

**ENVIRONMENTAL ASSESSMENT  
FOR THE  
PALA TRIBAL WASTEWATER SYSTEM  
REHABILITATION PROJECT**

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## 1.0 INTRODUCTION

The Pala Band of Mission Indians (Tribe) has requested funding from the Environmental Protection Agency (EPA) to upgrade a disposal system for wastewater on the Pala Indian Reservation (Reservation). The EPA is the principal Federal agency with jurisdiction over water quality issues on Indian lands. The EPA will therefore use this Environmental Assessment (EA) to determine if approval of the Proposed Action would result in significant adverse effects to the Human Environment. The estimated cost of the project is approximately \$1,200,000. The funds would be used to address an immediate environmental and public health concern on the Reservation, the replacement and abandonment of remaining septic systems in the project area.

This EA has been prepared to comply with the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) NEPA regulations (40 CFR 1500-1508), and U.S. EPA procedures for implementing NEPA (40 CFR Part 6), which require an evaluation of potential environmental effects prior to the approval of the release of funding for a proposed construction project.

There are currently approximately 1,100 persons living on the Reservation in approximately 425 homes. Approximately 160 of these homes are connected to a community wastewater collection, treatment, and disposal system. The remaining approximately 265 homes are on septic systems. These septic systems are generally in deteriorated condition, and many individual septic systems serve multiple buildings. Because these septic systems were installed so long ago, service and repair is infeasible due to lack of standard design, plans, knowledge of exact locations of tanks and pipes, and limited accessibility caused by development.

The Tribe has proposed the installation of 9,630 feet of 4" diameter and 8" diameter sewer pipeline and a single lift station on the Reservation. The sewer pipeline will serve two areas on the Reservation designated the Pala-Temecula Road Area (Area 1) and the Cactus Road Area (Area 4). The Pala-Temecula Road Area (Area 1) is located to the east and west of Pala-Temecula Road, north of the village center and includes Sycamore Lane, Pala-Temecula Road, and Santiago Road. The Cactus Road Area (Area 4) is located east of the Pala Village and Tribal Administration Building and north of Pala Mission Road and includes Pala Mission Road and Cactus Road.

The Proposed Action will provide 50 existing homes that are currently on substandard septic systems with sewer connections. The Pala-Temecula Road Area (Area 1) includes 31 connections and the Cactus Road Area (Area 4) includes 19 connections. The Tribe is concerned that if septic systems from this dense cluster of homes were to fail, there could be increased risk to groundwater resources. Additionally, a number of the septic systems in this area are known to be servicing several homes, which could accelerate the failure of these systems and lead to raw sewage spills.

The existing wastewater treatment plant is located between the two project areas, on the eastern edge of the Pala Village and east of the Tribal Administration Building. The 9,630-

foot long linear study area included approximately 8 feet from the edge of roadway and totals approximately 1.8 acres.

A Preliminary Engineering Report prepared in November 2000 by Springer and Anderson, Inc. identified four project alternatives for the Tribe to pursue to rehabilitate the existing outdated septic systems, including the No Project Alternative. The remaining three alternatives were to repair the existing septic systems, install a Septic Tank Effluent Pump (STEP) System, or to install a conventional gravity sewer system to connect the homes to the existing community sewer system. The Tribe has rejected the No Project Alternative, the repair of existing septic systems, and the installation of a STEP System. The Tribe has selected the connection of homes to the existing community sewer system as the Preferred Alternative. Reasons for this decision are discussed in Chapter 2.0 of this EA. Installation of sewer pipeline, along with the necessary booster pumps and lift station, is considered the Proposed Action in this EA.

The project site is located on the Pala Indian Reservation, north of State Route 76 (SR-76) and the San Luis Rey River, in San Diego County, California. The Pala Indian Reservation is approximately 5 miles east of Interstate 15 (I-15) and is accessible via SR-76 (Figure 1). The project site is located within Sections 21, 22, and 27 of Township 9 South, Range 2 West, as shown on the Pala, California USGS 7.5' Quadrangle (Figure 2).

## **1.1 Proposed Action**

The Proposed Action is release by the EPA of funding up to \$1,200,000 to the Tribe for construction of 9,630 feet of sewer line to connect existing residents currently on residential septic systems with an existing wastewater treatment plant. The sewer connections would consist of 8-inch diameter gravity sewer mains, a 4-inch diameter sewer force main from Sycamore Lane to Pala-Temecula Road, a single lift station west of the Sycamore Lane Bridge over Pala Creek, and 50 lateral connections to homes that are currently served by substandard septic systems. These new pipelines would connect the homes to the existing community wastewater collection and treatment system. The existing homes would be connected to the sewer mains with 4-inch diameter sewer laterals. The existing septic systems replaced by sewer connections, and whose location is known, would be cleaned and abandoned according to industry standards. The sewer mains would be located within street right-of-ways and the single sewage lift station would be located on available vacant land on the Reservation adjacent to the street right-of-way.

The Preliminary Engineering Report divided the Reservation into six geographical areas requiring sewer infrastructure. These areas were designated as Area 1 through Area 6. This EA addresses Areas 1 and 4. Area 1, which is also known as the Pala-Temecula Road Area, is located north of SR-76, Pala Village, and the existing wastewater treatment plant. Area 4, which is also known as the Cactus Road Area, is located east of the Pala Village and the Tribal Administration Building. Figures 3a and 3b provide the alignment of the proposed sewer lines and the location of the single proposed lift station.



Figure 1  
Regional Location Map





SOURCE: USGS 7.5' Quad Maps - Pala and Pechanga

Figure 2  
Project Location Map







Figure 3a  
Proposed Sewer Lines  
Pala Temecula Road Area (Area 1)





Figure 3b  
Proposed Sewer Lines  
Cactus Road Area (Area 4)

Pipeline alignments have been proposed within and adjacent to existing roads on the Reservation. The study area for each of these alignments consisted of an eight-foot corridor along the shoulder of the roads proposed for sewer lines. This resulted in a survey area of approximately 1.8 acres. Fences and vegetation that line the roads on the Reservation suggest that no impacts would occur beyond eight feet from the roadways. The residential lots where the septic systems will be abandoned and the sewer laterals were not included in the survey area as they have clearly been disturbed by development and do not contain sensitive resources that could be affected by the project. There are 31 lateral connections proposed the Pala-Temecula Road Area (Area 1) and 19 in the Cactus Road Area (Area 4). Ultimately, 50 residences currently utilizing substandard septic systems would be connected to an existing sewage collection system for treatment at an existing wastewater treatment plant.

## **1.2 Project Background**

Land for the Reservation was set aside by an Executive Order of December 27, 1875. Executive Orders of May 3, 1877 and July 24, 1882 restored portions of the Reservation to the public domain. On May 12, 1903 the Cupa Tribe was forced from their homeland in the area currently know as Warner Springs and was moved to Pala. The Reservation includes approximately 12,000 acres today.

For many years there were few jobs on or near the Reservation and little economic activity to stimulate the local economy. Aggregate mining from the San Luis Rey River and operation of an avocado grove were the two primary sources of income. With the passage of the Indian Gaming Regulatory Act in 1988 the Tribe began to pursue a Tribal-State compact for the construction and operation of a casino. The Governor of California met with the Tribe in 1996 to discuss the terms of a Tribal-State compact. On September 10, 1999, the Tribe and the State of California entered into a Tribal-State Gaming Compact permitting class III video gaming devices on tribal lands.

In 2000, the Department of Interior approved the Tribal-State Gaming Compact, which allowed the Tribe to proceed with their plans for the Pala Casino Spa Resort. The Pala Casino opened for business April 3, 2001 and the Spa Resort and Hotel opened approximately 2 years later. The construction of the casino project included the construction of a modern wastewater treatment facility. Additional capacity was provided at the wastewater treatment facility to accommodate residential development on the Reservation and to allow the elimination of septic systems. The current wastewater treatment facility utilizes an aeration basin pond with drying beds and evaporation/percolation ponds. All dry material is removed from drying beds and disposed of at a municipal sanitary landfill. The Tribe has approved the expansion of the wastewater treatment plant to handle all future residential growth on the Reservation and the recently approved expansion of the Pala Casino. The expansion plans for the wastewater treatment plant include an upgrade in treatment from secondary to tertiary standards in order to better maintain water quality and conserve valuable water resources through the use of reclaimed water for irrigation purposes.

### **1.3 Purpose and Need for the Proposed Action**

The purpose of the proposed action is to protect public health and environmental conditions on the Reservation by replacing outdated septic systems with connections to a modern wastewater treatment facility. The economic condition of Pala Tribal members has historically been poor, but has been steadily improving since the opening of the Pala Casino. The Pala Tribe has an enrollment of 867 members with 600 living on the Reservation. Prior to the opening of the casino, the Tribe operated on a very limited annual budget and unemployment on the Reservation was approximately 40 percent. Many of the homes and septic systems were poorly constructed. With the improvement of economic opportunity on the Reservation, the Tribe has been able to address issues of public health and safety. The provision of wastewater disposal services and the continued protection of groundwater resources has been a high priority for the Tribe.

A number of the individual septic systems in the project area designed to service individual dwellings are currently serving multiple dwellings in high-density areas (up to 11 homes/acre). This can overload the design capacity of the septic systems and can lead to failures. Raw sewage spills pose a significant threat to children playing in the area of the spills and to animals that may consume the sewage. Offensive odors add to the health concerns.

Even lacking failure of the septic systems and surface contamination, the density of up to 11 homes/acre presents the potential for groundwater contamination through high percolation rates within the porous alluvial soils and relatively shallow groundwater tables. There are numerous public and private wells in close proximity to septic systems on the Reservation. Contamination of these wells by failing septic systems is of great concern to the Tribe because groundwater is the Tribe's only drinking water supply.

Many of the septic systems are in close proximity to creeks, rivers, or drainage swales, which increases the chances for surface water contamination. The standard for 100-foot setbacks from creeks and 50-foot setbacks from drainage swales were not in place when the septic systems were installed, in most cases many years ago.

