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4.9 HYDROLOGY AND WATER QUALITY

Would the Proposed Project:	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?			✓	
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			✓	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?			✓	
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				✓
e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			✓	
f) Otherwise substantially degrade water quality?			✓	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				✓

Would the Proposed Project:	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?				✓
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?			✓	
j) Cause inundation by seiche, tsunami, or mudflow?			✓	

4.9.0 Introduction

This section describes the existing surface and groundwater hydrology, use, and quality, as well as the potential for erosion and flooding for the proposed San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company—hereinafter referred to as "the Applicants"—Pipeline Safety & Reliability Project (Proposed Project). It also describes the potential impacts to hydrological features and water quality from construction, operation, and maintenance of the Proposed Project. The Proposed Project involves construction, operation, and maintenance of an approximately 47-mile-long, 36-inch-diameter natural gas transmission pipeline that will carry natural gas from SDG&E's existing Rainbow Metering Station to the pipeline's terminus on Marine Corps Air Station (MCAS) Miramar. The Proposed Project will include implementation of a Storm Water Pollution Prevention Plan (SWPPP) and SDG&E's Water Quality Construction Best Management Practices (BMPs) Manual, provided in Attachment 4.9-A: Water Quality Construction Best Management Practices Manual. In addition, the Proposed Project will implement an Applicants-Proposed Measure (APM) for water quality. As a result, the Proposed Project will result in a less-than-significant impact to hydrology and water quality.

4.9.1 Methodology

Hydrology and water quality in the Proposed Project area were evaluated through field surveys and review of the following:

- city and county general plans,
- watershed and groundwater basin plans,
- United States (U.S.) Geological Survey (USGS) 7.5-minute quadrangle maps,
- online geographic information system sources,
- aerial photographs of the Proposed Project area, and
- water quality studies.

The San Diego Regional Water Quality Control Board's (RWQCB's) Water Quality Control Plan for the San Diego Region (Basin Plan) was reviewed to ensure compliance with State regulations. Federal Emergency Management Agency (FEMA) maps and Dam Inundation Maps were referenced to determine the location and extent of flood hazard zones. In addition, field surveys were conducted in April 2015 to map drainages and potential wetlands that cross the Proposed Project or are located in close proximity to Proposed Project components. Additional detail on field survey methodology is provided in Section 4.4 Biological Resources.

4.9.2 Existing Conditions

The Proposed Project begins in the community of Rainbow at the San Diego-Riverside county border and continues south for approximately 47 miles through San Diego County and the cities of Escondido, Poway, and San Diego where it terminates near State Route 52 on MCAS Miramar land. The following subsections describe the regulatory background and environmental setting pertaining to hydrology and water quality for the Proposed Project.

Regulatory Background

The following federal, state, and local regulations and policies pertaining to hydrology and water quality are relevant to the Proposed Project.

Federal

Clean Water Act

The Clean Water Act (CWA) (Title 33, § 1251 et. seq. of the U.S. Code [U.S.C.]), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of waters of the U.S. The definition of waters of the U.S., as recently defined in the Clean Water Rule, includes traditional navigable waters, interstate waters, territorial seas, and impoundments of waters of the U.S.; tributaries of waters of the U.S.; waters adjacent to waters of the U.S., including ponds, lakes, wetlands, and similar water features; and waters determined to have a significant nexus to a water of the U.S. (Title 33, § 328.3[b] of the Code of Federal Regulations [CFR]).[1] Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Title 33, § 328.3[c] of the CFR). The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point sources and certain nonpoint source discharges to surface water.

Clean Water Act Sections 303 and 304

Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the U.S. (33 U.S.C. § 1313). Section 304(a) requires the U.S. Environmental Protection Agency (EPA) to publish water quality criteria that accurately reflect the latest scientific knowledge on the kind of effects and extent of effects that pollutants in water may have on health and welfare

[1] The Clean Water Rule: Definition of Waters of the United States—published in the Federal Register on June 29, 2015 and effective August 28, 2015—was issued to ensure that waters protected under the CWA are more precisely defined and predictably determined.

(33 U.S.C. § 1314[a]). Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based on biomonitoring methods may be employed when numerical standards cannot be established or when they are needed to supplement numerical standards.

Section 303(c)(2)(b) of the CWA requires states to adopt numerical water quality standards for toxic pollutants for which the U.S. EPA has published water quality criteria and which could reasonably be expected to interfere with designated uses in a waterbody. Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop a list of waterbodies where beneficial uses are impaired. The waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for water segments on the lists and develop action plans—called Total Maximum Daily Load (TMDL) plans—to improve water quality. Section 4.9.2 Existing Conditions provides the 303(d)-listed waterbodies whose watersheds are crossed by the Proposed Project and describes the contaminants listed for each waterbody.

Clean Water Act Section 401

Under Section 401 of the CWA, any applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters must obtain State Water Quality Certification (Certification) that the proposed activity will comply with state water quality standards. A Certification for the Proposed Project must be issued in connection with U.S. Army Corps of Engineers (USACE) CWA section 404 permitting for dredge and fill discharges in accordance with the applicable CWA provisions (33 U.S.C. § 1341).

Clean Water Act Section 402

The National Pollutant Discharge Elimination System (NPDES) program was established in 1972 to control discharges of pollutants from defined point sources (33 U.S.C. § 1342). The program originally focused on industrial-process wastewater and publically owned treatment works. In 1987, Section 402 of the CWA was amended to include requirements for five separate categories of storm water discharges, known as Phase I facilities. Phase I facilities include the following:

- facilities already covered by an NPDES permit for storm water,
- facilities that engage in industrial activities (including construction activities with five or more acres of soil disturbance),
- large municipal separate storm drain systems that serve more than 250,000 people,
- medium municipal separate storm drain systems that serve between 100,000 and 250,000 people, and
- facilities that are considered significant contributors of pollutants to waters of the U.S.

The U.S. EPA issued a final rule for Phase II discharges in August 1995. Phase II storm water discharges include light industrial facilities, small construction sites (i.e., less than five acres), and small municipalities (i.e., populations of less than 100,000 people).

On August 19, 1999, the State Water Resources Control Board (SWRCB) reissued the General Permit for Storm Water Discharges Associated with Construction Activity (Water Quality Order 99-08-DWQ) and, later in 2002, amended the permit to apply to sites as small as one acre. In California, with the exception of construction activities that are conducted on Indian Tribal Lands, NPDES permitting authority is delegated to, and administered by, the nine RWQCBs.

On September 2, 2009, the SWRCB adopted Order No. 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-0006-DWQ) (Construction General Permit), which reissued Water Quality Order 99-08-DWQ and incorporated Water Quality Order 2003-0007 (Small Linear Utility General Permit) for projects disturbing one or more acres of land, or that are part of a common plan of development or sale that disturbs more than one acre of land where the rainfall erosivity waiver does not apply. The new permit became effective July 1, 2010, whereby all existing dischargers and new dischargers are required to obtain coverage under the new permit by submitting Permit Registration Documents.

The Construction General Permit requires the implementation of a SWPPP, which must be prepared before construction begins and kept on site (or readily available) throughout the construction process. In accordance with the Construction General Permit, the SWPPP must include the following:

- identification of pollutant sources and non-storm water discharges associated with construction activity;
- specifications for BMPs that will be implemented during project construction to minimize the potential for accidental releases and runoff from the construction areas, including temporary construction yards, pull sites, and other temporary work areas;
- calculations and design details, as well as BMP controls for site run-on;
- BMPs used to eliminate or reduce pollutants after construction is complete; and
- certification from a Qualified SWPPP Developer.

The Construction General Permit requires that the site sediment risk is calculated based on rainfall, soil erodibility, and slope. It also requires that the receiving water risk is calculated based on whether the disturbed areas discharge to a 303(d)-listed waterbody that is impaired for sediment or that has a U.S. EPA-approved TMDL plan for sediment. The receiving water risk must also be calculated based on whether the disturbed areas discharge to a waterbody with a beneficial use of fish spawning, cold freshwater habitat, and fish migration. The result of this analysis determines the combined risk (i.e., 1, 2, or 3), which dictates the monitoring and reporting requirements. Linear underground/overhead projects (LUPs) can be broken into two or more segments for permitting purposes based upon several factors, one of which is risk.

Clean Water Act Section 404

Section 404 of the CWA prohibits the discharge of dredge or fill material into waters of the U.S. without a permit from the USACE. The U.S. EPA has veto authority over the USACE's

administration of the Section 404 program and may override a USACE decision with respect to permitting.

The USACE issues individual site-specific permits or general permits (i.e., Nationwide Permits or Regional General Permits) for such discharges. A WQC or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions.

Rivers and Harbors Appropriation Act Section 10

Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. § 401 et seq.) makes it unlawful to obstruct or alter a navigable river or other navigable water of the U.S. Construction, excavation, or deposition of materials in, over, or under such waters—or any work that will affect the course, location, condition, or capacity of those waters—requires a Section 10 permit and approval from the USACE.

National Flood Insurance Program

FEMA is responsible for determining flood elevations and floodplain boundaries based on USACE studies. FEMA is also responsible for distributing the Flood Insurance Rate Maps (FIRMs) used in the National Flood Insurance Program (NFIP). These maps identify the locations of special flood hazard areas, including the 100-year floodplain. FEMA allows non-residential development in floodplains; however, construction activities are restricted within flood hazard areas, depending on the potential for flooding within each area. Federal regulations governing development in a floodplain are set forth in Title 44, Part 60 of the CFR, enabling FEMA to require municipalities that participate in the NFIP to adopt certain flood hazard reduction standards for construction and development in 100-year floodplains.

Floodplain Management (Executive Order 11988)

Executive Order (EO) 11988, issued on May 24, 1977, requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, EO 11988 states that "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities" for the following actions:

- acquiring, managing, and disposing of federal lands and facilities;
- providing federally undertaken, financed, or assisted construction and improvements;
- conducting federal activities and programs affecting land use, including, but not limited to water and related land resources planning, regulation, and licensing activities.

