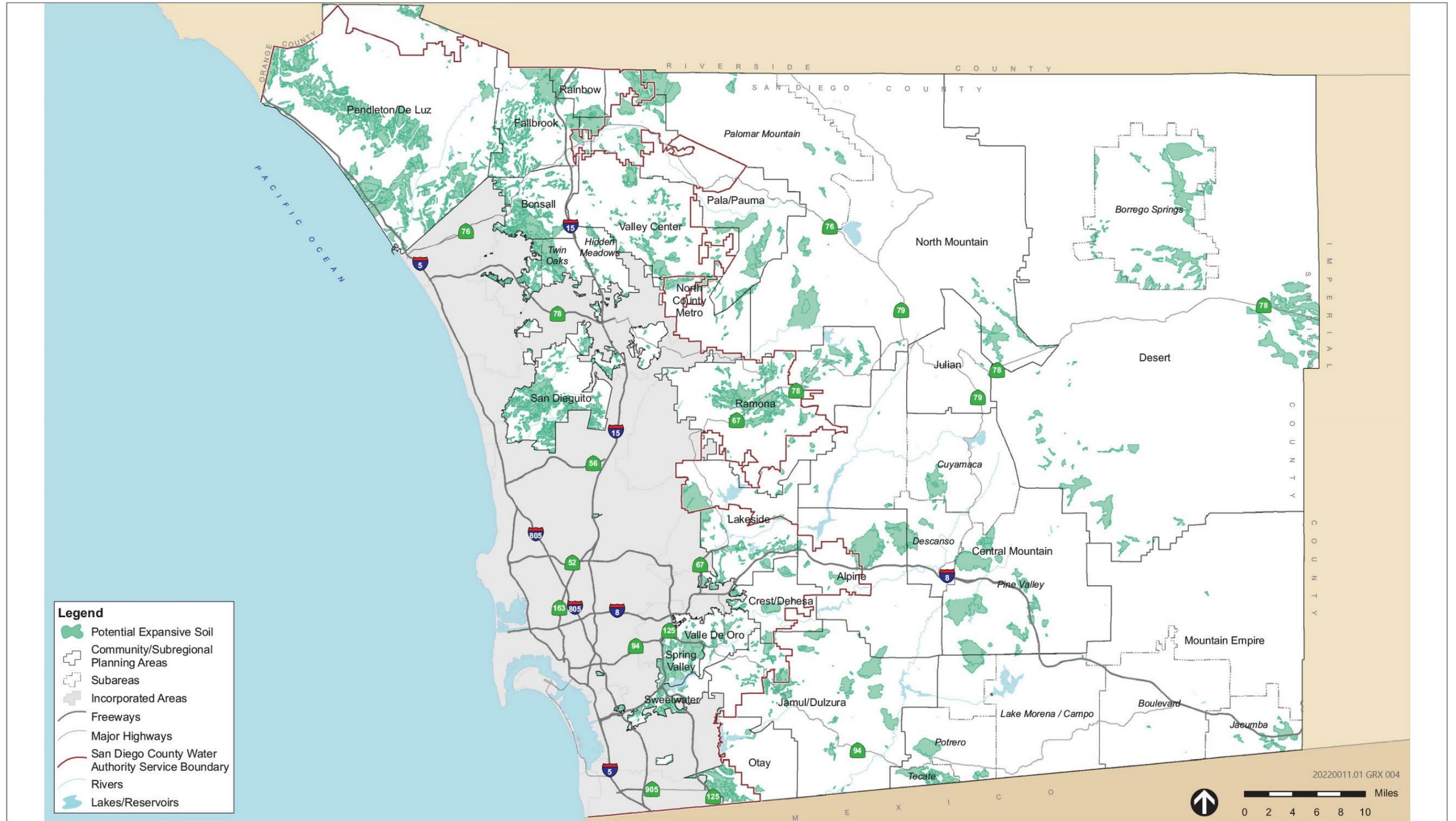
Source: US Geological Survey 2024.