Maintenance of the existing septic systems is very difficult because the original construction did not allow for adequate access to the septic tanks by pump trucks. In most cases, there are no manhole risers from the top of the septic tanks to the ground surface. As a result, many residents do not know where their septic tanks are located and the tanks are not maintained.

### **1.4 General Setting**

The Pala Reservation encompasses 18 square miles. Property adjacent to the Reservation boundaries is unincorporated and within the jurisdiction of the County of San Diego. Primary access to the Reservation is provided by SR-76, also called Pala Road, from I-15. Other accesses include County Highway S-16 (S-16), also known as Pala-Temecula Road, which leads north to the city of Temecula in Riverside County, and Lilac Road, which leads south to the community of Valley Center in San Diego County.

The Reservation is at the western edge of the Agua Tibia Mountain Range. The San Luis Rey River passes through the center of the Reservation in an east to west direction. The river enters and leaves the Reservation in a somewhat restricted channel between steep mountain slopes, but opens out into a small valley within the Reservation where the Pala Mission and Pala town site are located. In addition to the Pala Mission, the Pala town site features a Tribal Administration Center, swimming pool and athletic fields, school, and relatively dense housing. The density of the housing decreases away from the center of the village to that more typical of a rural residential area. The elevation of the town site is approximately 400 feet Above Mean Sea Level (AMSL), while surrounding mountain peaks within the Reservation rise to about 2,100 feet AMSL. To the northeast of the Pala town site, alluvial fans slope from the mountain to the river channel.

A substantial portion of the Reservation area is steeply sloping mountainous terrain. Most of the hills are rocky and the soil is shallow. The San Luis Rey River and its tributaries have dropped considerable amounts of sand and silt in the floor of the valley. River sand is the largest mineral resource in the County of San Diego and several sand extraction operations have occurred on the San Luis Rey River. Evidence of past sand mining activities is visible along the river.

The Pala area generally lies within the chaparral belt of the mountain area, although the vegetation on the valley floor is distinctly coastal sage scrub and agriculture. Riparian plant communities exist along the San Luis Rey River and its tributaries.

Prevailing winds are from the southwest. Over a 20-year period, average seasonal rainfall has been 18.4 inches per year, which is indicative of a semi-arid region. The climate is moderate with a mean annual temperature of 66 degrees Fahrenheit.

Land uses in the area are primarily characterized by low-density residential development, a variety of crop and orchard agriculture operations, and undeveloped open space. In addition, the Pala Casino Spa Resort is located south of SR-76 and north of the San Luis Rey River, near the village center.

## **1.5 Organization Of Report**

The remainder of this report is organized as follows. Section 2.0 describes the project alternatives, including the Preferred Alternative and the No Action Alternative. Section 3.0 presents the affected environment and Section 4.0 provides information regarding the potential environmental consequences of the proposed action. Section 5.0 provides a cumulative analysis of this action when considered with other past, present and reasonably foreseeable future actions. Section 6.0 presents the mitigation measures to be adopted by the Tribe to reduce or avoid significant environmental effects. Section 7.0 provides references cited and Section 8.0 lists project personnel and project consultation/coordination. The technical reports prepared in support of this EA are provided as appendices to this document.



## **2.0 PROJECT ALTERNATIVES**

This section describes the proposed action and all alternatives to the proposed action that have been considered by the Tribe. The purpose of the alternative analysis is to allow informed decisions concerning the environmental consequences of the proposed action and the alternatives by responsible and reviewing agencies, the public, and decision makers. All information regarding the Proposed Action has been obtained from the *Pala Band of Mission Indians Preliminary Engineering Report* (Springer and Anderson 2000).

Four alternatives are investigated in this EA. They are the Preferred Alternative (Conventional Gravity Sewer System), the Repair the Existing Septic Systems Alternative, the Install a Septic Tank Effluent Pump (STEP) System, and the No Action Alternative (continued use of septic systems). As no long-term adverse environmental impacts have been identified for the Preferred Alternative, the investigation of alternatives that reduce or avoid significant environmental impacts was not required.

### **2.1 Preferred Alternative (Gravity Sewer Connection to Treatment Plant)**

The Preferred Alternative consists of the installation of approximately 9,630 feet of 8-inch diameter gravity sewer mains, a 4-inch diameter sewer force main over the Sycamore Lane Bridge, a single sewage lift station west of the Sycamore Lane Bridge, and 50 4-inch diameter lateral lines to connect residences to the sewer mains. The sewer mains would be located within existing street right-of-ways and the proposed sewage lift station would be located on vacant Tribal land adjacent to the Sycamore Lane right-of-way. Existing septic systems would be cleaned and abandoned in place according to industry standards.

### **2.2 Repair Existing Septic Systems**

This alternative consists of the evaluation of each individual septic system to determine the requirement for cleaning, repair, upgrade, or reconstruction to meet current industry standards. In areas where single septic systems are serving multiple homes, new septic systems would be constructed to serve each residence.

### **2.3 Install a Septic Tank Effluent Pump (STEP) System**

This alternative consists of the construction of a STEP system. In a STEP system, effluent from each home undergoes primary treatment in a septic tank before being pumped through force mains to connect to gravity sewer mains, which then connect to the wastewater treatment system. This alternative would require the abandonment of all existing septic tanks and construction of new septic tanks, effluent pumps, alarm systems, and 2-inch diameter force mains at each home. The STEP system would allow the use of smaller 6-inch diameter sewer mains to convey the sewage to the existing 8-inch diameter sewer lines, but would require the installation of approximately 20 pumps and alarms spread throughout the Reservation.

## **2.4 No Action Alternative**

Selection of the No Action Alternative would occur where the Tribe does no repairing or replacing of existing deteriorated and inadequate septic systems. The No Action Alternative is not in the best interest of the Tribe because it would allow the use of existing septic tanks and associated threats to groundwater to continue.

## **2.5 Comparison of Project Alternatives**

### **Preferred Alternative**

The Preferred Alternative would allow for the Tribe to improve the collection and disposal of wastewater on the Reservation in Areas 1 and 4 through installation of 8-inch and 4-inch diameter sewer lines to connect existing homes on septic systems to an existing wastewater treatment facility. No culturally sensitive or special recreation areas are located along the proposed alignment.

There are no unacceptable short- or long-term impacts to sensitive habitat, jurisdictional wetlands, or endangered or threatened species of plants, mammals, birds, reptiles, amphibians, and fishes expected as a result of this project, although the proposed pipelines cross Pala Creek at Sycamore Lane and two tributaries to Pala Creek that cross beneath Pala-Temecula Road. These seasonal drainages are under the jurisdiction of the U.S. Army Corps of Engineers as other waters of the U.S. The proposed pipelines would be placed within the existing roads that feature concrete and steel culverts beneath concrete or asphalt road surfaces where they cross these seasonal drainages. Because the proposed pipelines would cross these drainages within the existing improved crossings and no dredge or fill of the drainages would occur, a 404 permit from the U.S. Army Corps of Engineers is not necessary.

No significant adverse impacts to natural resources, water, wastewater, and other community infrastructure such as schools, emergency medical care, public safety, recreation or transportation are expected to result from the direct, secondary, or cumulative effects of the construction and operation of the proposed sewer lines. This project would not involve the use of herbicides, defoliants, blasting, or burning. Construction activities would comply with Occupational Safety and Health Administration (OSHA) standards.

The Preferred Alternative represents the best means for the Tribe to achieve its goals of improving the environment and public health through the replacement of existing septic systems with connections to a sewage treatment system.

### **Repair Existing Septic Systems**

Repair of the existing septic systems is not acceptable to the Tribe because of the lack of sufficient area to add replacement septic tanks and leach lines on existing lots, and because of poor access to pump existing septic tanks. Furthermore, repairing existing septic systems would not alleviate the risk of groundwater or surface water contamination

because of the cumulative effect resulting from a high density of septic systems in a relatively small area.

Soils in the project area consist of Tujunga sand, Visalia gravelly sandy loam, Fallbrook sandy loam, Greenfield sandy loam, Cienega sandy loam, and river wash. All of these soil types provide excellent percolation for septic systems. However, the porosity of the soil, combined with the high water table, can result in the infiltration of septage into the groundwater. Leachate from the septic systems can include bacteria, virus, nitrate, and volatile organic compounds. The repair of the existing septic systems would not address issues of septic system failure due to high density of septic systems, high groundwater conditions, and porous soil conditions on the Reservation. This is another reason that the repair of existing septic systems has been rejected by the Tribe.

### **Install a Septic Tank Effluent Pump (STEP) System**

Installation of a STEP system was rejected by the Tribe as a project alternative due to the high cost of construction and operation. This alternative would require the treatment of effluent within a septic tank at each residence followed by the pumping of the effluent through force mains to connect with gravity sewer mains, which would then connect to the wastewater treatment facility for additional treatment. The costs for replacing the existing septic tanks and installing effluent pumps and force mains are much higher than the savings gained by the use of 6-inch diameter gravity sewer mains in place of the proposed 8-inch diameter sewer mains. Additionally, the maintenance of each septic tank and pump would remain the responsibility of individual residents, or would become the responsibility of the Tribe. Connection of the outlying residential areas to the existing wastewater treatment facility is much more cost-effective in the long run, especially because the wastewater treatment facility has adequate capacity to serve these areas.

STEP systems are much more effective for use in sparsely-developed areas where the cost of lift stations and force sewer mains would exceed the cost of having individual septic systems and pumps at each residence. In more densely populated areas, the cost of construction, operation, and maintenance of a STEP system quickly exceeds the cost of a gravity sewer and lift stations, the cost of which can be spread among many residences.

### **No Action Alternative**

The No Action Alternative would be the least preferable alternative. Approval of the No Action Alternative would represent a loss of potential improvement to the environment and the public health of Tribal members by maintaining the existing outdated septic systems. The No Action Alternative is, therefore, not in the best interest of the Tribe.



## **3.0 AFFECTED ENVIRONMENT**

### **3.1 Land Resources**

#### **Topography and Soils**

The project area is a nearly level valley formed by Pala Creek and the San Luis Rey River. Elevations range from approximately 420 feet AMSL at the north end of Sycamore Lane to 400 feet AMSL along Pala Mission Road at the intersection with Cactus Road.