The federal government has developed processes for evaluating the impacts of federal actions in or affecting floodplains to implement EO 11988.

Federal Flood Risk Management Standard (Executive Order 13690)

Presidential EO 13690 was issued in January 2015 to create a new flood risk reduction standard. The Federal Flood Risk Management Standard (FFRMS) is designed to be a flexible framework to increase resiliency against flooding and to help preserve the natural values of floodplains. The FFRMS is part of a national policy on resilience and risk reduction that is consistent with the June 2013 Climate Action Plan issued by the Executive Office of the President. Incorporating the FFRMS will ensure that federal agencies expand management from the current base flood level to a higher vertical elevation and corresponding horizontal floodplain to address current and future flood risk and ensure that projects funded with taxpayer dollars last as long as intended. Specifically, the FFRMS creates a national minimum flood risk management standard to ensure that federal actions located in or near a floodplain when there are no other practical alternatives last as long as intended by considering risks, changes in climate, and vulnerability.

EO 13690 also sets forth a process for further solicitation and consideration of public input on revisions to the implementation guidance document ("Revised Guidelines for Implementing Executive Order 11988, Floodplain Management-Draft for Public Comment, 1/28/15" or "Implementation Guidance"). The Implementation Guidance has been issued in draft form but has not yet been finalized by FEMA. All affected federal agencies will be required by June 15, 2015 to develop a plan and schedule for revising applicable regulations and procedures such that requirements of EO 13690 and FFRMS will be implemented within one year.

The FFRMS, and the Implementation Guidelines as drafted, apply to structures or facilities that are constructed within a floodplain, or adjacent to a floodplain and that could affect the floodplain. EO 11988 and the Floodplain Management Guidelines For Implementing EO 11988 (Implementing Guidelines) apply to Federal Actions in or affecting floodplains and define a Federal Action as: "(1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to, water and related land use resource planning, regulating, and licensing activities."

The final Implementation Guidance may limit these new requirements to just those actions that are federally funded. "Structures" are defined to have walls and a roof while "facilities" are defined as any other man-made or man-placed item other than a structure. Construction refers to activities that involve new construction or the reconstruction of greater than 50 percent of an existing facility or structure.

EO 13690 and the FFRMS also institute new approaches to defining a floodplain. According to the draft Implementation Guidelines, the intent of the new approach regarding floodplains is to "ensure that uncertainties associated with climate change and other future changes are more adequately accounted for in the agency decision-making process". In addition, the new approach to floodplains allow consideration for whether a structure or facility should be allowed within an expanded floodplain and, if so, what additional requirements will be applicable to make it more resilient to floods.

The FFRMS establishes the following three approaches to defining floodplains:

- *Climate-informed Science Approach* – The elevation and flood hazard area that result from using a climate-informed science approach that uses the best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding based on climate science. This approach will also include an emphasis on whether the action is a critical action as one of the factors to be considered when conducting the analysis. This approach is preferred. According to the FFRMS, Federal departments and agencies should use this approach when data to support such an analysis is available.

- *Freeboard Value Approach* – The elevation and flood hazard area that result from using the freeboard value, reached by adding an additional 2 feet to the base flood elevation for non-critical actions and from adding an additional 3 feet to the base flood elevation for critical actions.

- *500-year Elevation Approach* – The area subject to flooding by the 0.2 to 100 percent-annual-chance flood.

The Climate-informed Science Approach is the preferred approach when relevant data is available. When actionable science is not available, a Federal department or agency may also select the Freeboard Value Approach, the "500-year" Flood Elevation Approach, or a combination of approaches as appropriate. A federal department or agency is not required to use the higher of the elevations but may opt to do so. As a result, the implementing agencies will develop implementation plans revising their regulations and guidance as needed.

State

California Fish and Game Code Sections 1600 through 1606

Sections 1601 through 1606 of the California Fish and Game Code require that a Notification of Lake or Streambed Alteration be submitted to the California Department of Fish and Wildlife (CDFW) for any proposed action that "may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." The CDFW reviews the proposed action and, if necessary, submits a proposal to the applicant that includes measures to protect affected fish and wildlife resources of a river, lake, or stream. The final mutually agreed-upon proposal constitutes the Lake or Streambed Alteration Agreement.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1967 (California Water Code Section 13000 et seq.), requires that the SWRCB and the nine RWQCBs adopt water quality criteria to protect waters of the State. These criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. The criteria for the Proposed Project area are contained in the San Diego RWQCB's Basin Plan.

San Diego Regional Water Quality Control Board Basin Plan

The San Diego RWQCB (Region 9) is responsible for protecting the beneficial uses of surface water and groundwater resources in the San Diego area. The RWQCB adopted the Basin Plan in 1975. It underwent a revision in September 1994 which incorporated a number of interim amendments and has been amended a number of times since 1994. The plan sets forth implementation policies, goals, and water management practices in accordance with the Porter-Cologne Water Quality Control Act and establishes both numerical and narrative standards and objectives for water quality aimed at protecting aquatic resources. Discharges to surface waters within the approximately 3,900 square miles of the San Diego Basin are subject to the regulatory standards set forth in the Basin Plan, which prevents the unauthorized discharge of pollutants into waters of the U.S. and/or waters of the State. NPDES permits, waste discharge requirements, and waivers are mechanisms used by the RWQCB to control discharges and protect water quality.

Local

Pursuant to Article XII, Section 8 of the California Constitution, the California Public Utilities Commission (CPUC) has exclusive jurisdiction in relation to local government to regulate the design, siting, installation, operation, maintenance, and repair of natural gas pipeline transmission facilities. Other state agencies have concurrent jurisdiction with the CPUC. Although local governments do not have the power to regulate such activities, the CPUC encourages, and the Applicants participate in, cooperative discussions with affected local governments to address their concerns where feasible. As part of the environmental review process, the Applicants have considered relevant regional and county, policies, and issues, and have prepared this evaluation of the Proposed Project's potential impacts to hydrology and water quality. As outlined in the following sections, the construction and operation of the Proposed Project will not conflict with any environmental plans, policies, or regulations adopted by agencies with jurisdiction over local regulations related to hydrology and water quality.

San Diego Regional Water Quality Control Board Regional Municipal Storm Water Permit

The San Diego RWQCB issued the San Diego Municipal Permit Order No. R9-2013-0001 (NPDES No. CAS0109266)—as amended in February 2015 with Order No. R9-2015-0001—with the primary goal of preventing polluted discharges from entering the storm water conveyance system and local receiving and coastal waters. Within San Diego County, the Regional Municipal Storm Water Permit jointly covers 21 municipal, county government, and special district entities—known as "co-permittees". Pursuant to the permit, the co-permittees are required to develop and implement measures that will address and prevent pollution from development projects. Priority development projects are also required to include permanent BMPs in the design to reduce pollutant discharges from project sites. Implementation of the permit is proceeding in accordance with the schedules within the permit.

County of San Diego Standard Urban Stormwater Mitigation Plan

In order to comply with the San Diego RWQCB's San Diego Municipal Permit (NPDES No. CAS0109266), a Standard Urban Stormwater Mitigation Plan (SUSMP) was developed in January 2011 and revised in August 2012 for San Diego County. A Storm Water Management Plan that complies with the criteria provided in the SUSMP must be developed for applicable

priority development projects in San Diego County. In accordance with the amended San Diego Municipal Permit Order No. R9-2015-0001, a Regional BMP Design Manual—which will supersede the existing SUSMP—has been drafted and is currently under public review. In accordance with the amended San Diego Municipal Permit Order No. R9-2015-0001, priority development projects must implement specific structural BMPs that conform to performance requirements specific to storm water pollutant control, hydromodification management, long-term structural BMP maintenance, as well as infiltration and groundwater protection. The Regional BMP Design Manual will provide technical guidance and regional standards for pollutant and flow control performance requirements for new priority development projects.

The SUSMP will remain in effect until December 24, 2015, when the Regional BMP Design Manual will apply to construction projects. Projects that are in the early planning or design phase, and not anticipated to begin construction before December 2015, are strongly recommended to incorporate the requirements listed in the Regional BMP Design Manual. The existing public draft Regional BMP Design Manual currently discusses source control and site design requirements, storm water pollutant control requirements, hydromodification management requirements, long term operation and maintenance requirements, as well as alternative compliance methods. Additionally, in accordance with the amended San Diego Municipal Permit Order No. R9-2015-0001, the Regional BMP Design Manual requires priority development projects to avoid development in "critical coarse sediment yield areas" or to implement measures that allow critical coarse sediment to be discharged to receiving waters, such that there is no net impact to the receiving water. A Watershed Management Area Analysis is currently under development by the County of San Diego that identifies areas of critical coarse sediment yield areas.

General Setting

The Proposed Project is located in the western portion of San Diego County, at elevations ranging from 246 feet to 1,161 feet. The weather conditions in this region are representative of a Mediterranean climate, with mild, rainy winters and warm, dry summers. Average maximum and minimum temperatures in the area—recorded at the National Oceanic and Atmospheric (NOAA) station in the City of Escondido—are 77.5 degrees Fahrenheit (˚F) and 52.6˚F, respectively. The average annual rainfall, as measured at the NOAA station in Escondido, is 15.00 inches per year, with the majority of precipitation falling in the winter months (December to February). The average rainfall during the winter months is 8.58 inches, and the average rainfall in the summer months (June to August) is only 0.28 inches.