Table 2.8.4 Unique Geologic Features in San Diego County

Geologic Feature	Reason for Uniqueness	Locality
Borrego Badlands (Borrego Formation)	Exposures of wind and water erosion features that are unusual in San Diego County.	Imperial Valley, Anza-Borrego State Park east of Borrego Springs, Ocotillo Wells south of State Route 78 near the Imperial County border
Ocotillo conglomerate in the Northern Borrego Badlands	Exposures of wind and water erosion features that are unusual in San Diego County.	Near Ocotillo Wells
San Onofre breccia	The only exposure of these rocks in San Diego County. During the middle Miocene, from Oceanside north to the Orange County line, exotic breccia was deposited along an ancient beach. These rocks, the San Onofre breccia, had their origin in the west, from an unknown island in the Pacific Ocean. The unit contains clasts of metamorphic rocks, predominantly blue-gray glaucophane schist that is relatively rare in southern California. Layering of the clasts indicates they came from the west, fossils indicate they came from shallow marine waters, and angularity indicates they came from nearby. Deposited 100 million years ago.	San Onofre Hills
Monterey shale	Only place this rock is exposed.	Along sea cliffs southeast of San Onofre
Petrified forest with logs in place. Exposures of the prebatholithic volcanics and sedimentary rocks containing leaf imprints	Petrified wood is extremely rare in the county.	Lusardi Canyon near Rancho Santa Fe, near junction with San Dieguito River
Folded slates—steep dips and primary structures.	Probably the county's best location for viewing these types of features.	Lusardi Canyon near Rancho Santa Fe, near junction with San Dieguito River
Unusual occurrence of orbicular gabbro, where the orbicles are the result of banding around xenoliths in the original rock	An unusual occurrence of orbicular gabbro.	Dehesa Road, west of the Harbison Canyon Road intersection
Stonewall quartz diorite	Oldest igneous rock in the county.	Stonewall Peak; Cuyamaca Region
A major bend in the Elsinore fault that includes augen gneiss	Unusual occurrence. Augen gneiss is a coarsegrained gneiss, interpreted as resulting from metamorphism of granite, which contains characteristic elliptic or lenticular shear bound feldspar porphyroclasts, normally microcline, within the layering of the quartz, biotite and magnetite bands	Overland Stage Route west of Vallecito

Geologic Feature	Reason for Uniqueness	Locality
Dos Cabazas marble	Unusual tight folding in marble, alternating bands of calcite, finely disseminated graphite, and garnet. Some schist and green diopside. Only place in the county to find Wollastonite.	Vicinity San Diego and Arizona Eastern Railroad to west of the Imperial County Line
Stratigraphic relationship between Jacumba volcanic rocks (Alverson andesite) and "Table Mountain gravels;" reworked younger gravels well exposed	Indications of volcanism and rifting from 18 million years ago.	Table Mountain, north of Jacumba
Los Pinos Mountain	Only accessible gabbro pluton. Has unique comb layers and orbicular structures.	Los Pinos Mountain, approximately two miles northwest of Morena Reservoir
A combination of gembearing dikes and geologic features, such as migmatites, folds, and metamorphic rocks intruded by granite	Educational field trips visit this location.	Sacatone Springs, Mount Tule
Contact zone in road cuts	Major divide between rocks that are older than 105 million years and those that are younger than 95 million years. Educational field trips visit this location.	State Route 80 and Interstate 8 just west of the intersection with Kitchen Creek Road
Andalusite-bearing schis	Only occurrence in San Diego County.	Sunrise Highway (State Route 1) east of Lake Cuyamaca
Ridge between Blair and Little Blair Valleys	Intermontane basins, exposures of pegmatite dikes, prebatholithic rocks, and La Posta granites.	Blair Valley and Little Blair Valley east of State Route 2 in Anza-Borrego State Park
Potrero Peak gabbro	Contains orbicular structures.	Potrero Peak located east of Stat Route 94 in the unincorporated community of Potrero
Orbicular diorite and abandoned W-bearing rocks	Contains orbicular structures. Orbicular structures are unusual to find.	Northeast of the intersection of Buckman Springs Road and Interstate 8
Piñon Mountains	Only exposures of a detachment fault and associated alteration in San Diego County.	Anza-Borrego State Park