#### **Regional Geology**

The site is located in the Peninsular Range Geomorphic Province range of southern California. Artificial Fill and Recent Holocene Alluvium underlie the entire site. Mid-Cretaceous age plutonic rocks of the Southern California Batholith underlie the surrounding area, but are not exposed along the proposed pipeline alignment.

The project site is located in a seismically active region of southern California. No on-site landslides, faults, or shear zones have been observed during field studies and no previously mapped on-site landslides or faults were found by a literature search conducted for the Pala Casino Spa Resort. The Reservation is not located within the limits of an Alquist-Priolo Special Study Zone. The nearest fault zones include the Elsinore Fault Zone, located approximately 4.0 miles northeast of the project area, the San Jacinto Fault Zone, located approximately 26 miles northeast, and the San Andreas Fault Zone, located approximately 55 miles northeast. The predominance of seismic activity has been associated with the San Jacinto Fault Zone along its southeast section in the vicinity of the Salton Sea and within the northwest portion near its junction with the San Andreas Fault Zone. The predominance of the remaining recorded activity has been associated with the San Andreas Fault Zone, the most recent earthquake activity of magnitude M 7.5 and M 6.6 on June 28, 1992, on nearby faults in the Landers and Big Bear areas, respectively.

#### **Land Use**

The Reservation is located on approximately 18 square miles in northern San Diego County. The Reservation is bisected in an east-west direction by SR-76. The main part of the Pala town site is located on the north side of SR-76 and is centered about one-half mile east of the project site where the Pala-Temecula Road (S-16) heads north to Temecula. The town site includes the Tribal offices and the historic Mission San Antonio de Pala, founded in 1816. The town site also has the Pala Fire Station, Pala Store and Post Office, Cupa Cultural Center, Boys and Girls Club, and Mission School. Numerous residences are concentrated in the townsite area and others extend out west, east, and south. Truck crops are grown on the San Luis Rey River valley floor south of SR-76.

The project site lies approximately 25 miles east of the Pacific Ocean and is more than 20 miles beyond the Coastal Zone boundaries (Bill Ponder, personal communication 2005). The Tribe has not adopted a land use plan or zoning ordinance but, rather, relies upon the Tribal Council, the governing body of the Tribe, to guide and regulate land use.

The proposed pipeline alignments are all within or immediately adjacent to existing paved and dirt roads. Lateral sewer lines would run perpendicular to the sewer mains at each residence.

## **3.2 Water Resources**

### **Surface Water**

The San Luis Rey River flows through the Reservation. The flow of water in the river is regulated at the Lake Henshaw Dam by the Vista Irrigation District. No flood maps defining the limits of a 100-year flood flow are known to exist. The Federal Emergency Management Agency (FEMA) does not map flood plains on Reservation land. All other water features, such as Pala Creek, are dry much of the year.

### **Groundwater**

Komex H2O Science, Inc. prepared a Groundwater Study Report for the Pala Groundwater Basin (Komex 2005) that concluded that documented groundwater within the alluvial aquifer at depths of 10 to 80 feet below ground surface. Areas of high groundwater have contributed to the failure of septic systems, especially during periods of wet weather. The high groundwater has also contributed to groundwater contamination issues.

### **Water Quality**

Surface water quality in the project vicinity is generally good, however the lower westernmost segment of the San Luis Rey River is on the 2002 Clean Water Act Section 303(d) List of Water Quality Limited Segments for chloride (urban runoff, storm drains, unknown point and non-point sources) and total dissolved solids (agricultural runoff, industrial point sources, urban runoff, surface mining, flow regulation/modification, golf courses, unknown point and non-point sources, natural sources). The San Luis Rey River is also on the Proposed Watch List by the U.S. EPA Region 9 for calcium, eutrophication, magnesium, and phosphorus. These impairments threaten the beneficial uses of warm water habitat, wildlife habitat, preservation of rare, threatened, or endangered species, agriculture, and industrial uses (Teel, et. al. 2004).

Storm water runoff and its potential effects on water quality is an environmental issue that has received increasing attention from regulatory agencies in recent years. The National Pollution Discharge Elimination System (NPDES), established pursuant to the provisions of the Clean Water Act, is a national program for regulating and administering permits for all

discharges to receiving waters. The EPA is ultimately charged with regulating discharges to surface waters. In California, the EPA has delegated permitting authority to the State Water Quality Control Board, but continues to regulate discharges originating on Indian lands into receiving waters, since the State Board has no jurisdiction on Indian lands.

All construction projects encompassing one acre or more on Indian lands in California must be covered by the EPA's NPDES General Storm Water Permit for Construction Activities. To achieve project authorization under the EPA's General Storm Water Discharge Permit, a Notice of Intent (NOI) must be submitted to the EPA at least two days prior to the commencement of construction. The Notice of Intent must include a Stormwater Pollution Protection Plan.

### **3.3 Air Quality**

#### **Climate**

The climate of the Pala region can generally be described as arid. For the Pala Reservation area, the annual average maximum temperature is 66 degrees Fahrenheit (°F), ranging from 51 °F in December and January to 84 °F in July. The annual average minimum temperature is 45 °F, ranging from 34 °F in January to 62 °F in July. Average annual precipitation is 28 inches at the Palomar Observatory, with most of the rain falling from November through April. Annual rainfall on the Reservation is 18.4 inches. Snowfall occurs on Palomar Mountain between November and April, with an average snow depth of one to two feet during these months (Western Regional Climate Center, 2002). Snowfall is rarely seen on the Reservation.

The project is located in the San Diego Air Basin (SDAB). The boundaries of the air basin are coincident with those of the County. The climate of San Diego County is profoundly influenced by the Pacific Ocean and its semi-permanent high pressure systems that result in dry, warm summers and mild, occasionally wet winters. The normal wind pattern is moderate to strong onshore winds during the day and weak offshore winds at night.

Two climatic phenomena contribute to air pollution problems in San Diego County. Subsidence inversions occur in the summer and the base of the inversion, at elevations between 1,000 and 3,000 feet, forms a "lid" to trap pollutants, which have been generated in the coastal plain and blown inland by the onshore winds. Thus, the highest pollution levels are often found in the western mountain slope communities, such as Alpine, Ramona and Descanso.

The Santa Ana wind condition is a reversal of the normal winds, and offshore winds blow pollutants out to the ocean. A strong Santa Ana will produce clear days. However, a weak Santa Ana, and conditions at the start and end of a Santa Ana wind period, will transport air pollutants from Los Angeles and Orange Counties out to sea and southward, then back to

shore in San Diego County. These phenomena will produce higher pollutant concentrations in the coastal communities.

### **Applicable Regulations, Plans, and Policies**

The Federal Clean Air Act (42 U.S.C. " 7401-7671q) requires the adoption of national ambient air quality standards (NAAQS) to protect the public health and welfare from the effects of air pollution. Current standards are set for sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter equal to or less than 10 microns in size (PM<sub>10</sub>), fine particulate matter equal to or less than 2.5 microns in size (PM<sub>2.5</sub>), and lead (Pb). These pollutants are called the criteria pollutants. The State of California Air Resources Board (ARB) has established additional standards for the criteria pollutants that are generally more restrictive than the NAAQS. Federal and state standards are shown in Table 1.

Federal standards for 8-hour O<sub>3</sub> and PM<sub>2.5</sub> became effective on 15 September 1997 and were subsequently challenged and litigated. The U.S. Supreme Court affirmed the standards, and policies and systems to implement these new standards are being developed. On April 15, 2004 the U.S. Environmental Protection Agency (EPA) issued a final ruling for the 8-hour O<sub>3</sub> designations and controls (USEPA 2004c).

A state or region is given the status of "attainment" or "maintenance" if ambient air quality standards have not been exceeded. A status of "non-attainment" for particular criteria pollutants is assigned if the ambient air quality standard for that pollutant has been exceeded. Once designated non-attainment, the status of attainment may be achieved after three years of data showing non-exceedance of the standard.

In San Diego County, the San Diego Air Pollution Control District (APCD) is the agency responsible for protecting the public health and welfare through the administration of federal and state air quality laws and policies. Included in the APCD's tasks are the monitoring of air pollution; the preparation of the San Diego air basin portion of the State Implementation Plan (SIP); and the promulgation of Rules and Regulations. The SIP includes strategies and tactics to be used to attain acceptable air quality in the County. The APCD does not have jurisdiction over actions that take place on the Reservation. The EPA does, however, have an air quality program and enforce federal clean air regulations on the Reservation.