The Proposed Project is located in the San Diego River Hydrologic Basin Region (San Diego Region), which covers approximately 3,900 square miles in the southwestern portion of California and includes the majority of San Diego County and portions of Riverside and Orange counties. The San Diego Region is bounded to the west by 85 miles of the Pacific Ocean coastline; to the north by the hydrologic divide starting near Laguna Beach and extending inland through El Toro and along the ridge of the Elsinore Mountains into the Cleveland National Forest; to the east by the Laguna Mountains and the mountains of Cleveland National Forest; and to the south by the U.S.-Mexico border. One of the most significant geographic features in the region is the Peninsula Range, which is characterized by a gently sloped western surface and

steeply sloped eastern surface. The Peninsula Range includes the Santa Ana, Agua Tibia, Palomar, Volcan, Cuyamaca, and Laguna mountains.

The San Diego Region is divided into 11 hydrologic units (HUs), 54 hydrologic areas (HAs), and 147 hydrologic subareas (HSAs). As defined in the San Diego RWQCB's Basin Plan, HUs encompass the entire watershed of one or more streams, HAs encompass major tributaries and/or major groundwater basins within an HU, and HSAs encompass major subdivisions of HAs, including both water-bearing and non-water-bearing formations. Each HU is identified by a unique hydrologic unit code.

The Proposed Project is situated within the following six HUs, which are listed with their hydrologic unit codes from north to south:

- Santa Margarita (902.00),
- San Luis Rey (903.00),
- Carlsbad (904.00),
- San Dieguito (905.00),
- Peñasquitos (906.00), and
- San Diego (907.00).

Table 4.9-1: Hydrologic Units, Areas, and Subareas within the Proposed Project Area lists the HUs, HAs, and HSAs that occur within the Proposed Project area, and Figure 4.9-1: Hydrologic Regions and Groundwater Basins Map depicts the locations of these areas. Each of the HUs within the Proposed Project area ultimately flow west to the Pacific Ocean, which ranges from 10 to 25 miles west of the Proposed Project, depending on location.

Santa Margarita Hydrologic Unit

The Santa Margarita HU extends across approximately 750 square miles of northern San Diego and southwestern Riverside counties. Approximately 27 percent of the total watershed area is located within San Diego County. The Santa Margarita River, the main drainage channel, forms in Riverside County near the City of Temecula, at the confluence of the Temecula Creek and Murrieta Creek systems. The majority of the Santa Margarita River main stem is located in San Diego County and flows through unincorporated areas of the county; the community of Fallbrook; Marine Corps Base, Camp Pendleton; and into the Pacific Ocean. The Santa Margarita Watershed supports various habitats, including chaparral-covered hillsides, riparian woodlands, and coastal marshes.

San Luis Rey Hydrologic Unit

The San Luis Rey HU extends across approximately 562 square miles of northern San Diego County and is surrounded by the Santa Margarita Watershed to the north, and the Carlsbad and San Dieguito watersheds to the south. The San Luis Rey River System forms in the Palomar and Hot Springs mountains at elevations greater than 600 feet above mean sea level, along with several other mountain ranges to the west of Anza Borrego Desert Park. The river travels for approximately 55 miles, ultimately flowing into the Pacific Ocean near the City of Oceanside.

Table 4.9-1: Hydrologic Units, Areas, and Subareas within the Proposed Project Area

HU	HA(s)	HSA(s)
Santa Margarita (902.00)	DeLuz (902.2)	Vallecitos
San Luis Rey (903.00)	Lower San Luis (903.1)	Bonsall
		Moosa
Carlsbad (904.00)	San Marcos (904.5)	Twin Oaks
		Richland
	Escondido Creek (904.6)	Escondido
San Dieguito (905.00)	Hodges (905.2)	Del Dios
		Green
Peñasquitos (906.00)	Miramar Reservoir (906.1)	Undefined
	Poway (906.2)	Undefined
	Miramar (906.4)	Undefined
San Diego (907.00)	Lower San Diego (907.1)	Mission San Diego

Source: San Diego RWQCB 1994

Carlsbad Hydrologic Unit

The Carlsbad HU extends across approximately 210 square miles, encompassing the cities of Carlsbad, San Marcos, and Encinitas. The Carlsbad Watershed is bordered by the Pacific Ocean to the west; the headwaters above Lake Wohlford to the east; the cities of Vista and Oceanside to the north; and the cities of Solana Beach and Escondido and the community of Rancho Santa Fe to the south. Four unique coastal lagoons, three major creeks, and two large water storage reservoirs are located within this HU.

San Dieguito Hydrologic Unit

The San Dieguito HU extends across approximately 346 square miles of west-central San Diego County. The watershed encompasses portions of the cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach, as well as unincorporated areas of San Diego County. The San Dieguito River, the main drainage channel, forms in eastern San Diego County in the Volcan Mountains. The watershed supports five water storage reservoirs (i.e., Lake Hodges, Lake Sutherland, Lake Poway, Olivenhain, and San Dieguito Reservoir) and one coastal lagoon (i.e., the San Dieguito Lagoon). The San Dieguito Lagoon is located in the City of Del Mar at the mouth of the San Dieguito River and is usually isolated from the Pacific Ocean by a sandbar.

Peñasquitos Hydrologic Unit

The Peñasquitos HU encompasses the Los Peñasquitos Creek Watershed, the Mission Bay Watershed, and several coastal tributaries, all of which drain a highly urbanized area in coastal San Diego County. These watersheds discharge mainly into Los Peñasquitos Lagoon and Mission Bay.

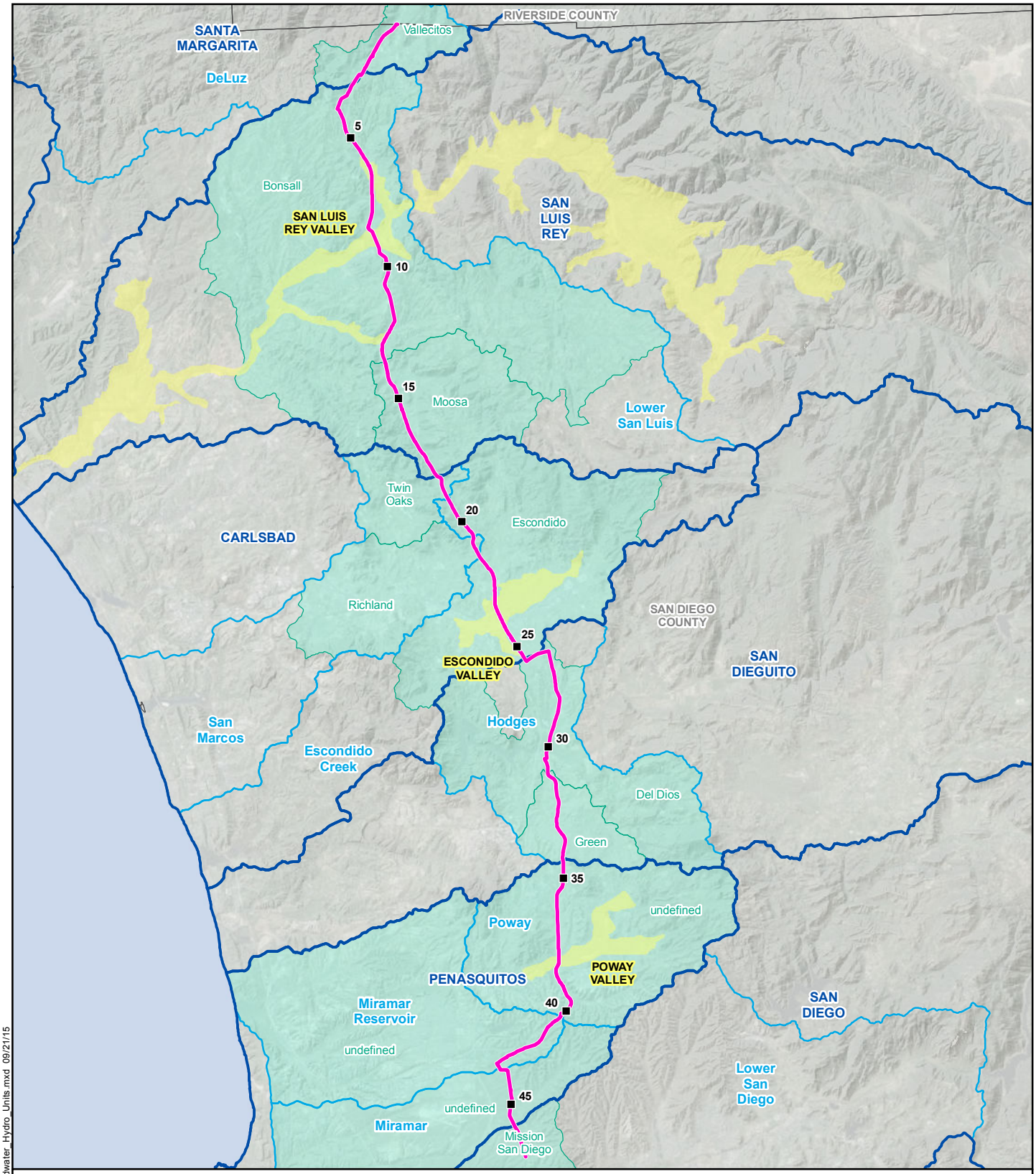

Figure 4.9-1: Hydrologic Regions and Groundwater Basins Map **Pipeline Safety & Reliability Project**

- Milepost
- Proposed Project Route
- Groundwater Basin
- Hydrologic Unit
- Hydrologic Area
- Hydrologic Subarea

1:310,000
0 2.5 5 Miles

\MXDs\PEA\Hydro\Groundwater_Hydro_Units.mxd 09/21/15

San Diego Hydrologic Unit

The San Diego HU extends across approximately 440 square miles of San Diego County, through portions of the cities of San Diego, El Cajon, La Mesa, Poway, and Santee and several unincorporated areas of San Diego County. The San Diego River, the main drainage channel, forms in the mountains northwest of the Town of Julian, terminating in the Pacific Ocean near the community of Ocean Beach. The San Diego River has several major tributaries, including Boulder, Conejos, Los Coches, San Vincente, and Forester creeks. The San Diego HU also contains five reservoirs, including El Capitan, San Vicente, Lake Jennings, Lake Cuyamaca, and Lake Murray; extensive riparian habitat; coastal wetlands; and tidepools.