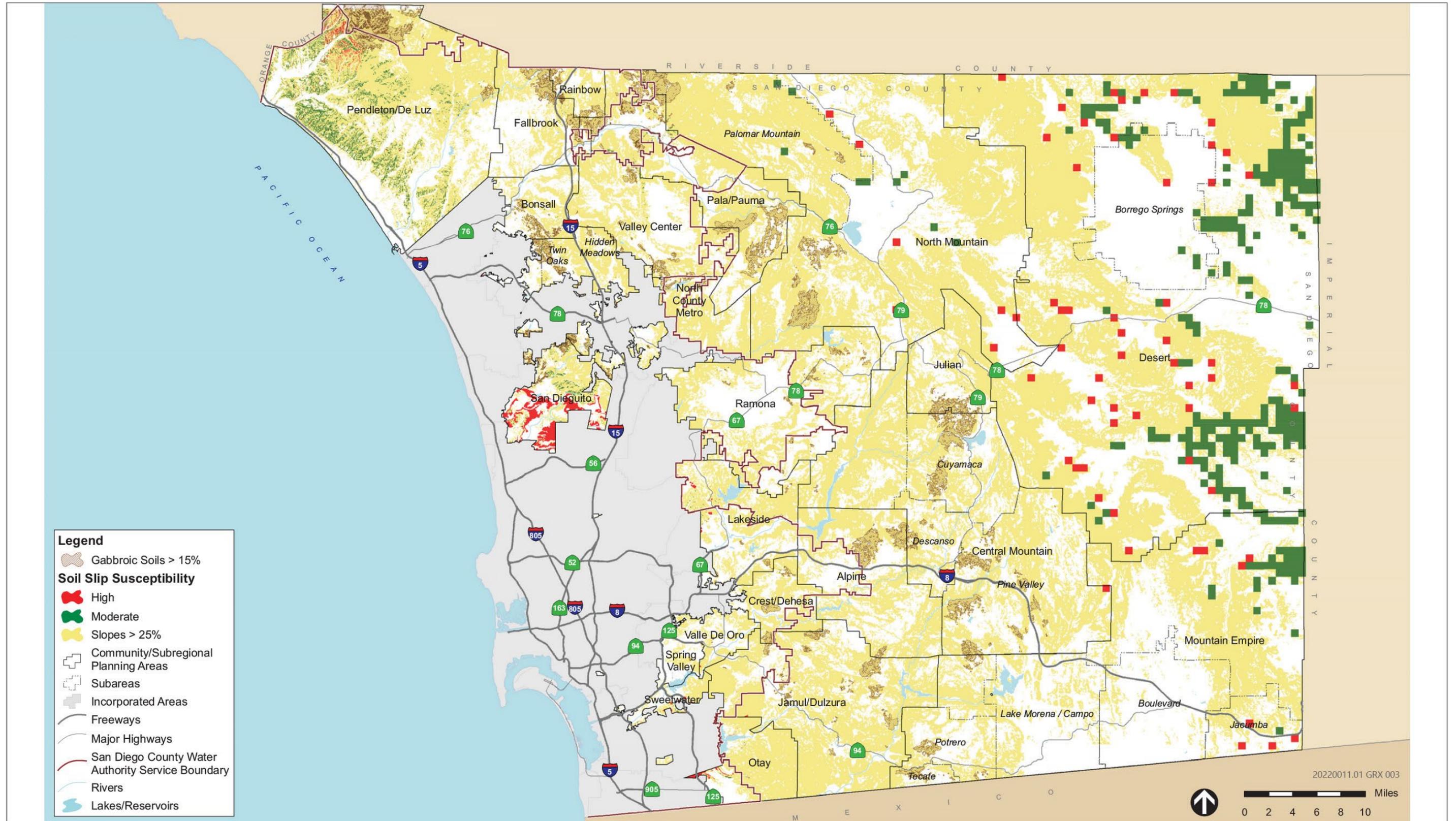
Source: County of San Diego 2009.



Source: County of San Diego 2009.