### **Clean Air Act Conformity**

The 1990 amendments to federal Clean Air Act Section 176 require the USEPA to promulgate rules to ensure that federal actions conform to the appropriate State Implementation Plan (SIP). These rules, known together as the *General Conformity Rule* (40 CFR 51.850-.860 and 40 CFR 93.150-.160), require any federal agency responsible for

**Table 1. State and Federal Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards <sup>1</sup>	National Standards <sup>2</sup>	
		Concentration <sup>3</sup>	Primary <sup>3,4</sup>	Secondary <sup>3,5</sup>
Ozone (O <sub>3</sub> )	1 Hour	0.09 ppm (180 µg/m <sup>3</sup> )	0.12 ppm (235 µg/m <sup>3</sup> ) <sup>6</sup>	Same as Primary Standard
	8 Hour	-	0.08 ppm (157 µg/m <sup>3</sup> ) <sup>6</sup>	
Respirable Particulate Matter (PM <sub>10</sub> )	24 Hour	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>	
Fine Particulate Matter (PM <sub>2.5</sub> )	24 Hour	No Separate State Standard	65 µg/m <sup>3</sup>	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m <sup>3</sup> )	9.0 ppm (10 mg/m <sup>3</sup> )	None
	1 Hour	20 ppm (23 mg/m <sup>3</sup> )	35 ppm (40 mg/m <sup>3</sup> )	
Nitrogen Dioxide (NO <sub>2</sub> )	Annual Arithmetic Mean	-	0.053 ppm (100 µg/m <sup>3</sup> )	Same as Primary Standard
	1 Hour	0.25 ppm (470 µg/m <sup>3</sup> )	-	
Sulfur Dioxide (SO <sub>2</sub> )	Annual Arithmetic Mean	-	0.030 ppm (80 µg/m <sup>3</sup> )	-
	24 Hour	0.04 ppm (105 µg/m <sup>3</sup> )	0.14 ppm (365 µg/m <sup>3</sup> )	-
	3 Hour	-	-	0.5 ppm (1300 µg/m <sup>3</sup> )
	1 Hour	0.25 ppm (655 µg/m <sup>3</sup> )	-	-
Lead (Pb) <sup>7</sup>	30 Day Average	1.5 µg/m <sup>3</sup>	-	-
	Calendar Quarter	-	1.5 µg/m <sup>3</sup>	Same as Primary Standard
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometerB visibility of ten miles or more (0.07-30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent.	No Federal Standards	
Sulfates (SO <sub>4</sub> )	24 Hour	25 µg/m <sup>3</sup>		
Hydrogen Sulfide (HS)	1 Hour	0.03 ppm (42 µg/m <sup>3</sup> )		
Vinyl Chloride (chloroethene) <sup>7</sup>	24 Hour	0.01 ppm (26 µg/m <sup>3</sup> )		

µg/m<sup>3</sup> - micrograms per cubic meter; ppm - parts per million

Source: California Air Resources Board (CARB) 2003

1. California standards for ozone, carbon monoxide, sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter, PM<sub>10</sub>, PM<sub>2.5</sub>, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM<sub>10</sub>, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m<sup>3</sup> is equal to or less than one. For PM<sub>2.5</sub>, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based

upon a reference temperature of 25 °C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25 °C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume or micromoles of pollutant per mole of gas.

4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

5. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

6. New federal 8-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18, 1997. Contact U.S. EPA for further clarification and current federal policies.

7. The ARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

an action in a non-attainment area to determine that the action conforms to the applicable SIP or that the action is exempt from the General Conformity Rule requirements. This means that federally supported or funded activities will not (1) cause or contribute to any new air quality standard violation, (2) increase the frequency or severity of any existing standard violation, or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone.

Actions would conform to a SIP and be exempt from a conformity determination if an applicability analysis shows that the total direct and indirect emissions from the project construction and operation activities would be less than specified emission rate thresholds, known as *de minimis* limits, and that the emissions would be less than 10 percent of the area emission budget.

### **Existing Air Quality**

San Diego County is an attainment area for all federal criteria pollutants except ozone (O<sub>3</sub>). The county is classified as attainment/maintenance for carbon monoxide (CO). The maintenance classification indicates that attainment has been achieved after being in violation of the federal standards. The non-attainment and maintenance designations require that any federal project demonstrate conformity, called General Conformity, with the applicable state implementation plan (SIP) for attainment and maintenance of the pollutant standards. On 15 April 2004, the USEPA issued the initial designations for the 8-hour O<sub>3</sub> standard, and the San Diego Air Basin is classified as “basic” non-attainment. Basic is the least severe of the six degrees of O<sub>3</sub> non-attainment. The San Diego County APCD must submit an air quality plan to the USEPA in 2007; the plan must demonstrate how the 8-hour O<sub>3</sub> standard will be attained by 2009 (APCD 2004).

Air quality is monitored at nine locations in the SDAB. Regionally, ozone levels monitored from 1997 to 2001 exceeded federal and state standards the most in 1998. During this year, smog levels exceeded the federal standard on 9 days and the state standard on 54 days. This represented a dramatic increase from 1997, but APCD officials feel this is not a reversal of the continuing long-term improvement, rather that meteorological conditions in 1997 caused unusually low ozone levels for that year. Federal and state standards for carbon monoxide and nitrogen dioxide have not been exceeded in the past five years. The annual federal standard for PM<sub>10</sub> was not exceeded in the region in 1998; the state annual standard was exceeded only at Otay Mesa.

## **3.4 Living Resources**

A biological resources report was prepared for the Proposed Action by TIERRA Environmental Services (2007a) and is attached as Appendix A to this EA. The biological resources survey was conducted on December 22, 2005 to identify and map vegetation communities and associated biological resources existing on-site, to determine the

presence or absence of sensitive species, and to assess the potential impacts of the proposed action on these resources. A subsequent survey was conducted September 6, 2006.

Prior to the survey, a search was conducted of the California Natural Diversity Data Base (CNDDB), a computerized inventory of endangered, threatened, or rare species occurrences maintained by the California Department of Fish and Game (CDFG). It is noted that the CDFG does not have jurisdiction over biological resources on the Reservation and that the database only covers the adjacent non-Reservation lands. Input on the potential occurrence of sensitive species was also solicited from the U.S. Fish and Wildlife Service (USFWS). The USFWS response is documented as an attachment to the Biological Resources Technical Report.

### **Vegetation Communities**

The proposed work corridor includes the Pala-Temecula Road shoulder, which is approximately five feet wide, as well as the shoulders of several residential side roads. The road shoulders are developed, undeveloped with native vegetation, or are agricultural areas. An area eight feet from the edge of pavement, or to an existing fence line, was surveyed and mapped as an Area of Potential Effect (APE) as the pipeline will either be placed within the existing roadways or within the immediate shoulder. The survey area was approximately 9,630 feet by 8 feet from the edge of the roadways and equaled approximately 1.8 acres.

Seven vegetation communities were observed along the project alignment, including areas immediately adjacent to the existing roads. These vegetation communities included Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, mule-fat scrub, sycamore alluvial woodland, interior live oak woodland, scale-broom scrub, and non-native grassland. In addition, ruderal habitat, agricultural areas, and developed areas were observed along the proposed alignments. Maps of the biological resources identified along the project alignment are provided on Figures 4a and 4b. A complete list of all plant species observed along the proposed alignment is included in Appendix A to the Biological Resources Technical Report.

Diegan coastal sage scrub consists of a mixture of low-growing coastal plants typically dominated by California sagebrush, California buckwheat, laurel sumac and white sage. These plants show the most growth in winter and early spring following winter rains. Plant species observed adjacent to the roads proposed for sewer lines included coastal sagebrush, California buckwheat, laurel sumac, blue elderberry, climbing milkweed, honeysuckle, wishbone, California croton, and deerweed.





FIGURE 4a  
Biological Resources Map  
Pala-Temecula Road (Area 1)







FIGURE 4b  
Biological Resources Map  
Cactus Road Area (Area 4)





Disturbed Diegan coastal sage scrub is, as the name implies, coastal sage scrub that has been disturbed, typically by human activities or livestock. Disturbed coastal sage scrub includes a strong presence of non-native species, in addition to the sparse distribution of typically dominant shrub species. On-site, dominant species within the areas mapped as disturbed Diegan coastal sage scrub included coastal sagebrush, phacelia, short-pod mustard, thistle, and telegraph weed.

Mule-fat scrub is a tall mix of plants found along streams and in wetland areas dominated by mule-fat. This vegetation community is maintained by frequent flooding. Other plant species associated with this vegetation community include narrow-leaf willow, arroyo willow, and hoary nettle. On-site, mule-fat scrub was associated with the first and second crossings of the Pala Creek. Plant species observed on-site included mule-fat, tree tobacco, and arroyo willow.

Sycamore alluvial woodland consists of well-spaced western sycamore trees with blue elderberry widely spaced in the subcanopy. Understories are usually introduced grasses. Plant species observed in this community, observed along Pala Creek, included western sycamore, toyon, blue elderberry, annual bluegrass, scrub oak and interior live oak.

Interior live oak woodland is dominated by interior live oak, which is an evergreen oak tree. The shrub layer is poorly developed, but may include toyon, gooseberry, laurel sumac, or blue elderberry. The herb component is usually continuous and dominated by ripgut grass and several other introduced plants. Plant species observed in association with this vegetation community included interior live oak, honeysuckle, toyon, and coffeeberry.

Scale-broom scrub is dominated by scale-broom, which is a broom-like shrub that colonizes open rocky riparian habitats. On-site, scale-broom is found in association with mule-fat, California buckwheat, California brickellbush, and tree tobacco.

Non-native grassland has a dense to sparse cover of annual grasses with germination occurring with late fall rains and growth occurring winter through spring. Plant species occurring on-site included wild oat, ripgut grass, short-pod mustard, telegraph weed, cryptantha, and Italian ryegrass.

Ruderal habitat describes areas that have been heavily disturbed in the past or are currently subject to continuous disturbance. These areas are dominated by weedy, non-native species. Plants observed on-site included tree tobacco, short-pod mustard, annual bluegrass, and telegraph weed.

Agricultural areas are those areas that are actively cultivated, as indicated by existing crops or evidence of crop harvesting, or evidence of preparation of the land for future crops. At the time of the survey the agricultural fields were fallow and it appeared that they had been recently disced.

Developed areas, as the name implies, have been paved or built upon. On-site developed areas include Pala-Temecula Road, residential areas and other paved and dirt roads.

### **Wetland Areas**

The U.S. Army Corps of Engineers (ACOE) maintains jurisdiction over streams, rivers, and other wetland areas under Section 404 of the Clean Water Act, which requires anyone interested in dredging or filling “waters of the U.S.” to receive authorization for such activities.

The proposed sewer alignment crosses Pala Creek within the Sycamore Lane Bridge and two tributary drainages to Pala Creek that cross beneath Pala-Temecula Road. At the time of the survey, Pala Creek and all tributaries were dry and did not support wetland vegetation. The Sycamore Lane crossing features a bridge with four 4-foot by 6-foot concrete box culverts. Pala Creek is approximately 110 feet wide at the site of the Sycamore Lane Bridge crossing. Culverts are also in place to ensure water flows under Pala-Temecula Road and into Pala Creek. The Pala-Temecula Road crossings feature a single 36-inch diameter corrugated steel culvert at each location. Figure 5 provides photographs of the creek crossing at Sycamore Lane. Although the creek supports wetland vegetation, areas immediately adjacent to Sycamore Lane are unvegetated.