Rivers, Creeks, Waterbodies, and Wetlands

The Proposed Project crosses several named rivers, creeks, and other waterbodies, including Rainbow Creek, the San Luis Rey River, Moosa Creek, Vista Canal, Reidy Canyon Creek, Escondido Creek, Lake Hodges/the San Dieguito River, Poway Creek, Beeler Creek, and the Second San Diego Aqueduct. In addition, the Proposed Project crosses numerous unnamed intermittent creeks, drainages, wetlands. Table 4.9-2: USGS Blue-Line Hydrologic Features Crossed by the Proposed Project lists the named USGS blue-line features located within the Proposed Project right-of-way (ROW). Attachment 4.9-B: National Wetlands Inventory Map depicts the National Wetlands Inventory (NWI) wetlands within the vicinity of the Proposed Project. These wetland areas represent coarse-grain, publicly available wetlands data that provided background information for the preliminary wetlands and waters assessment conducted by Insignia Environmental in the winter of 2014 and spring of 2015. Each of the NWI wetland areas shown in Attachment 4.9-B: National Wetlands Inventory Map was evaluated to verify the presence or absence of wetland conditions during the preliminary wetlands and waters assessment. Not all NWI wetland areas were determined to exhibit wetland characteristics during the preliminary wetlands and waters assessment. Some areas mapped as NWI wetlands contained some hydrophytic vegetation but were not dominated by hydrophytic vegetation, and as a result, they were not mapped as wetlands during the preliminary wetlands and waters assessment. The results of the preliminary wetlands and waters assessment are provided in Attachment 4.4-A: Biological Resources Technical Report, which further describes all of the field-verified, unnamed intermittent creeks, drainages, and wetlands within or crossed by the Proposed Project ROW.

Groundwater

The Proposed Project is located in the San Diego Subregion of the South Coast Hydrologic Region of California. Within the San Diego Subregion, there are 27 delineated groundwater basins. While the majority of the Proposed Project is not located within a groundwater basin, portions of the ROW are situated within the San Luis Rey Valley, Escondido Valley, and Poway Valley groundwater basins. Section 4.6 Geology, Soils, and Seismicity provides the locations of several areas within the Proposed Project where loose- to medium-dense alluvial soils and shallow groundwater may be present, according to the results of the Geologic Hazard Assessment provided in Attachment 4.6–A: Geologic Hazard Assessment. Figure 4.9-1: Hydrologic Regions and Groundwater Basins Map depicts the locations of the groundwater basins crossed by the Proposed Project. Additional detail regarding groundwater basins crossed by the Proposed Project is provided in the following subsections.

Table 4.9-2: USGS Blue-Line Hydrologic Features Crossed by the Proposed Project

Feature	Feature Type	Type of Crossing	Approximate MP
Rainbow Creek	Intermittent stream	Horizontal Bore	1.9
San Luis Rey River	Intermittent River	Horizontal directional drilling (HDD)	8.8
Moosa Creek	Intermittent Stream	To Be Determined[2] (TBD)	14.0
Vista Canal	Underground Concrete Channel	TBD	20.8
Reidy Canyon Creek	Concrete Channel	Horizontal Bore	22.4
Escondido Creek	Intermittent Stream	Horizontal Bore	24.1
Lake Hodges/San Dieguito River	Lake/Intermittent River	HDD	29.6 – 30.2
Poway Creek[3]	Intermittent Stream	Not Applicable (N/A)	38.0
Beeler Creek[3]	Intermittent Stream	N/A	39.0
Second San Diego Aqueduct	Underground Concrete Channel	Horizontal Bore	42.8, 43.8, 46.6
Rose Creek	Intermittent Stream	TBD	44.6

Source: USGS 2015

San Luis Rey Valley Groundwater Basin

Approximately 1.58 miles of the Proposed Project—from Milepost (MP) 6 to MP 6.9 and from MP 8.5 to MP 9.2—are located within the San Luis Rey Valley Groundwater Basin. This groundwater basin extends across approximately 58 square miles along the western coast of San Diego County, underlying an east-to-west alluvium-filled valley drained by the San Luis Rey River. The basin is bounded by the Pacific Ocean to the west, and the contact of alluvium with impermeable Mesozoic granitic and Pre-Cretaceous metamorphic rocks to the east.

The primary water-bearing deposits of this basin are Quaternary and younger alluvium, which measure 200 feet of thickness on average. Recharge of the basin occurs from imported irrigation water applied on upland areas and storm-flow in the San Luis Rey River and its tributaries. Average well yields measure 500 gallons per minute (gpm), but can reach up to 2,000 gpm. As groundwater recharge is inconsistent, groundwater levels generally fluctuate from year to year. While overall groundwater levels in the San Luis Rey Valley Basin steeply declined during the 1950s and 1960s, levels subsequently increased primarily because of the development of imported water resources. More recent depth-to-water measurements range from at ground surface to 20

[2] At the current level of design, the crossing method has not been determined for all hydrologic features crossed by the Proposed Project.

[3] Poway Creek and Beeler Creek are located along an approximately one-mile pre-lay segment of existing pipe where new pipe is not required and new construction impacts are not anticipated. As a result, this section may overstate impacts because Beeler Creek and Poway Creek will likely not be crossed by the Proposed Project.

feet below ground surface (bgs) (California Department of Water Resources [DWR] 1984). The total groundwater storage capacity is estimated at approximately 240,000 acre-feet, and current groundwater storage is unknown. Groundwater in the San Luis Rey Valley Groundwater Basin is calcium-bicarbonate, calcium-sulfate-bicarbonate, and calcium-sulfate types. The Department of Health Services conducted an analysis of 19 wells in 1983, total dissolved solids (TDS) content ranges from 530 to 7,060 milligrams per liter (mg/L), averaging 1,258 mg/L.

Escondido Valley Groundwater Basin

Approximately 1.50 miles of the Proposed Project—from MP 23.1 to MP 24.2 and from MP 25.1 to MP 25.4—are located within the Escondido Valley Groundwater Basin. This groundwater basin is relatively small, extending across approximately 4.5 square miles of central San Diego County, and underlying a northeast-trending valley drained by Escondido Creek. The basin is bound by the contact of residuum with impermeable Cretaceous granitic rocks and pre-Cretaceous metamorphic rocks. The primary water-bearing deposits are Quaternary alluvium and residuum; however, Quaternary alluvium likely lacks the thickness to be water-bearing, and groundwater production largely occurs from residuum. In addition, many wells extract groundwater from fractures in the underlying crystalline rocks. The total groundwater storage capacity was estimated at approximately 24,000 acre-feet, and current groundwater storage is unknown. Groundwater is generally found between at ground surface and 50 feet bgs, as estimated in 1967. Average well yields measure 50 gpm, with a maximum rate of 190 gpm. Groundwater in the Escondido Valley Groundwater Basin is mainly of sodium chloride type, with lower amounts of magnesium, calcium, bicarbonate, and nitrate ions. Groundwater TDS content ranges from 250 mg/L to 5,000 mg/L. Local sources of groundwater in this basin vary in quality, ranging from suitable to inferior for domestic use. Groundwater designated as inferior for domestic use contains high nitrate, TDS, or sulfate content.

Poway Valley Groundwater Basin

Approximately 0.41 mile of the Proposed Project—from MP 37.8 to MP 38.2—is located within the Poway Valley Groundwater Basin. This groundwater basin is relatively small, extending across 3.9 square miles of west-central San Diego County, underlying a portion of Poway Valley drained by Poway and Los Peñasquitos Creeks to the Pacific Ocean. The basin is bound by impermeable rocks of the Peninsular Ranges, and groundwater generally flows to the west. The primary water-bearing deposits are alluvium—with an average thickness of 40 feet—and residuum—with an average thickness of 70 feet. The groundwater basin is primarily recharged through precipitation and infiltration along Poway Creek from the east. Irrigation waters and septic tank effluent also recharge the basin, although these sources are limited. Average well yields measure 100 gpm, with a maximum rate of 200 gpm. While the total groundwater storage capacity of the Poway Valley Groundwater Basin is unknown, 2,330 acre-feet of groundwater was estimated to be in storage in 1984; therefore, the groundwater basin has the potential to store at least this amount. According to measurements taken between 1984 and 1985, groundwater can be found between 5 and 266 feet in depth bgs (Evenson 1989). While groundwater in the Poway Valley Groundwater Basin is characteristically high in sodium chloride, wells near Beeler Creek exhibit higher concentrations of calcium bicarbonate. Groundwater TDS content ranges from approximately 610 mg/L to 1,500 mg/L, and high TDS content contributes to a marginal rating for domestic use. In addition, groundwater is considered marginal to inferior for irrigation in some areas of the basin due to high chloride content.

Groundwater Supply Wells

Public and private groundwater supply wells can be used as a potable water supply for residents in San Diego County. Table 4.9-3: Groundwater Supply Wells Within 150 Feet of the Proposed Project lists the public and private groundwater supply wells located within 150 feet of the Proposed Project. Ten public and private groundwater supply wells within 150 feet of the Proposed Project were identified through a review of well permit data and logs.