Figure 2.8.1

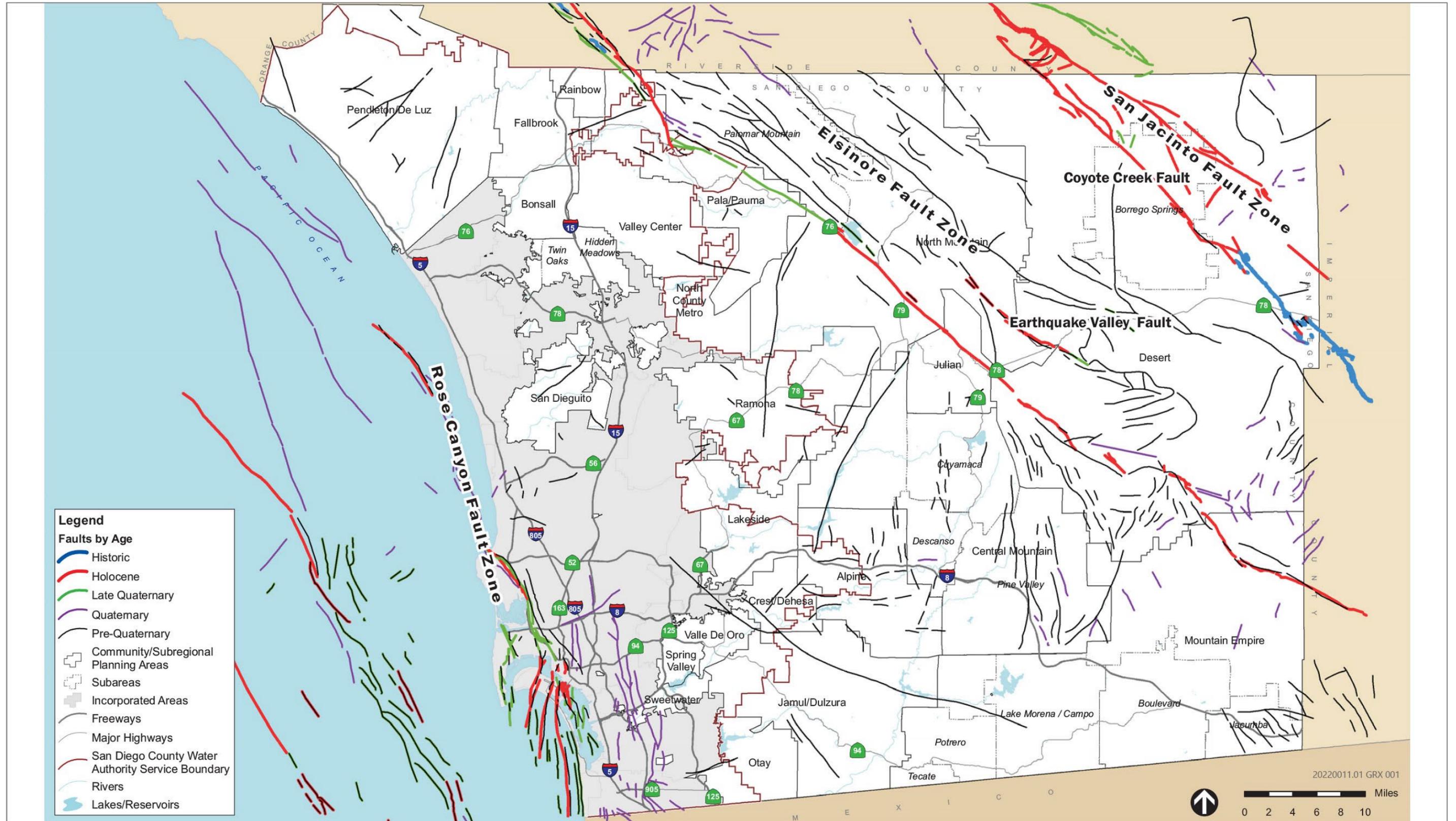
Potential Expansive Soils in San Diego County



Source: County of San Diego 2009.