Pala Creek and its tributaries are considered waters of the U.S. by the ACOE. The proposed pipeline crossing of Pala Creek would be within the Sycamore Lane Bridge and the crossing of the two tributaries that pass beneath Pala-Temecula Road would be within the road shoulder, above the existing culverts. The Proposed Action would not require any dredge or fill of jurisdictional areas. Therefore, impacts to waters of the U.S. are not anticipated and a 404 Permit would not be required.

### **Wildlife**

Wildlife species were detected during the biological surveys along the Reservation roads. These species consisted of birds, rabbits, and squirrels. A complete list of all wildlife species observed is presented in Appendix B of the Biological Resources Technical Report.

Bird species observed on-site included red-shouldered hawk (*Buteo lineatus*), Nuttall's woodpecker (*Picoides nuttallii*), western scrub jay (*Aphelocoma californica*), spotted towhee (*Pipilo maculatus*), and white-crowned sparrow (*Zonotrichia leucophrys*). Two mammals, Audubon's cottontail (*Sylvilagus audubonii*) and California ground squirrel (*Spermophilus beecheyi*) also were observed on-site.



View of Sycamore Lane crossing of Pala Creek, looking north (12/22/05)



View of Sycamore Road crossing of Pala Creek, looking west (12/22/05)

Figure 5  
Photos of Pala Creek Crossings



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## **Rare and/or Endangered and Sensitive Species**

Plant and animal species are considered sensitive if they have been listed as such by a federal resource agency. The USFWS provided a list of endangered and threatened wildlife and plant species potentially occurring on the Reservation. That list is included as Appendix A to the Biological Resources Technical Report.

Federally listed species reported as potentially occurring within the Reservation include Quino checkerspot butterfly, arroyo toad, California red-legged frog, mountain yellow-legged frog, mountain plover, western yellow-billed cuckoo, southwestern willow flycatcher, coastal California gnatcatcher, least Bell's vireo, Stephen's kangaroo rat, San Diego thornmint, San Diego ambrosia, Del Mar manzanita, and Nevin's barberry.

The CDFG publishes the California Natural Diversity Database (CNDDDB) RareFind, a computerized inventory of information on the location and condition of California's rare, threatened, endangered, and sensitive plants, animals, and natural communities (CDFG 2004). Additional species reported as occurring within the Pala and Pechanga Quadrangles (USGS) by the CNDDDB included federally endangered slender-horned spineflower and Riverside fairy shrimp; and federally threatened Vail lake ceanothus and spreading navarretia.

Potentially appropriate habitat for arroyo toad, coastal California gnatcatcher, southwestern willow flycatcher, least Bell's vireo, Quino checkerspot butterfly, Stephen's kangaroo rat, mountain plover, San Diego thornmint, San Diego ambrosia, and Nevin's barberry occurs on the Reservation. The ecology and potential occurrence on-site for these species is discussed below. The ecology and potential occurrence for all species reported as potentially on or in the vicinity of the Reservation is summarized in Table 1 of the Biological Resources Technical Report and is discussed in the following paragraphs.

### Quino Checkerspot Butterfly

Federal Status: Endangered

State Status: None

The Quino checkerspot butterfly is known to occur in sunny openings within chaparral and coastal sage shrublands in portions of Riverside and San Diego counties, California, and northwestern Baja California, Mexico (Federal Register 1997). This species has been threatened by habitat loss and degradation as a result of grazing, urban development, fire management, excessive collection and general human disturbance (Federal Register 1997).

The Quino checkerspot's primary larval hostplant, dot-seed plantain, is generally small, growing to between approximately 3 and 30 centimeters in height (Hickman 1993). It is easily displaced by non-native species that invade following disturbance from discing,

grading or grazing (Federal Register 1997). Other known larval host plants include Chinese houses, snapdragon and Indian paintbrush (USFWS 1999).

In addition to specific larval host plant requirements, the Quino checkerspot is also associated with particular topographic features. It is known to prefer open or bare soils with moderate to heavy clay content or cryptogamic crusts (USFWS 1999). Ridges, rounded hilltops and generally, topographic diversity indicates suitable Quino checkerspot habitat.

The biological survey was conducted at a time when the Quino checkerspot butterfly and its larval host plants would not be present. Portions of the project area located east of Pala-Temecula Road occur within the USFWS Recommended Survey Area (USFWS 2005). Although the Reservation is topographically diverse, the project area is relatively flat. Open native habitats on-site occur as narrow strips and are located adjacent to existing roads. Ruderal habitats also provide open habitat for this species. However, these areas are also located adjacent to roads and are associated with disturbed areas near residences. Consequently, this species is not expected to occur on-site.

#### Arroyo Toad

Federal status: Endangered

State Status: Species of Special Concern

The arroyo toad is an amphibian that is found along sandy streams throughout the southwestern United States. The arroyo toad is a small, light greenish-gray or tan with warty skin and black spots. Its underside is buff-colored and often without spots.

Optimal habitat for the arroyo toad consists of rivers that have shallow, gravelly pools adjacent to sandy terraces suitable for foraging adults. Arroyo toads forage in upland habitats including coastal sage scrub, chaparral, grassland, and oak woodland.

The biological survey was conducted in December, a time of year when the arroyo toad would not be above ground. A known population of arroyo toads lives along the San Luis Rey River, which is approximately 3,000 feet south of the project alignments. Pala Creek, which is a tributary to the San Luis Rey River, is crossed by the proposed pipeline alignments at the Sycamore Lane Bridge. This location does not provide suitable breeding habitat for the arroyo toad, but the soils are suitable for burrowing toads. Therefore, project construction should remain within the existing bridges to avoid impacts to Pala Creek and its tributaries. Because the project “may affect” arroyo toad habitat, the EPA will require that conservation measures be put in place during construction and will initiate informal consultation with the U.S. Fish and Wildlife Service. With the implementation of the conservation measures, listed in Section 6.0 Mitigation Measures, the project will not adversely affect the arroyo toad.

California Red-legged frog

Federal Status: Threatened

State Status: Species of Special Concern

The California red-legged frog (*Rana aurora draytonii*) ranges between 1.5 to 5 inches in length. In adults, the belly and hind legs are often red or salmon pink and its back is characterized by small black flecks and larger dark blotches on a brown, gray, olive, or reddish brown background. Once a common species with a range that extended from the vicinity of Redding, California south to northern Baja California, Mexico, the red-legged frog is currently distributed from Sonoma and Butte Counties in the north to Riverside County in the south. This species is often associated with permanent sources of deep water. Adults often use dense, shrubby or emergent vegetation closely associated with deep-water pools with fringes of cattails and dense stands of overhanging willows (USFWS 2001). The decline of this species is greatly attributed to mining, grazing, and the introduction of exotic species including bullfrog (*Rana catesbiana*).

California red-legged frog was not observed on-site during the general biological survey. The closest source of permanent deep water is the San Luis Rey River, which is approximately one mile south of the project area. Therefore, this species is not expected to occur within the proposed alignment.

Mountain Yellow-Legged Frog

Federal Status: Proposed Endangered

State Status: Species of Special Concern

The mountain yellow-legged frog (*Rana muscosa*) is 2 to 3.5 inches long with black or brown spots on the back. The ventral surface of the legs and sometimes the entire belly is yellow or pale orange. Their fully webbed toes have dark tips and adults have swollen thumbs. This species inhabits the high Sierra Nevada Mountain Range and has been found at elevations over 12,000 ft. It prefers sunny streams with sloping gravelly banks. It can be found along isolated pools and undisturbed lakeshores. It is never more than a few jumps from water. Breeding occurs predominantly above 7,000 feet in elevation and begins as soon as lakes and meadows are snow and ice free, usually from May through August. The pigmented eggs form in globular masses of 1 to 2 inches in diameter and are attached to vegetation or to the bank itself. The larvae of the mountain yellow-legged frog eat organic debris, plant tissue, algae and small organisms. Metamorphosed frogs are insectivorous (Forest Service).

Mountain yellow-legged frog was not observed on-site during the general biological survey. The project site is located at an elevation of approximately 400 feet above mean sea level, well below the preferred habitat of the mountain yellow-legged frog. Therefore, this species is not expected to occur within the proposed alignment.

Riverside Fairy Shrimp

Federal Status: Endangered

State Status: None

The Riverside fairy shrimp (*Streptocephalus woottoni*) is a small, delicate freshwater crustacean historically found in vernal pools, ephemeral wetlands, and manmade depressions (e.g., road ruts and ditches) in coastal southern California and south to northwestern Baja California, Mexico. It was first collected in 1979 and later identified as a new species 1985.

No vernal pools are present within the project vicinity. This species is not likely to occur in the project area.

Mountain Plover

Federal Status: Proposed Threatened (Proposal Withdrawn September 2003)

State Status: None

The mountain plover is an upland plover with sandy brown plumage on the head, back, and wings and a white belly (Sibley 2000). Distinguishing characteristics of this species include a dark patch on the tail and black primaries with a thin white line (Sibley 2000). The breeding plumage consists of a black crown patch and a black stripe that extends from the base of the beak to the eye and is offset by its white forehead and throat. The mountain plover can be found in bare plowed fields and short-grass prairie habitat (Unitt 1984). Although this species is a common winter visitor of San Diego County, few records of breeding pairs exist (Unitt 1984). The mountain plover winters from central California along the southern half of the border states and southward into Mexico.

Mountain plover was not observed during the biological survey. Open habitats, including ruderal and recently plowed agricultural land, occur on-site. However, the project area is located adjacent to roads. Higher quality habitat occurs outside of the project area. Consequently, areas occurring within the project area would only provide marginal habitat for this species. Therefore, this species is not expected to occur on-site.

Western Yellow-Billed Cuckoo

Federal Status: Candidate

State Status: Endangered

The western yellow-billed cuckoo is the only cuckoo that occurs west of the Rockies. It belongs to the Cuculidae family, which includes cuckoos and their allies. This species is slender, long-tailed, and inconspicuous; they move furtively through the dense foliage of trees (mature willows and cottonwoods) and bushes in search of caterpillars. They are found in woods and brush, especially during outbreaks of tent caterpillars. Its song is guttural and relatively toneless. Formerly summer residents, the yellow-billed cuckoo is now rare. Breeding cuckoos were restricted to dense lowland riparian woodland.