Table 4.9-3: Groundwater Supply Wells Within 150 Feet of the Proposed Project

Well Number[4, 5]	Accessor's Parcel Number	Approximate Distance to the Proposed Project Alignment (feet)	Approximate MP
21136	102-650-05-00	100	0.1
21342	108-031-02-00	72	2.8
376	108-031-02-00	129	2.8
435	108-411-01-00	96	6.1
2	108-411-02-00	91	6.2
979	108-411-02-00	77	6.3
436	108-400-15-00	80	6.6
19542	185-363-20-00	50	15.4
760	172-091-27-00	50	15.5
10276	273-630-11-00	39	32.5

Source: Munter 2015; Google 2014

Surface Water Quality

The Basin Plan designates beneficial uses for surface and ground waters in the San Diego Region, and it also sets narrative and numeric objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's antidegradation policy. Table 4.9-4: Beneficial Uses of Hydrological Features describes the designated beneficial use of each surface water located within the Proposed Project area. Table 4.9-4: Beneficial Uses of Hydrological Features also includes fishery types for waterbodies crossed by the Proposed Project that comprise warm freshwater habitat, cold freshwater habitat, spawning, reproduction, and/or early development for marine and/or cold freshwater fish, and those classified as rare, threatened, and endangered species. Beneficial uses for unnamed ephemeral surface waters crossed by the Proposed Project have not been designated within the Basin Plan.

[4] Public and private groundwater supply well data was collected from the County of San Diego; however, the wells were not spatially mapped and many of the permit applications did not include coordinates. Therefore, the well logs and permits were utilized to plot approximate locations of the groundwater supply wells. A field investigation will be required to determine their exact locations and distance from the Proposed Project alignment.

[5] Well numbers are assigned by the County of San Diego staff and correspond with the well permit applications.

Table 4.9-4: Beneficial Uses of Hydrological Features

Water Feature	Beneficial Uses[6]														
	MUN	AGR	IND	PROC	REC1	REC2	BIOL	WARM	COLD	WILD	SPWN	RARE	MAR	SHELL	EST
Rainbow Creek	●	●	●		●	●		●	●	●	●				
Santa Margarita River	●	●	●		●	●		●	●	●		●			
San Luis Rey River		●	●		●	●	●	●		●		●			
Moosa Creek		●	●		●	●		●		●					
Keys Creek		●	●		●	●		●		●					
San Marcos Creek		●			●	●		●		●					
Reidy Canyon Creek	●	●			●	●		●	●	●					

[6] Explanation of beneficial use codes:

- MUN: municipal and domestic supply
- AGR: agricultural supply
- IND: industrial service supply
- PROC: industrial process supply
- REC1: contact water recreation
- REC2: non-contact water recreation
- BIOL: preservation of biological habitats of special significance
- WARM: warm freshwater habitat
- COLD: cold freshwater habitat
- WILD: wildlife habitat
- SPWN: spawning, reproduction, and/or early development for marine and/or cold freshwater fish
- RARE: rare, threatened, and endangered species
- MAR: marine habitat
- EST: estuarine habitat
- SHELL: shellfish harvesting

Water Feature	Beneficial Uses[6]														
	MUN	AGR	IND	PROC	REC1	REC2	BIOL	WARM	COLD	WILD	SPWN	RARE	MAR	SHELL	EST
Escondido Creek	●	●			●	●		●	●	●					
Kit Carson Creek	●	●	●	●	●	●		●		●		●			
Lake Hodges	●	●	●	●	●	●		●	●	●		●			
San Dieguito River	●	●	●	●	●	●	●	●	●	●		●			
Green Valley Creek	●	●	●	●	●	●		●		●					
Poway Creek		●			●	●		●		●					
Los Peñasquitos Creek		●	●		●	●	●	●	●	●					
Los Peñasquitos Lagoon					●	●	●			●		●	●	●	●
Soledad Canyon		●	●			●		●	●	●					
Beeler Creek		●			●	●		●		●					
Rose Creek					●	●		●		●					

Source: San Diego RWQCB 1994

303(d)-Listed Waterbodies

The following waterbodies crossed by the Proposed Project are listed as impaired pursuant to Section 303(d) of the CWA:

- Rainbow Creek,
- the San Luis Rey River,
- Escondido Creek,
- Lake Hodges,
- the San Dieguito River,
- Poway Creek, and
- Rose Creek.

The Proposed Project alignment is also located within the watersheds of the following 303(d)-listed waterbodies:

- Santa Margarita River,
- Keys Creek,
- San Marcos Creek,
- Kit Carson Creek,
- Green Valley Creek,
- Los Peñsaquitos Creek,
- Los Peñsaquitos Lagoon, and
- Soledad Canyon.

Table 4.9-5: 303(d)-Listed Waterbodies in the Proposed Project depicts the proximity of these 303(d)-listed waterbodies to the Proposed Project and lists the contaminants for each. San Marcos Creek and Soledad Canyon are listed for sediment toxicity, Lake Hodges is listed for turbidity, and Los Peñasquitos Lagoon is listed for sedimentation/siltation.

Floodplains

As discussed in the Regulatory Background section, the guidance and regulations for implementing the FFRMS—including the applicability of the FFRMS to this type of project—have not been finalized. Therefore, for the purposes of this analysis, the following discussion is based on the proposed draft guidance and regulations available at the time of submittal of this Proponent's Environmental Assessment.[7] Floodplains are defined under the FFRMS using one of the following approaches: the Climate-informed Science Approach, the Freeboard Value Approach, or the "500-year" Elevation Approach. The Climate-informed Science Approach is the preferred approach when relevant data is available. Climate-informed data is available for Coastal Flood Hazard Areas from the U.S. Department of Commerce's – National Oceanic and Atmospheric Administration's (NOAA's) or from similar global mean sea-level-rise (GMSLR) scenarios, adjusted to local relative sea-level (LRSL) conditions. However, the Proposed Project is located approximately 8.5 miles from the coast at the nearest point, and Coastal Flood Hazard

[7] The Proposed Project will be constructed in accordance with the final guidance and regulations issued by the applicable agencies.

Area data is therefore not likely to be relevant. Sufficient climate-informed data for Riverine Flood Hazard Areas, such as generated by the Hydrologic Engineering Centers River Analysis System (HEC-RAS) modeling is not currently available for the riverine areas along the Proposed Project route. As a result, the "500-year" Flood Elevation Approach was selected to define potential floodplains within the vicinity of the Proposed Project.

The 0.2-percent-annual-chance flood elevation data was obtained for the Proposed Project Route using FEMA's FIRMs. According to the FIRMS, the Proposed Project crosses areas designated as FEMA Zones A, AE, AO, D, X, and 0.2-Percent-Annual-Chance Flood Hazard Zone. Table 4.9-6: FEMA Flood Zone Designations provides the definitions of the relevant FEMA flood zones. The Proposed Project crosses approximately 2.5 miles of 100-year flood zones—which include Zones A, AE, AO—and approximately 1.7 mile of 500-year flood zones—which includes the 0.2-percent-annual-chance Flood Hazard Zone. In addition, one permanent facility—the Line 1601 Cross-Tie located at MP 23.4—will be constructed within a 500-year flood zone. Attachment 4.9-C: FEMA Flood Hazard Zones Map depicts the locations of the 100-year and 500-year flood zones within the Proposed Project area.

Dam Failure Inundation Areas

The California Governor's Office of Emergency Services is responsible for the identification of areas of potential inundation in the event of dam failures throughout California. The Proposed Project is located within inundation areas for dam failures for the following five dams:

- Henshaw,
- Turner,
- Lake Wohlford,
- Dixon, and
- Sutherland Overtopping Hodges.

4.9.3 Impacts

Significance Criteria

Standards of significance were derived from Appendix G of the California Environmental Quality Act Guidelines. Impacts to hydrology and water quality will be considered significant if the Proposed Project:

- Violates any water quality standards or waste discharge requirements

- Substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local ground water table level

- Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on site or off site

Table 4.9-5: 303(d)-Listed Waterbodies in the Proposed Project Vicinity

303(d)-Listed Waterbody	Approximate MP[8]	Distance to Proposed Project Alignment (miles)	303(d)-Listed Waterbody Codes[9]																			
			DDE	PCP	SED	Fe	N	P	PO_4	SO_4	Mn	Cl	Se	Hg	TOX	DDT	TDS	ENT	COL	FC	TRB	pH	SS
Rainbow Creek	1.9	0				●	●	●		●							●						
Santa Margarita River	--	3.15						●							●								
San Luis Rey River	8.8	0					●	●				●			●		●	●		●			
Keys Creek	--	0.06											●										
San Marcos Creek	--	0.15	●		●			●					●										
Escondido Creek	24.1	0					●		●	●	●		●		●	●	●	●		●			
Kit Carson Creek	--	0.19		●													●						
Lake Hodges	29.6 – 30.2	0					●	●			●			●					●		●	●	
San Dieguito River	30	0					●	●							●		●	●		●			
Green Valley Creek	--	0.77		●						●	●	●											
Poway Creek	38	0											●		●								
Los Peñsaquitos Creek	--	0.22					●						●		●		●	●	●				
Los Peñsaquitos Lagoon	--	10																					●
Soledad Canyon	--	6.12			●								●										
Rose Creek	44.6	0											●		●								

Source: San Diego RWQCB 2008

[8] Where no MP location is listed in the "Approximate MP" column, the waterbody does not cross the Proposed Project.
[9] Explanation of 303(d)-listed waterbody codes:

- DDE: dichlorodiphenyldic hloroethylene
- PCP: pentachlorophenol
- SED: sediment toxicity
- Fe: iron
- N: nitrogen
- P: phosphorous
- PO_4: phosphate
- SO_4: sulfate
- Mn: manganese
- Cl: chloride
- Se: selenium
- Hg: mercury
- TOX: toxicity
- DDT: dichlorodiphenyltrichloroethane
- TDS: total dissolved solids
- ENT: enterococcus
- COL: color
- FC: fecal coliform
- TRB: turbidity
- pH: potential hydrogen
- SS: sedimentation/siltation

Table 4.9-6: FEMA Flood Zone Designations

Flood Zone	Description
Zone A	Areas with a one-percent annual chance of flooding and a 26-percent chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.
Zone AE	The base floodplain where base flood elevations are provided.
Zone AO	River or stream flood hazard areas, and areas with a one-percent or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from one to three feet. These areas have a 26-percent chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
Zone D	Areas with possible, but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.
Zone X	Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by a levee from a 100-year flood.
0.2-percent-annual-chance Flood Hazard Zone	Area with a 0.2-percent annual chance of flooding, and is also referred to as a 500-year flood zone.