Figure 2.8.2

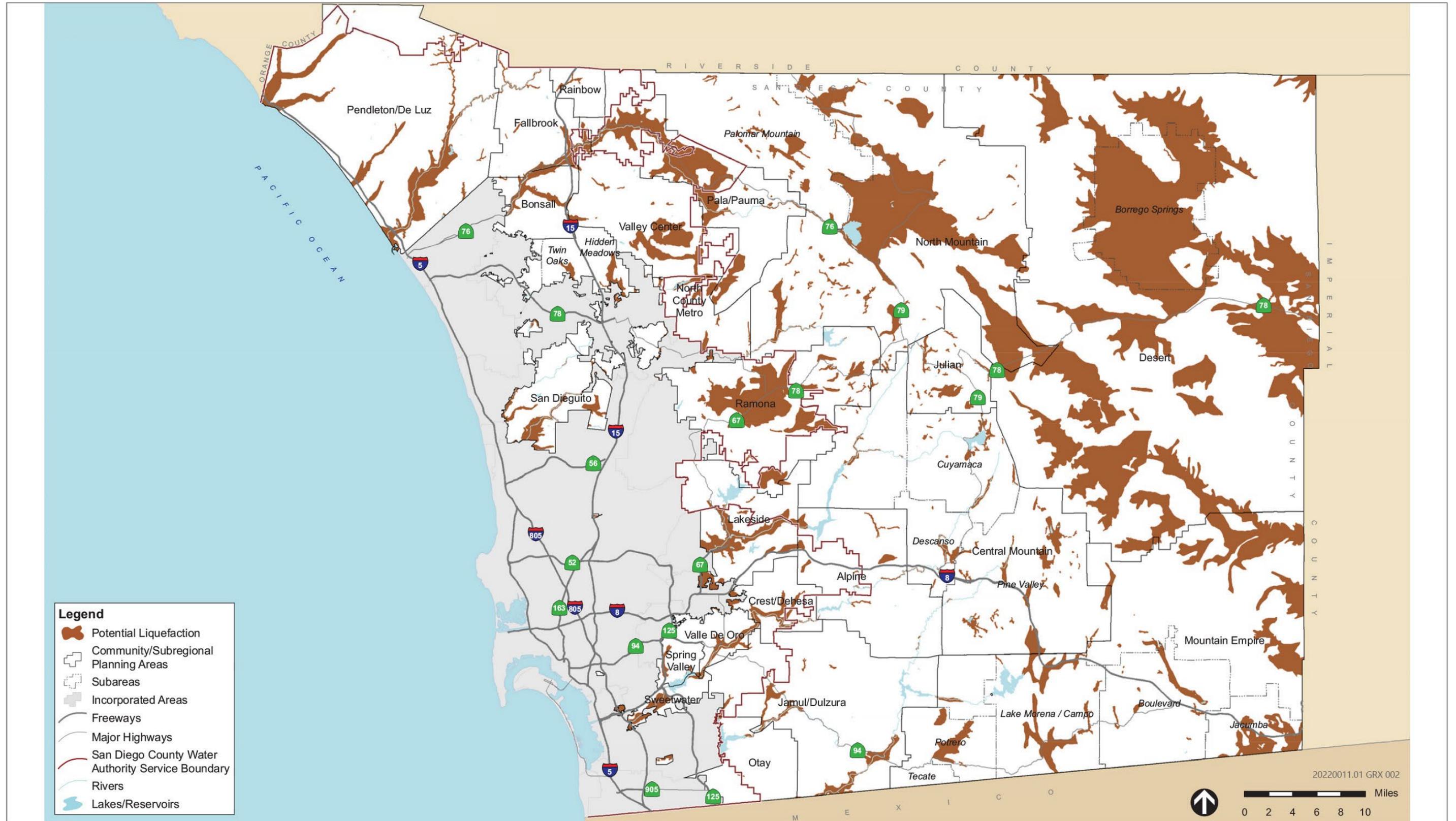
Areas Susceptible to Landslides in San Diego County



Source: County of San Diego 2009.