The biological survey was conducted at a time of year when western yellow-billed cuckoo does not occur in San Diego County. Riparian habitats, including southern coast live oak riparian forest, sycamore alluvial woodland, and mule-fat scrub, associated with the Pala Creek occur adjacent to the project area. Appropriate willow dominated riparian habitat does not occur on-site. Therefore, western yellow-billed cuckoo is not expected to occur on site.

#### Southwestern Willow Flycatcher

Federal Status: Endangered

State Status: Endangered

The southwestern willow flycatcher is a small insect-eating bird that is greenish or brownish gray above, with a white throat that contrasts with a pale olive breast, and a pale yellow belly. It nests and forages in riparian habitats typically dominated by dense willow understory (Federal Register 1993). Other plant species characterizing appropriate flycatcher habitat include mule fat, arrow weed, coast live oak, and scattered cottonwoods. This species is a summer resident, arriving in San Diego County in May and migrating south in August.

The historic breeding range of the southwestern willow flycatcher includes southern California, Arizona, New Mexico, extreme southern portions of Nevada and Utah, and western Texas. Currently in San Diego County, this species primarily occurs within the Marine Corps Base Camp Pendleton and the upper San Luis Rey River (U.S. Forest Service 1999). However, a few pairs have been detected at the Sweetwater Reservoir, lower San Luis Rey River and San Felipe Creek (U.S. Forest Service 1999). Currently, the southwestern willow flycatcher is declining in most states where it was historically found. The species was proposed for federal endangered status in July 1993.

The biological survey was conducted at a time of year when southwestern willow flycatcher does not occur in San Diego County. Riparian habitats, including southern coast live oak riparian forest, sycamore alluvial woodland, and mule-fat scrub, associated with the Pala Creek occur adjacent to the project area. This species is known to breed in the San Luis Rey River, located approximately 3,000 feet south of the project alignment. Appropriate willow dominated riparian habitat does not occur on-site. Therefore, this species is not expected to occur on-site.

#### Coastal California Gnatcatcher

Federal Status: Threatened

State Status: Species of Special Concern

The coastal California gnatcatcher is a small gray songbird that resides in coastal sage scrub plant communities. It is a recognized subspecies of the California gnatcatcher, which has a greater geographical distribution. The coastal California gnatcatcher is endemic to

coastal southern California and northwestern Baja California, Mexico. The present distribution of the subspecies includes Los Angeles, Orange, Riverside, and San Diego counties. The southern limit of the coastal California gnatcatcher coincides with the distributional limit of coastal sage scrub.

Coastal California gnatcatcher was not observed on-site during the general biological survey. Diegan coastal sage scrub on-site occurs as bands of disturbed habitat located immediately adjacent to Pala-Temecula Road and residential areas. Due to the small size of the patches of vegetation and the proximity to the roads, the coastal California gnatcatcher is not expected to occur within the proposed alignment.

#### Least Bell's Vireo

Federal Status: Endangered

State Status: Endangered

The least Bell's vireo is a small, olive-gray songbird that nests and forages almost exclusively in riparian woodland habitats. Nesting habitat typically consists of riparian woodland with well-developed overstories, understories and low densities of aquatic and herbaceous cover. The understory often consists of dense thickets composed of narrow-leaved willow, mule fat, and saplings of arroyo willow, Goodding's black willow or one of several possible herbaceous species.

The biological survey was conducted at a time of year when least Bell's vireo does not occur in San Diego County. Riparian habitats including southern coast live oak riparian forest, sycamore alluvial woodland, and mule-fat scrub associated with the Pala Creek occur adjacent to the project area. This species is known to breed in the San Luis Rey River, located south of Pala Mission Road and SR-76. Appropriate willow dominated riparian habitat does not occur on-site. Therefore, least Bell's vireo is not expected to occur on-site.

#### Stephen's Kangaroo Rat

Federal Status: Endangered

State Status: Threatened

The Stephen's kangaroo rat is a medium sized kangaroo rat with dark color, five toes on the hind feet, and a striped tail (Jameson and Peeters 1988). Preferred habitat occurs in non-native grasslands. Soil type and topography occupied are variable. Long linear dirt roads at the base of hills serve as important refuges and movement corridors that have allowed many populations to persist (O'Farrel and Uptain 1989).

Open habitats supporting exotic annuals occur adjacent to the shoulders of Pala-Temecula Road. However, due to their narrow width and proximity to a busy paved road, these areas do not provide appropriate habitat for the Stephen's kangaroo rat. Agricultural areas also exist on-site. At the time of the survey, it appeared that these areas had been recently

disced, possibly as weed abatement. Sufficient time to allow for soil compaction of these cultivated areas has not passed. Therefore, these areas are not suitable for Stephen's kangaroo rat.

#### San Diego Thornmint

Federal Status: Threatened

State Status: Endangered

The San Diego thornmint is a small annual herb, endemic to San Diego County and northwestern Baja California, Mexico. Its flowers are small and white, sometimes rose-tinged, and bloom between April and June (Hickman 1993). This species is known to occur in grassy openings in coastal sage scrub or chaparral, and foothill and valley grassland. It has also been associated with clay soils, vernal pools, and clay depressions on mesas. The thornmint is commonly found on southwest-facing gentle slopes. San Diego thornmint is commonly found in association with foothill needlegrass and with native herbs such as mariposa lily, mock-parsley, osmadenia, California aster, fringed spineflower, tarweed, and Palmer's grappling hook. Associated native shrub species include chamise, California buckwheat, toyon, laurel sumac, spiny redberry and various *Rhus* and *Salvia*.

The biological survey was conducted at time of year when Diego thornmint is not present. Areas dominated by non-native grasses and short-pod mustard occur in openings between native shrubs in disturbed Diegan coastal sage scrub. However, due to the absence of clay soils, the small size of disturbed Diegan coastal sage scrub on-site, and its disturbed condition, San Diego thornmint is not expected to occur along the project alignment.

#### San Diego Ambrosia

Federal status: Endangered

State Status: None

San Diego ambrosia is a perennial herb that grows to approximately two feet. The stems are green to straw colored, with short, dense hairs. The leaves of this plant are softly gray-white and hairy. The flowers bloom between May and September. This species occurs in chaparral, coastal scrub, valley and foothill grassland, and vernal pools. It is also known to occur in disturbed sites. Many occurrences of this plant have been destroyed in San Diego, where it is threatened by continued development (CNPS 2001).

Appropriate habitat for San Diego ambrosia occurs on-site. However, this species was not observed on-site and would have been detected if present.

Del Mar Manzanita

Federal Status: Endangered

State Status: None

Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*) is an evergreen shrub member of the Ericaceae or heath family. It grows between 3 and 8 feet in height with finely tomentose stems with long white hairs. The leaf blade is gray and smooth and slightly glaucous. Its flowers are white and bloom between December and April (Hickman 1993). This species is known to occur on sandy mesas and bluffs in southern maritime chaparral habitat, typically associated with chamise and wart-stemmed ceanothus (*Ceanothus verrucosus*). Its current distribution is restricted to San Diego County and Baja California, Mexico. Its decline has been attributed to agricultural conversion and urban expansion (Skinner and Pavlik 1994).

Del Mar Manzanita was not observed on-site. The project site does not include suitable habitat for this species, which would have been easily identified if present. Therefore, this species is not expected to occur within the project alignment.

Nevin's Barberry

Federal Status: Endangered

State Status: Endangered

Nevin's barberry is an erect evergreen shrub with leaves that are crowded on short lateral stems and that are composed of three to five leaflets. Nevin's barberry blooms from March to April. This species occurs in sandy or gravelly chaparral, cismontane woodland, coastal scrub and riparian scrub (CNPS 2001). In San Diego County, it may occur in the foothills of the Agua Tibia Wilderness Area close to the Dripping Springs Trail (Reiser 1994).

Nevin's barberry was not observed in the project area. Although potentially appropriate habitat for this species occurs on-site, Nevin's barberry is not expected to occur on the project site. It should be noted that this species, if present, would have been detected during the general survey.

Vail Lake Ceanothus

Federal Status: Threatened

State Status: Endangered

Vail Lake Ceanothus is a small-leaved species of ceanothus that grows on a reddish-hued, pyroxenite outcrop at Oak Mountain, southern Riverside County, in Chamise Chaparral and it utilizes gabbroic soils near Woodchuck Campground. Shrub diversity is relatively limited and the Vail Lake Ceanothus is a very localized but common component of this chaparral. A second site where this shrub is found in several dense concentrations is south of Highway 79 and south of Woodchuck Campground within the Agua Tibia Wilderness near

the San Diego County line. Additional sites may occur nearby in the rugged and little explored Agua Tibia Wilderness Area of San Diego County.

Vail Lake ceanothus was not observed in the project area and is not expected to occur on the project site due to the lack of suitable soil and the distance from known populations. It should be noted that this species, if present, would have been detected during the general survey.

#### Slender-Horned Spineflower

Federal Status: Endangered

State Status: Endangered

Slender-horned spineflower is a diminutive annual herb that is subject to wide annual variability as a function of amount and seasonality of rainfall, as well as seed set from previous year(s). This species flowers April through June, but most distinct in June and early July after the branches have turned a characteristic dark red color. Slender-horned spineflower occurs on sandy alluvial benches, and floodplain terraces with alluvial scrub vegetation. It also occurs on well-drained slopes in chaparral (near Vail Lake).

At the time of listing in 1987, the slender horned spineflower was known from five small and widely scattered occurrences throughout coastal California. Historically, the species was reported to occur in many of the alluvial systems on the coastal side of the transverse range, in Los Angeles and San Bernardino Counties. The closest known occurrence to the project area is the Vail Lake area of Riverside County.

Slender-horned spineflower was not observed in the project area. While Pala Creek provides suitable habitat for this species, the closest known population is located near Vail Lake in southern Riverside County. It should be noted that this species, if present, would have been detected during the general survey.