Source: FEMA 2014

- Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or a substantial increase in the rate or amount of surface runoff in a manner which would result in flooding on site or off site
- Creates or contributes to runoff water, which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff
- Otherwise substantially degrades water quality
- Places housing within a 100-year floodplain, as mapped on a federal Flood Hazard Boundary Map or FIRM, or other flood hazard delineation map
- Places structures within a 100-year flood hazard area, which would impede or redirect flood flows
- Exposes people or structures to a significant risk of loss, injury, or death involving flooding, including as a result of the failure of a levee or dam
- Cause inundation by seiche, tsunami, or mudflow

Question 4.9a – Water Quality Standards and Waste Discharge Violations

Construction – Less-than-Significant Impact

Construction activities associated with the Proposed Project (e.g., grading, excavation, and trenching activities) will expose soil to erosion and subsequent sedimentation. In addition, grading and excavation activities have the potential to increase runoff due to changes to surface contours. Sediment transport from construction work areas to adjacent water resources could contribute to water quality degradation. The erosion potential at most of the work areas is low because the majority of work will occur in urban areas on pavement with flat to gentle terrain. However, in cross-country areas, approximately 74 acres will be disturbed during construction of the Proposed Project, and approximately 0.5 mile of the route will cross an area with over 33-percent slopes, which will result in a greater potential for erosion and sedimentation, as well as increased runoff potential. Sediment transfer from construction work areas to waterbodies could occur from surface water runoff, heavy rains, or overwatering during construction activities. However, these potential impacts to water quality will be minimized through implementation of the SWPPP, which is required in accordance with the Construction General Permit, and the BMPs in SDG&E's Water Quality Construction BMP Manual.

The Proposed Project alignment crosses seven 303(d)-listed waterbodies and is located within the watershed of eight 303(d)-listed waterbodies, as described in Section 4.9.2 Existing Conditions. Section 3.6.9 Wetland and Waterbody Crossing Procedures in Chapter 3 – Project Description describes the typical waterbody crossing procedures that will be followed during construction of the Proposed Project. Table 4.9-5: 303(d)-Listed Waterbodies in the Proposed Project lists the proximity of each 303(d)-listed waterbody to the Proposed Project alignment, and describes the contaminants that contribute to the impairment of each 303(d)-listed waterbody. The 303(d)-listed waterbodies whose watersheds will be crossed by the Proposed Project are impaired for one or more of the following: DDE, PCP, sediment toxicity, iron, nitrogen, sulfates, phosphorous, TDS, chloride, enterococcus, fecal coliform, DDT, manganese, phosphate, selenium, color, mercury, toxicity, pH, sedimentation/siltation, and turbidity. As typical pipeline construction does not result in the discharge of these listed materials, with the exception of the potential for turbidity and sedimentation, the Proposed Project will not contribute to these impairments. Lake Hodges and Los Peñasquitos Lagoon are the only 303(d)-listed waterbodies impaired for turbidity and/or sedimentation/siltation within the Proposed Project vicinity, and sedimentation as a result of construction could contribute to the impairment of this waterbody. The implementation of the SWPPP and BMPs in SDG&E's Water Quality Construction BMPs Manual, as well as the use of HDD, described further in the following paragraphs, will minimize the potential for sedimentation to contribute to turbidity and/or sedimentation/siltation impairment of Lake Hodges or Los Peñasquitos Lagoon.

In order to address the potential for erosion and subsequent sedimentation, the Applicants will conduct a risk determination prior to construction in accordance with the Construction General Permit described in Section 4.9.2 Existing Conditions. The risk determination will take into consideration the receiving waters, soil type, slopes, construction duration, and rainfall to determine the potential erosion and estimate the volume of sediment that could potentially leave disturbed areas during construction of the Proposed Project. Specifically, the receiving water risk must be calculated based on whether the disturbed areas discharge to a sediment-sensitive watershed, defined as a 303(d)-listed waterbody that is impaired for sediment/siltation or

turbidity, or to a waterbody with the three beneficial uses of SPWN, migratory (MIG), and COLD, as designated by the Basin Plan. Lake Hodges and Los Peñsaquitos Lagoon are the only 303(d)-listed waterbodies whose watersheds are crossed by the Proposed Project that are impaired for sedimentation/siltation or turbidity. None of the waterbodies crossed by the Proposed Project have the beneficial uses of SPWN, MIG, and COLD. BMPs (e.g., the use of silt fences, fiber rolls, hydroseeding, and soil binders) will be identified in the SWPPP based on the results of the risk determination and will be implemented during construction to ensure that water quality standards are met.

Hazardous materials used during construction (e.g., diesel fuel, hydraulic fluid, oils, and grease) have the potential to degrade the water quality of hydrological features. Hazardous materials could come into contact with storm water runoff and/or be transported to nearby water resources. In addition, spills, releases, or leaks of hazardous materials could contaminate water features when construction activities are conducted near waterbodies. The potential impacts and APMs to reduce these impacts are discussed further in Section 4.8 Hazards and Hazardous Materials. In addition, measures to manage hazardous materials (e.g., locating hazardous materials storage away from storm drain systems on impervious surfaces, maintaining original product labels, and maintaining on-site spill cleanup kits) will be addressed in the SWPPP. With the implementation of the APMs discussed in Section 4.8 Hazards and Hazardous Materials and the measures outlined in the SWPPP, impacts to water quality resulting from hazardous materials are anticipated be less than significant.

As described in Section 4.9.2 Existing Conditions, portions of the Proposed Project are located within three groundwater basins: the San Luis Rey Valley, Escondido Creek, and Poway Valley Groundwater Basins. The most current measurements for groundwater levels in the San Luis Rey Valley range from at ground surface to 20 feet bgs, at ground surface to 50 feet bgs in the Escondido Valley Groundwater Basin, and five to 266 feet bgs in the Poway Valley Groundwater Basin (Evenson 1989). Typical trenches associated with the Proposed Project will be seven to eight feet deep; therefore, groundwater may be encountered during trenching and excavation activities in some areas. Trench dewatering will be required if groundwater infiltrates the pipeline trench to a point where tie-in welds cannot be made. Potential discharge may include using the trench water as a means for dust control and fire prevention, discharging the trench water overland or to surface waters, or using a nearby sewer system with an agreement with the operator. All trench water will be discharged in a manner to control the rate of discharge and to minimize erosion and in accordance with the RWQCB or SWRCB Waste Discharge Requirements (WDRs) or WDR waivers and RWQCB or SWRCB NPDES permits.

HDD is a method designed to reduce the impacts of construction activities on surface water features, and it will be used to install the pipeline beneath waterbodies including the San Luis Rey River and Lake Hodges to avoid direct impacts to these water features. HDD is a highly specialized boring technique that involves drilling along a vertical arc that will pass beneath these water features. A more detailed discussion of the HDD process is provided in Chapter 3 – Project Description. Water will be required for creation of drilling fluid during the HDD process. While this technique is often used to reduce impacts to hydrological features, there is potential for a "frac-out" to occur, and this can happen when a fracture is created in the strata above the bore and beneath the water feature. During a frac-out, "drilling mud" (i.e., lubrication containing water, bentonite clay and additives) can rise to the surface and potentially increase

turbidity in the water feature above. If a frac-out occurs in a sensitive resource area (e.g., a waterbody), a Project-specific Frac-out Contingency Plan will be implemented, in accordance with APM-HYD-01, to stop or control the release of drilling muds and to contain and remove the drilling mud as appropriate.

The drilling mud that is used to facilitate the HDD will be received in a pit. The drilling mud that is returned back through the drill hole will be pumped from the entry and exit pits to a processing/shaker unit where the soil cuttings are removed, allowing the drilling mud to be reused. It is anticipated that the majority of the drilling mud will be hauled off site after construction for potential reuse where feasible. Where it cannot be reused, excess drilling mud will be disposed of at an appropriate waste facility. No additives that are considered hazardous, according to federal and state laws, will be used during the HDD process. As the HDD process is used to pass beneath water features, this method reduces the potential for construction activities to cause erosion and subsequent sediment transport into waterbodies. As a result, there is a low potential that the waterbodies whose watersheds are crossed by the Proposed Project will see an increase in turbidity; thus, impacts will be less than significant.

Horizontal boring will be used to install the pipeline beneath smaller waterbodies. Horizontal boring is a technique that can be used to install the pipeline beneath waterbodies without disturbing the surface of the area being crossed. As described in Chapter 3 – Project Description, approximately four horizontal bores are anticipated to be used to install the pipeline. The actual number and location of bores will depend on the final design and permit restrictions that dictate the construction methodology at the time of construction. If groundwater is encountered during horizontal boring, it will be pumped into a temporary holding tank (e.g., a Baker tank) for analysis prior to being discharged in accordance with a SWRCB or RWQCB NPDES permit, WDR or WDR waiver. Discharges within the limits and conditions of these permits will ensure water quality is protected during construction. As a result, impacts will be less than significant.

Open-cut techniques through smaller waterbodies may also be used to install the pipeline, which will disturb the surface of the area being crossed. Details regarding the waterbodies which will be crossed using open-cut techniques are provided in Attachment C: Preliminary Wetlands and Waters Assessment contained within Attachment 4.4-A: Biological Resources Technical Report. Open-cut trenching through waterbodies will generally be conducted when the waterbody is dry or at low flow. The Applicants will implement standard BMPs from SDG&E's Water Quality Construction BMPs Manual to prevent erosion and sedimentation when the waterbodies are wet or during rain events. If groundwater is encountered during trenching through waterbodies, the water will be discharged in a similar manner to the other trench dewatering procedures. Therefore, impacts will be less than significant.