Figure 2.8.3

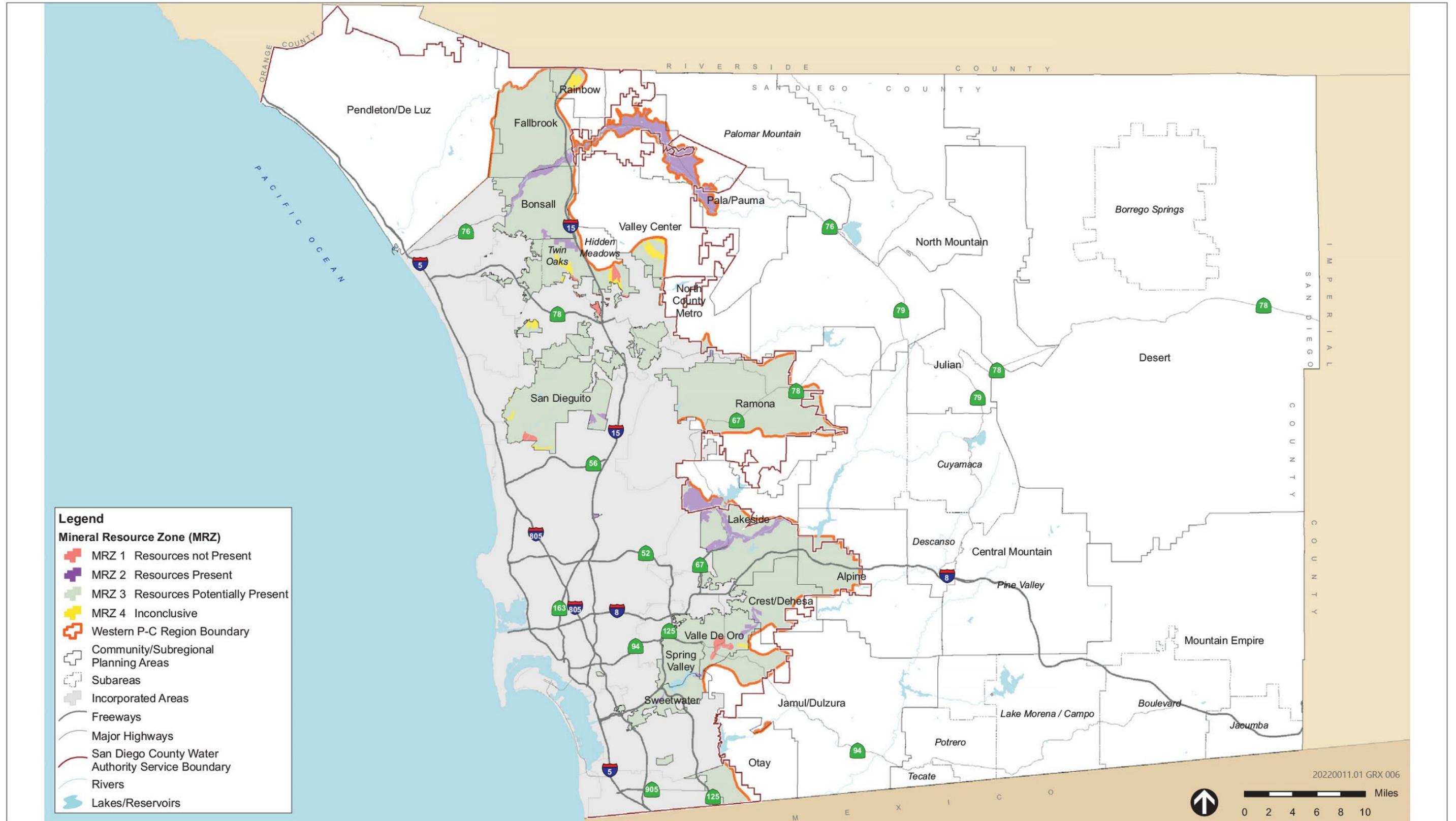
Mapped Faults in San Diego County



Source: County of San Diego 2009.