#### Spreading Navarretia

Federal Status: Threatened

State Status: None

Spreading navarretia (*Navarretia fossalis*), a member of the Polemoniaceae or Phlox family, is a spreading plant growing between 1 and 15 centimeters with a glabrous stem and leaves. This rare plant produces white flowers and can be found in vernal pools and vernal swales (Reiser 1994). The population size of this plant is strongly correlated with rainfall and were drastically reduced during past drought years. Its range extends from southern California to Baja California, Mexico.

Spreading navarretia was not observed during the project survey. No vernal pools are present within the project vicinity. This species is not likely to occur in the project area.

### 3.5 Cultural Resources

Surveys for cultural resources were conducted by Tierra Environmental Services on December 22, 2005, August 18, 2006, and September 6, 2006. The survey area included approximately 12 acres, an area much larger than the 1.8-acre project APE, which includes approximately 9,630 feet of pipeline alignment with an approximately 8-foot corridor adjacent to the edge of the existing roads. The larger survey area included 15-meter transects along both sides of the subject roadways and was selected to identify any cultural resources in the proximity of the APE. A record search was conducted to determine the type and location of cultural resources previously recorded within a one-mile radius of the APE. The following information summarizes the cultural resources survey report, which is attached to this EA as Appendix B.

#### Ethnography

The Shoshonean inhabitants of northern San Diego County were called Luiseños by Franciscan friars who named the San Luis Rey River and established the San Luis Rey Mission in the heart of Luiseño territory. Their territory encompassed an area from roughly Agua Hedionda on the coast, east to Lake Henshaw, north into Riverside County, and west through San Juan Capistrano to the coast (Bean and Shipek 1978). The Luiseño shared boundaries with the Gabrieliño and Serrano to the west and northwest, the Cahuilla from the deserts to the east, the Cupeño to the southeast and the Ipai, to the south.

The Luiseño were divided into several autonomous lineages or kin groups. The lineage represented the basic political unit among most southern California Indians. According to Bean and Shipek (1978) each Luiseño lineage possessed a permanent base camp, or village, in the San Luis Rey Valley and another in the mountain region for the exploitation of acorns, although this mobility pattern may only apply to the ethnohistoric present. Nearly all resources of the environment were exploited by the Luiseño in a highly developed seasonal mobility system. Each lineage had exclusive hunting and gathering rights in their procurement ranges and violation of trespass was seriously punished (Bean and Shipek 1978).

Acorns were the most important single food source used by the Luiseño. Their villages were usually located near water necessary for leaching acorn meal. Seeds from grasses, manzanita, sage, sunflowers, lemonade berry, chia and other plants were also used along with various wild greens and fruits. Deer, small game and birds were hunted and fish and marine foods were eaten. Generally women collected the plant resources and the men hunted but there was no rigid sexual division of labor (Bean and Shipek 1978).

Houses were arranged in the village without apparent pattern. The houses in primary villages were conical structures covered with tule bundles, having excavated floors and central hearths. Houses constructed at the mountain camps generally lacked any excavation, probably due to the summer occupation. Other structures included

sweathouses, ceremonial enclosures, ramadas and acorn granaries. Domestic implements included wooden utensils, baskets and ceramic cooking and storage vessels. Hunting implements consisted of the bow and arrow, curved throwing sticks, nets and snares. Shell and bone hooks as well as nets were used for fishing. Lithic resources of quartz and metavolcanics, and some cherts were available locally in some areas. Exotic materials, such as obsidian and steatite, were acquired through trade.

The traditional Luiseño religion is a complex and deeply philosophical belief system with powerful religious leaders, elaborate ceremonies and a veil of secrecy (White 1963). Each ritual and ceremonial specialist maintained the knowledge of the full meaning of a ceremony in secrecy and passed on the knowledge to only one heir. The decimation of the population after European contact undoubtedly caused the loss of some religious specialists and brought about abbreviated versions of ceremonies (Winterrowd and Shippek 1986), many of which are still practiced today. Surviving ceremonies include initiation for cult candidates, installation of religious chiefs, funerals and clothes burning (Bean and Shippek 1978).

Spanish explorers first encountered coastal Luiseño villages in 1769 and later established the Mission San Luis Rey de Francia in 1798, four miles inland from the mouth of the river. The missions "recruited" the Luiseño to use as laborers and convert them to Catholicism. The inland Luiseño were not heavily affected by Spanish influence until 1816, when an outpost of the mission was established 20 miles further inland, at Pala (Sparkman 1908). At the time of contact, Luiseño population estimates range from 5,000 to as many as 10,000 individuals. Missionization, along with the introduction of European diseases, greatly reduced the Luiseño population. Most villagers, however, continued to maintain many of their aboriginal customs and simply adopted the agricultural and animal husbandry practices learned from Spaniards.

By the early 1820s California came under Mexico's rule, and in 1834 the missions were secularized resulting in political imbalance, which caused Indian uprisings against the Mexican rancheros. Many of the Luiseños left the missions and ranchos and returned to their original village settlements. When California became a sovereign state in 1849, the Luiseño were recruited more heavily as laborers and experienced even harsher treatment. Conflicts between Indians and encroaching Anglos finally led to the establishment of reservations for some Luiseño populations, including the Pala Reservation in 1875. Other Luiseños were displaced from their homes, moving to nearby towns or ranches. The reservation system interrupted Luiseño social organization and settlement patterns, yet many aspects of the original Luiseño culture still persist today. Certain rituals and religious practices are maintained and traditional games, songs and dances continue as well as the use of foods such as acorns, yucca and wild game.

## Prehistory

As currently understood, San Diego prehistory begins with the paleoindian or San Dieguito culture dating to approximately 11,000 before present (B.P.). The typical San Dieguito artifact assemblage includes a variety of scrapers, choppers, and bifacial knives or points suggesting that these peoples were a generalized hunting and gathering society. At roughly 8,500 to 7,500 B. P. a major shift in the artifact assemblage, and by extension the subsistence system, occurred. This shift is characterized by the introduction of milling equipment (manos and metates) together with an emphasis on plant and particularly marine (shellfish and fish) resources. Various referred to as La Jolla culture, Milling Stone Horizon or the Archaic Period, these hunters and gatherers are best known from a series of coastal sites although inland resource were also exploited. Also distinctive of the La Jollan culture was the practice of burying the dead.

The La Jollan culture pattern persisted until the Late Prehistoric period, which began about 2,000 B.P. when the ancestors of the contemporary Luiseño appear to have migrated into San Diego County from the deserts to the east. These Takic-speaking peoples brought with them a bow-and-arrow technology characterized by small pressure flaked projectile points and an expanded milling technology which included both permanent (bedrock) and portable metate/basins and mortars with their accompanying manos and pestles. At a somewhat later date ceramic technology was introduced which significantly changed and improved both the ability to prepare food and to store it for long periods of time. Burial patterns also varied from the earlier La Jollan culture in that inhumation was replaced by cremation. In the northern part of the county, where the project is located, the period is known archaeologically as the San Luis Rey Complex.

## History

The Spanish Period (1769-1821) represents a period of Euroamerican exploration and settlement. Dual military and religious contingents established the San Diego Presidio and the San Diego and San Luis Rey Missions. The Mission system used Native Americans to build a footing for greater European settlement. The Mission system also introduced horses, cattle, other agricultural goods and implements; and provided construction methods and new architectural styles. The cultural and institutional systems established by the Spanish continued beyond the year 1821, when California came under Mexican rule.

The Mexican Period (1821-1848) includes the retention of many Spanish institutions and laws. The mission system was secularized in 1834, which dispossessed many Native Americans and increased Mexican settlement. After secularization, large tracts of land were granted to individuals and families and the rancho system was established. Cattle ranching dominated other agricultural activities and the development of the hide and tallow trade with the United States increased during the early part of this period. The Pueblo of San Diego was established during this period and Native American influence and control



greatly declined. The Mexican Period ended when Mexico ceded California to the United States after the Mexican-American War of 1846-48.

Soon after American control was established (1848-present) gold was discovered in California. The tremendous influx of Americans and Europeans that resulted, quickly drowned out much of the Spanish and Mexican cultural influences and eliminated the last vestiges of de facto Native American control. Few Mexican ranchos remained intact because of land claim disputes and the homestead system increased American settlement beyond the coastal plain.

## **Survey Results**

The archaeological inventory included archival and other background studies in addition to Tierra's field survey of the project (Tierra Environmental Services 2006b). The archival research consisted of literature and records searches at local archaeological repositories and an examination of historic maps, aerial photographs, and historic site inventories. This information was used to identify previously recorded resources and determine the types of resources that might occur in the survey area. The methods and results of the archival research are described below.

The records and literature search for the project was conducted at the South Coastal Information Center at San Diego State University. The records search included a one-mile radius of the project area to provide background on the types of sites that would be expected in the region. Copies of historic maps were also provided by the South Coastal Information Center.

Twenty-one archaeological investigations have taken place in the vicinity of the project, but the majority of the APE itself had not been previously surveyed. The records search indicated that six previous surveys covered portions of the project area.

The records search identified 47 cultural resources identified through previous research within a one-mile radius of the project, including one located near the APE. The site adjacent to the APE consists of milling features along Pala Creek, well beyond the proposed pipeline alignment. None of the other 26 sites are located near the APE. These resources, however, provide an idea of the types of cultural resources that might be expected within the project area. The types of cultural resources within a one-mile radius suggest a variety of site types are present in the area ranging from prehistoric habitation sites to historic structures. As indicated in Table 2 of the Cultural Resources Technical Report, nearly all of the cultural resources recorded in the project vicinity are prehistoric. These sites are dominated by bedrock milling features, and associated cultural material indicating temporary occupation.

Historic research included an examination of a variety of resources. The current listings of the National Register of Historic Places were checked through the National Register of

Historic Places website. The California Inventory of Historic Resources (State of California 1976) and the California Historical Landmarks (State of California 1992) were also checked for historic resources. The 1901 San Luis Rey, 1942 Temecula, and 1949 edition of the Pala USGS Quadrangles indicated no historic structures within the APE.