During the pipeline-testing phase, up to 4.7 million gallons of water will be used to hydrostatically test the integrity of the pipeline, which may be obtained from potable or recycled water sources. Attachment 4.17–A: Water Usage Estimates in Section 4.17 Utilities and Service Systems provides the calculations used to estimate the amount of water required for hydrostatic testing. Water used for hydrostatic testing may be discharged directly into nearby surface waters and could result in adverse impacts to the water quality of the receiving waters. Alternatively, if the discharge location is in close proximity to the sewer system and discharge would not impact sewer operations, it may be discharged into the sewer system in coordination with sanitary sewer

system operator. In either case, hydrostatic testing water will be discharged in accordance with a RWQCB or SWRCB NPDES permit, WDR, WDR waiver, or an agreement with the sanitary sewer system operator. As a result of compliance with the terms and conditions of these permits, hydrostatic testing is not anticipated to violate waste discharge standards or degrade water quality. Section 4.17 Utilities and Service Systems provides a detailed discussion of hydrostatic testing water sources, discharge locations, and methods.

Construction activities associated with the Proposed Project—including grading, trenching, padding, backfill, cleanup, and the use of unpaved access roads—will require the use of water to control fugitive dust. During construction, water trucks will be used to apply water to work areas, trench spoil, and other exposed soil with the potential to create dust. As discussed in Chapter 3 Project Description and Section 4.17 Utilities and Service Systems, it is estimated that approximately 6 million gallons of water will be required to control fugitive dust in unpaved areas during construction. In general, paved areas will not require dust control; however, some water may be required to control fugitive dust as trench spoil is placed into haul trucks The calculations used to estimate water usage are provided in Attachment 4.17–A: Water Usage Estimates. Water used for dust control, which may be obtained from potable or recycled water sources, will be applied in a manner that prevents runoff to a surface water. As a result, dust control activities are not anticipated to violate waste discharge standards or degrade water quality.

The Proposed Project will generate small amounts of wastewater from the use of portable toilets during construction. The amount of wastewater associated with the portable toilets will be commensurate with the number of personnel working daily per construction segment (i.e., approximately 150 workers) and is expected to be minimal. The wastewater will be transported to a wastewater treatment facility by a licensed contractor.

With the implementation of the BMPs provided in the SWPPP and with adherence to the Construction General Permit and other applicable regulations, construction of the Proposed Project is not expected to violate water quality standards or waste discharge requirements. Therefore, impacts will be less than significant.

Operation and Maintenance – Less-than-Significant Impact

Operation and maintenance activities will generally involve visual inspections or aboveground work at the appurtenant facilities. If an unanticipated repair is necessary and requires excavation or grading, the Applicants will implement BMPs from SDG&E's Water Quality Construction BMPs Manual—included in Attachment 4.9-A: Water Quality Construction Best Management Practices Manual—to reduce or eliminate pollutants in runoff from disturbance areas. As a result, operation and maintenance of the Proposed Project will not violate any water quality standards or waste discharge requirements, and impacts will be less than significant.

Question 4.9b – Groundwater Depletion or Recharge

Construction – Less-than-Significant Impact

Construction of the Proposed Project will generally occur above the groundwater table and will not encounter groundwater. However, as described in response to Question 4.9a – Water Quality

Standards and Waste Discharge Violations, trenching activities and horizontal boring may encounter groundwater that will be dewatered in order to maintain a safe work area and/or to complete tie-ins. The amount of groundwater that is anticipated to be dewatered is expected to be minimal, and dewatering will be temporary and localized in nature. In addition, groundwater may be discharged to land or surface waters and allowed to percolate back into the groundwater system. Therefore, groundwater dewatering is not anticipated to substantially deplete groundwater supplies, and impacts to groundwater supplies will be less than significant.

The Proposed Project involves the construction of the following 14 permanent, aboveground facilities:

- the Rainbow Pressure-Limiting Station,
- the Line 1601 Cross-Tie,
- the Line 1600 Cross-Tie,
- the Line 2010 Cross-Tie, and
- 10 mainline valves.

The majority of the permanent footprint for each aboveground facility will consist of graveled surfaces, with the addition of minor impervious surfaces, such as concrete block walls and valve control cabinets measuring three feet by three feet. The locations and dimensions of the impervious surfaces to be constructed within each aboveground facility are provided in the following figures, which are provided in Chapter 3 – Project Description:

- Figure 3-7: Typical Mainline Valve
- Figure 3-8: Rainbow Pressure-Limiting Station Site Plan
- Figure 3-9: Line 1601 Cross-Tie Site Plan
- Figure 3-10: Line 1600 Cross-Tie Site Plan
- Figure 3-11: Line 2010 Cross-Tie Site Plan

As depicted in the aforementioned figures, the impervious surfaces created by the Proposed Project will be small in size and discontinuous, and as a result, they will not impede groundwater recharge. Further, the Proposed Project has enough pervious surfaces to allow rain water and storm water runoff to infiltrate the ground surface, similar to preconstruction conditions. Thus, the small increase in impervious surfaces will not substantially alter the groundwater recharge capabilities in the three groundwater basins within the Proposed Project site, and impacts will be less than significant.

As shown in Table 4.9-3: Groundwater Supply Wells Within 150 Feet of the Proposed Project, 10 groundwater supply wells are located within 150 feet of the Proposed Project, but their exact locations are unknown at this time. Construction activities have the potential to interfere with groundwater supply wells if they intersect or are immediately adjacent to the Proposed Project. As discussed previously, a field investigation will occur during the design of the Proposed Project to confirm that none of the wells will be impacted as a result of construction of the Proposed Project. Methods to control frac-outs during HDD and trench dewatering procedures, as described in Question 4.9a – Water Quality Standards and Waste Discharge Violations, will also protect groundwater supplying these public and private wells. Therefore, the Proposed

Project will not have an impact on groundwater recharge and will not cause the production rate of preexisting nearby wells to drop to a level that will not support existing land uses or planned land uses.

Approximately 6 million gallons (18.4 acre-feet) of water for dust control, 4.7 million gallons (14.4 acre-feet) of water for hydrostatic testing, and 1.2 million gallons (3.7 acre-feet) of water for HDD activities are estimated to be required during construction of the Proposed Project. As described previously, water may be obtained from potable or recycled water sources. The calculations used to estimate water usage are provided in Attachment 4.17–A: Water Usage Estimates in Section 4.17 Utilities and Service Systems. Water required for the construction phase of the Proposed Project may be purchased from six local water purveyors. While the six local water purveyors purchase water from the San Diego County Water Authority (SDCWA), SDCWA does not currently hold groundwater basin rights, nor does it own or operate groundwater facilities within San Diego County (2010 UWMP). While some of SDCWA's water supply member agencies utilize groundwater, groundwater is not currently part of the six local purveyors' portfolios. As a result, the Proposed Project will not have any impact on groundwater supplies and therefore there is no impact on groundwater. In the event that recycled water is used for construction, the conditions of the associated WDR or WDR waiver will be adhered to; therefore, no impact to groundwater is anticipated.

Operation and Maintenance – Less-than-Significant Impact

During operation and maintenance, water will be required only if repair or testing (i.e., pigging or in-line inspection, exposing various portions of the pipeline to verify pigging results) of the pipeline is necessary, and these activities are expected to occur once every seven years. Due to the infrequent nature of the water requirements, relatively small volumes of water required, and the fact that non-groundwater can be used, less-than-significant impacts to groundwater supplies will occur.

Question 4.9c – Drainage Patterns – Erosion/Siltation

Construction – Less-than-Significant Impact

The Proposed Project crosses the water features listed in Table 4.9-2: USGS Blue-Line Hydrologic Features Crossed by the Proposed Project. Impacts to jurisdictional waterbodies resulting from Proposed Project activities are detailed in the Preliminary Wetlands and Waters Assessment in Attachment 4.4-A: Biological Resources Technical Report.

Impacts to drainage features will be temporary in nature, and aquatic resources will be restored to pre-construction conditions once construction is complete. Any contours or vegetation altered by the Proposed Project will be recontoured to the original conditions to maintain the existing drainage patterns. Therefore, construction activities are not anticipated to permanently alter the existing drainage patterns within the Proposed Project area.

As discussed previously in the response to Question 4.9a – Water Quality Standards and Waste Discharge Violations, ground disturbing activities associated with the Proposed Project (e.g., grading within the ROW and laydown yards) will expose soil to erosion and subsequent sedimentation. Surface water run-on and runoff, heavy rains, or overwatering activities could

transfer sediment from areas with exposed soil to waterbodies, resulting in subsequent siltation. As described previously, the Applicants will implement a SWPPP in accordance with the Construction General Permit in order to minimize erosion and subsequent sedimentation associated with the Proposed Project. The SWPPP will identify BMPs for each activity that has the potential to degrade the surrounding water quality through erosion, sediment runoff, and other pollutants. These BMPs will be implemented and monitored throughout the Proposed Project by one or more Qualified SWPPP Practitioners. In addition, all temporarily disturbed areas will be returned to pre-construction conditions, restoring contours to the original state and final stabilization requirements of the Construction General Permit will be implemented. Approximately 87 percent (approximately 41 miles) of the Proposed Project will be installed in urban areas within existing roadways and road shoulders pursuant to franchise agreements where vegetation removal and soil compaction will be limited. As a result, the potential for erosion and siltation resulting from construction of the Proposed Project will be temporary, limited, and controlled through the use of BMPs. Permanent grading and recontouring may be required at the aboveground facilities, but will be located in previously disturbed, developed areas to the extent feasible. As a result, soil compaction and vegetation removal will be limited in these areas and the aboveground facilities will not require the alteration of drainage features or drainage patterns.