Figure 2.8.4

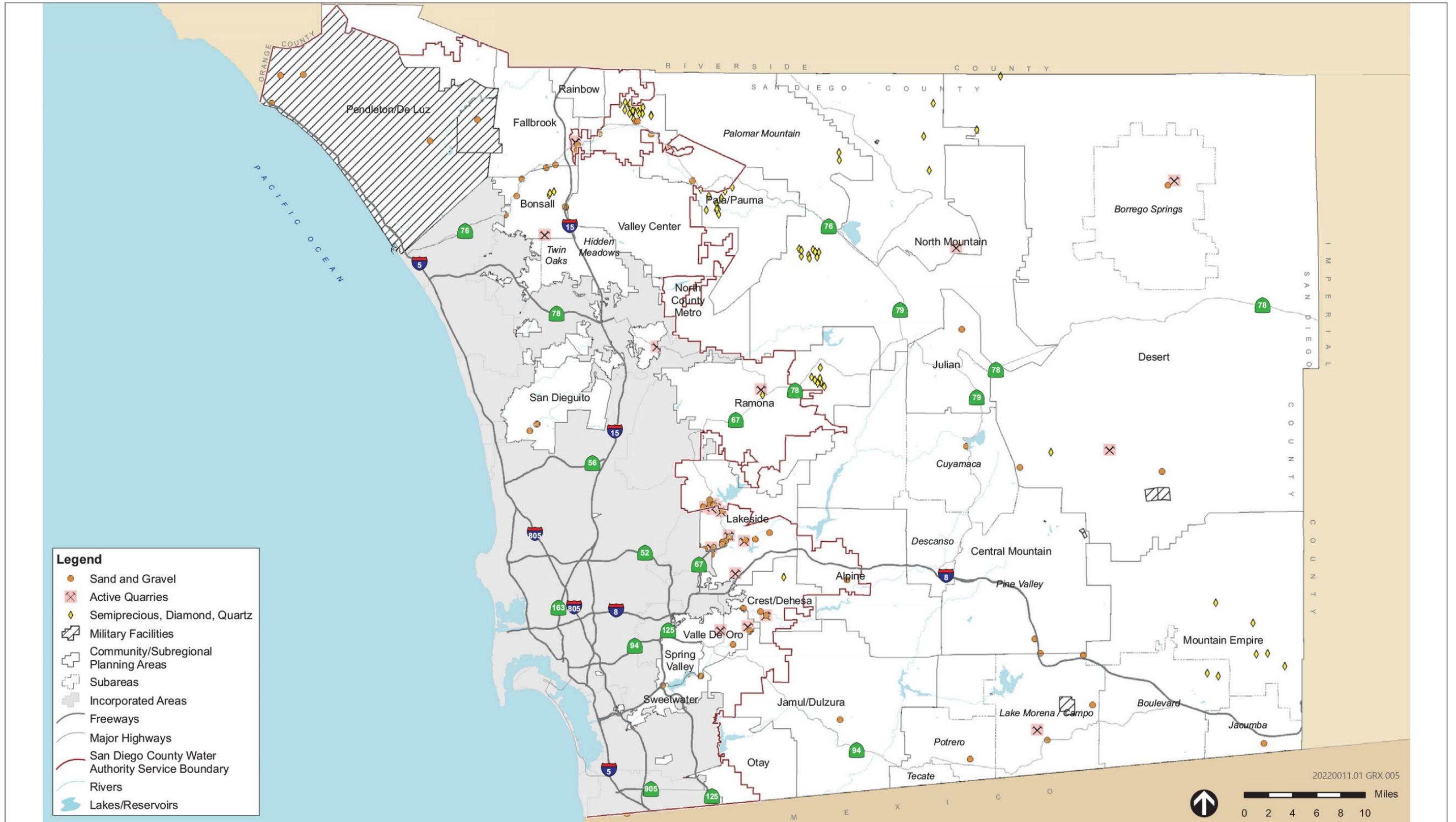
Potential Liquefaction Zones in San Diego County



Source: County of San Diego 2009.

Figure 2.8.5

Mineral Resource Zones in San Diego County



Source: County of San Diego 2009.

Figure 2.8.6

Mineral Resources in San Diego County