Site-specific structural BMPs in accordance with the Regional BMP Design Manual may also be implemented as required and according to final design of the Proposed Project. Critical coarse sediment yield areas (as defined by the County of San Diego) will be crossed by the Proposed Project; however, proposed construction activity will not inhibit critical coarse sediment from being discharged to receiving waters. As a result, no net impact to receiving water is anticipated as a result of construction within designated critical coarse sediment yield areas. Therefore, alteration of existing drainage patterns on the Proposed Project site are not anticipated, and impacts resulting from erosion and siltation will be less than significant.

Operation and Maintenance – Less-than-Significant Impact

As discussed previously in the response to Question 4.9a – Water Quality Standards and Waste Discharge Violations, operation and maintenance activities will generally involve visual inspections or aboveground work at the appurtenance facilities. Therefore, operation and maintenance activities are not anticipated to result in ground disturbance. In the event that an unanticipated repair is necessary and requires excavation or grading, the Applicants will implement BMPs from SDG&E's Water Quality Construction BMPs Manual—included in Attachment 4.9-A: Water Quality Construction Best Management Practices Manual—to reduce or eliminate pollutants in runoff from disturbance areas. As a result, operation and maintenance of the Proposed Project will not substantially alter the existing drainage pattern, and impacts resulting from erosion and siltation will be less than significant.

Question 4.9d – Drainage Patterns – Runoff/Flooding

Construction – Less-than-Significant Impact

As discussed previously in the response to Question 4.9c – Drainage Patterns – Erosion/Siltation, construction activities associated with the Proposed Project will not permanently alter existing drainage patterns. While minor alterations to drainage patterns could occur during construction activities, the original contours will be returned to near pre-construction conditions to maintain

the existing drainage patterns. As a result, long-term structural BMP maintenance will not be required and impacts to drainage patterns will be less than significant.

As described previously, the Proposed Project will include installation of 14 permanent aboveground facilities. No drainage features will be impacted at these locations. In addition, as discussed in the response to Question 4.9b – Groundwater Depletion or Recharge, the Proposed Project will result in minimal increases in impermeable surface and will not substantially increase the existing velocity or volume of surface runoff. Therefore, because existing drainage patterns will not be altered and the rate or amount of surface runoff will not substantially increase, no impacts are anticipated.

Operation and Maintenance – No Impact

As discussed previously in the response to Question 4.9c – Drainage Patterns – Erosion/Siltation, operation and maintenance activities associated with the Proposed Project will not alter existing drainage patterns. As a result, the rate or amount of surface runoff will not substantially increase, and no impacts are anticipated.

Question 4.9e – Stormwater Runoff

Construction – Less-than-Significant Impact

Ground-disturbing activities associated with construction of the Proposed Project have the potential to increase storm water runoff by removing existing vegetation and compacting soils. However, approximately 87 percent (approximately 41 miles) of the Proposed Project will be installed in urban areas (i.e., within existing roadways and road shoulders) where vegetation removal and soil compaction will not occur. Because the remaining approximately 13 percent (approximately six miles) of the Proposed Project will be installed cross-country, the Applicants will install perimeter sediment controls, such as silt fence or fiber rolls in accordance with the SWPPP, prior to soil-disturbing activities to control runoff during construction. With the implementation of the SWPPP, storm water runoff from the cross-country areas will not exceed the capacity of existing or planned storm water drainage systems and will minimize the discharge of any storm water pollutants.

Furthermore, impacts to storm water runoff will be short-term, as all disturbed areas will be returned to pre-construction conditions. As such, impacts resulting in increased runoff will be less than significant.

Operation and Maintenance – Less-than-Significant Impact

Surface runoff following the completion of construction is expected to be similar to the existing conditions due to a minimal amount of new, impermeable surfaces. As discussed in the response to Question 4.9c – Drainage Patterns – Erosion/Siltation, operation and maintenance activities are not anticipated to result in ground disturbance. In the event that an unanticipated repair is necessary and requires excavation or grading, the Applicants will implement perimeter sediment control BMPs from SDG&E's Water Quality Construction BMPs Manual, which is included in Attachment 4.9-A: Water Quality Construction Best Management Practices Manual, to reduce or eliminate pollutants in the runoff. Therefore, impacts to runoff resulting from operation and maintenance of the Proposed Project will be less than significant.

Question 4.9f – Water Quality Degradation

Construction – Less-than-Significant Impact

As described in the response to Question 4.9a – Water Quality Standards and Waste Discharge Violations, ground disturbing activities associated with the construction of the Proposed Project have the potential to degrade water quality. However, the Proposed Project will incorporate BMPs (e.g., sediment and erosion control and material management measures), which will be implemented through the SWPPP to reduce or prevent construction-related impacts to water quality. As such, construction of the Proposed Project is anticipated to result in a less-than-significant impact to water quality.

Operation and Maintenance – Less-Than-Significant Impact

As discussed in the response to Question 4.9a – Water Quality Standards and Waste Discharge Violations, operation and maintenance activities associated with the Proposed Project (e.g., the draining of pipeline oil drips and patrol road maintenance) have the potential to violate water quality standards and waste discharge requirements absent the implementation of appropriate BMPs. During operation and maintenance of the Proposed Project, the Applicants will implement BMPs from SDG&E's Water Quality Construction BMPs Manual—included in Attachment 4.9-A: Water Quality Construction Best Management Practices Manual—to reduce or eliminate pollutants in runoff from disturbance areas. As a result, operation and maintenance of the Proposed Project will not violate any water quality standards or waste discharge requirements, and impacts will be less than significant.

Question 4.9g – Housing in Flood Hazard Areas – *No Impact*

No housing will be constructed as part of the Proposed Project. Therefore, no housing will be placed in 100-year or 500-year flood hazard areas, and no impacts will occur.

Question 4.9h – Structures in Flood Hazard Areas – *No Impact*

Portions of the Proposed Project are located within 100-year and 500-year flood hazard areas, as depicted in Attachment 4.9-C: FEMA Flood Hazard Zones Map. FEMA defines a structure as "a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home." According to the FEMA Flood Hazard Boundary maps, no permanent aboveground structures or facilities of any type will be constructed within a 100-year flood hazard area. Therefore, no impacts will occur as a result of the placement of structures within 100-year flood hazard areas.

Question 4.9i – Flood Exposure – *Less-Than-Significant Impact*

As discussed previously in the response to Question 4.9h – Structures in Flood Hazard Areas, structures associated with the Proposed Project will not be impacted by floods and will not impede or redirect flood flows. Water discharge resulting from construction activities and hydrostatic testing will not constitute a sufficient volume to result in risk of loss, injury, or death due to flooding. Various portions of the Proposed Project fall within dam inundation zones, as described in Section 4.9.2 Existing Conditions. In the event of a dam failure, construction or operation workers will evacuate the area in accordance with County of San Diego Operational Area Evacuation Annex. Therefore, although portions of the Proposed Project will be

constructed within FEMA flood hazard zones and dam inundation zones, impacts to flood exposure that can result in a significant risk of loss, injury, or death will be less than significant.

Question 4.9j – Flooding, Seiche, Tsunami, and Mudflow – *Less-Than-Significant Impact*

The Proposed Project is not located within any tsunami inundation areas; therefore, it will not be subject to tsunamis. Lake Hodges, which is crossed by the Proposed Project, could be susceptible to a seiche in the event of a strong earthquake; however, the pipeline will be placed well below the ground surface as a result of HDD. Therefore, no impact to the pipeline is anticipated if a seiche occurs.

Mudflows, characterized by a flow of liquefied soil and debris, often develop when hillside disturbance is followed by intense rainfall. Hillside disturbance can be caused by natural disasters (e.g., wildfires and earthquakes) or human-induced activities. The potential for a mudflow depends on the slope steepness, soil type, and soil moisture content. The majority of the Proposed Project is located in existing roadways, relatively flat topography, or rolling terrain, where the potential for mudflows is considered to be low. In the event that a mudflow occurs across the Proposed Project ROW, the pipeline could be damaged; however, because of the ductile and below-grade nature of pipelines, significant damage from a mudflow is not anticipated. Further, the majority of the Proposed Project will be within existing roadways where mudflows are not expected. Any repairs to permanent aboveground facilities will be addressed in accordance with the Applicants' emergency repair protocols. Therefore, impacts of inundation due to mudflows are anticipated to be less than significant.

4.9.4 Applicants-Proposed Measures

A SWPPP will be developed for the Proposed Project that identifies BMPs to reduce the potential for erosion and subsequent sediment and pollution transport in accordance with the Construction General Permit. In addition, the Applicants will implement SDG&E's Water Quality Construction BMPs Manual—included in Attachment 4.9-A: Water Quality Construction Best Management Practices Manual during all phases of construction.

The following APM is provided to reduce impacts to a less-than-significant level:

- **APM-HYD-01:** Prior to Horizontal Directional Drilling operations at the San Luis Rey River and Lake Hodges crossings, the Applicants will prepare a Frac-out Plan to address procedures for containing an inadvertent release of drilling fluid (frac-out). The plan shall contain specific measures for monitoring frac-outs, containing drilling mud, and notifying agency personnel. The plan shall also discuss spoil stockpile management, hazardous materials storage and spill cleanup, site-specific erosion and sediment control, and housekeeping procedures, as described in the Storm Water Pollution Prevention Plan.

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ATTACHMENT 4.9-A: WATER QUALITY CONSTRUCTION BEST MANAGEMENT PRACTICES MANUAL

ATTACHMENT 4.9-B: NATIONAL WETLANDS INVENTORY MAP

ATTACHMENT 4.9-C: FEMA FLOOD HAZARD ZONES MAP