The survey identified no cultural resources within the project APE and due to the highly disturbed nature of the APE it is unlikely that cultural resources will be impacted by the construction of the wastewater project. No further cultural resources work is necessary or recommended. If cultural resources should be discovered during construction, work should be halted until the find can be evaluated for its significance by a qualified archaeologist.

### 3.6 Socioeconomic Conditions and Environmental Justice

**Socioeconomic Conditions.** According to the most current *Report on Service Population and Labor Force* available for the Pala Reservation, the Tribe has an enrollment of 900 members living on or adjacent to the Reservation (Bureau of Indian Affairs, 2003). According to the same report, the Pala Tribe has an unemployment rate of 63 percent, which is significantly higher than the overall unemployment rates of San Diego County and the State, at 3.2 percent and 5.3 percent, respectively, during the same time period. These differences are probably due in part to educational and cultural differences. The Tribe maintains a high reliance upon government funded programs and supplemental income.

**Environmental Justice.** Executive Order 12898 and accompanying Presidential Memorandum require that all federal agencies address environmental justice concerns to ensure fair treatment of all members of a community. Environmental justice concerns may arise from impacts on the natural or physical environment, such as human health or ecological impacts on low-income populations, minority populations, and Indian tribes, and from interrelated social, cultural and economic impacts. These concerns must be addressed through the NEPA process by identifying and addressing disproportionately high and adverse human health or environmental effects of the responsible agency's programs, policies, and activities on low-income populations, minority populations, and Indian tribes, particularly with respect to multiple and cumulative exposure to environmental hazards.

The goal of fair treatment is not to shift risks among populations, but to identify potential disproportionately high and adverse human health and environmental effects on minority populations and low-income populations and identify alternatives to mitigate those impacts.

### 3.7 Resource Use Patterns

#### 3.7.1 Transportation Networks

Regional access to the Reservation is provided by SR-76, which traverses the Reservation in an east/west direction connecting I-15 to the west to SR-79 to the east. Valley Center

Road (County S6) connects with SR-76 from the south, approximately 6 miles east of the Reservation. The Proposed Action site lies along Pala-Temecula Road. Figure 6 provides a map of the existing transportation network in the project area.

### **3.7.2 Land Use**

The project area is currently developed with rural residential home set among fallow agricultural fields. The village center area is located to the south, as is the Pala Casino Spa Resort. Several homes are currently planned for construction along the proposed sewer alignment that would be connected to the community sewer system rather than use septic systems.

### **3.7.3 Public Services**

#### **Solid Waste**

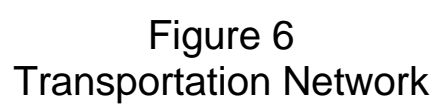
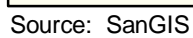
The Tribe provides waste collection services for the Pala townsite with their own truck. The solid waste is hauled to the Sycamore Landfill in Santee. Waste is currently collected once a week and requires two trips to the landfill. The two trips are never made in the same day.

#### **Water**

The water system serving the Pala Indian Reservation has developed on an incremental basis over a 70-80 year period. Recent system design and planning has been provided by the Tribe's engineers and Indian Health Services, with operation and maintenance by members of the Tribe. Domestic water supply is provided to the Reservation by multiple wells, a distribution network of 3-inch, 4-inch, 6-inch, and 8-inch main lines, and storage tanks. Separate water systems serve the areas north and south of the San Luis Rey River. The project area, which is north of the river, is served by two 200,000-gallon storage tanks and one smaller tank.

#### **Wastewater Treatment**

The Reservation currently has a combined gravity and pumped force main collection system that conveys wastewater generated by approximately 60 percent of the residences located north of the San Luis Rey River to a package wastewater treatment plant that was constructed as part of the Pala Casino project to replace an older wastewater treatment facility. The new wastewater treatment plant is located north of SR-76 and east of the Pala town site. The Tribe approved an upgrade from secondary to tertiary treatment and an expansion of the capacity of this wastewater treatment plant in 2006. The expanded capacity is designed to meet the Tribe's projected future wastewater treatment needs, including the replacement of existing septic systems with sewer connections. Separate lift stations pump sewage from the casino and from the residential areas to the wastewater treatment facility. The wastewater generated by other residences on the north side of the



San Luis Rey River, and by all residences on the south side of the river, is disposed to individual septic tanks. The wastewater treatment plant was constructed with expansion in mind so that ultimately the Tribe can connect all existing septic systems to the sewer mains.

### **Telecommunications**

All basic telecommunications services, including cellular communications, are provided to the project area by Pacific Bell. Telecommunications lines parallel SR-76 and Pala-Temecula Road.

### **Electrical and Gas Services**

Electricity is supplied to the Reservation by the San Diego Gas and Electric Company (SDG&E). There is no natural gas service to the Reservation or the surrounding area. A private propane distribution company leases land on the Reservation and maintains a 30,000-gallon storage tank. Propane is transported by truck from this tank to individual storage tanks at residences and business on the Reservation.

#### **3.7.4 Other Resource Use Patterns**

The project sites are not currently used for hunting, fishing, or gathering activities, timber harvesting, agriculture, mining, or recreation. The project site also does not contain any prime farmland, unique farmland or farmland of statewide importance. Land on the Pala Reservation has been mapped as Other Land by the State of California Department of Conservation Division of Land Resource Protection Farmland Mapping and Monitoring Program (State of California 2000). Other Land is land that does not meet the criteria of any other category. Common examples include low-density rural developments, wetlands, dense brush and timberlands, gravel pits, and small water bodies.

### **3.8 Other Values**

This section discusses sound and noise, public health and safety, and visual resources/aesthetics.

#### **3.8.1 Sound and Noise**

Noise is defined as unwanted or annoying sound that is typically associated with human activity and which interferes with or disrupts normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance.

The Reservation is located within a rural valley setting. The predominant source of noise is from traffic on SR-76 and Pala-Temecula Road.

### **3.8.2 Public Health and Safety**

This section describes the availability of fire and law enforcement services for the Pala Reservation and the potential for the occurrence of hazardous materials on the project site or vicinity.

#### **Law Enforcement**

Law enforcement for the Pala Reservation is provided by the Pala Tribe's own security force and the San Diego County Sheriff's Department. The Pala Tribe contracts with the County Sheriff's Department to provide one Special Purpose Deputy five days per week, eight hours per day. The Special Purpose Deputy has an office in the Pala townsite on the Reservation. The closest Sheriff's substation is the Pauma-Valley Center Substation located in Valley Center at 28205 North Lake Wolford Road, approximately 15 miles from the project site. The Sheriff's Substation has a total sworn staff of 18 including one Sergeant, one Lieutenant, two Detectives, two Community-Oriented Policing Deputies, one Pala Special Purpose Deputy, and twelve Patrol Deputies. The Station provides 24-hour service with a minimum of two officers on duty during the day, three during the evening, and two during the night hours.

#### **Fire**

The Pala Tribe maintains its own Fire Department located near the intersection of Pala Mission Road and Pala-Temecula Road. The fire fighting staff consists of six full-time paid fire fighters and two volunteer chiefs, of whom at least three are on duty at all times. The station's fire fighting equipment includes one engine with a 750-gallon water tank and a 1,250 gallon per minute (gpm) pump, one reserve engine with a 500-gallon tank and a 1,000 gpm pump, a water tender with a 2,500-gallon tank and a 750 gpm pump and a brush engine with a 500-gallon water tank and 500 gpm pump and foaming system with a 30-gallon tank of foam (Captain Juan Luna, Personal Communication). The station also maintains a rescue unit and provides both Basic and Advanced Life Support. All fire fighters have completed Emergency Medical Training (EMT) and are available 24 hours a day. Fire fighters can respond to the project site in approximately two minutes. The North County Fire Protection District provides mutual aid to the Reservation, and has a response time of approximately eight minutes. In addition, a California Department of Forestry (CDF) station is located at Rincon approximately nine miles east on SR-76 and is available to provide emergency backup fire protection.

## **Emergency Services**

The project site is within the Palomar-Pomerado Hospital District. The Palomar-Pomerado Hospital District extends from the City of San Marcos in the west to the community of Julian in the east, and from the Riverside County line in the north to the San Vicente and El Capitan Reservoirs to the south. The District maintains two hospitals: Palomar Medical Center in Escondido, with 299 beds; and Pomerado Hospital in Poway, with 109 beds. The Palomar Medical Center is closest to the project site at a distance of approximately 15 miles. Palomar Medical Center is also the base station for all paramedic units operating in the District. The Palomar-Pomerado Hospital District has opened the Mountain Valley Health Clinic, located in Pauma Valley, approximately 7 miles east of the Reservation, on Highway 76. The Mountain Valley Health Clinic provides services similar to an urgent care facility (Tamara Shackelton, Personal Communication).

## **Hazardous Materials**

A pedestrian survey of the proposed pipeline alignments did not reveal any evidence of hazardous materials along the dirt and paved road alignments.

### **3.8.3 Visual Resources/Aesthetics**

The project area consists of a flat valley dominated by rural residential development, agriculture, and fallow land. The valley narrows between steep, rocky, mountains to the north as Pala-Temecula Road climbs the Pala Creek corridor, crossing a saddle into the Temecula Valley. Pala Creek provides a corridor of riparian vegetation from the northern project limit south to the San Luis Rey River. Figure 7 provides photos of the project area.





View of Pala Temecula Road south of Sycamore Lane, looking north (12/22/05)



View of Santiago Road, looking west (12/22/05)

Figure 7  
Photos of Project Area



TIERRA  
ENVIRONMENTAL SERVICES

## **4.0 ENVIRONMENTAL CONSEQUENCES**

### **4.1 Land Resources**

There would not be a change in land use as the proposed sewer mains would be placed within existing road right-of-ways. A single lift station would be constructed adjacent to the roadway on existing vacant land adjacent to Sycamore Lane, west of the Sycamore Lane Bridge. The minimal area needed for these facilities and the proximity to existing roads would not have an adverse consequence on existing or future land use.

### **4.2 Water Resources**

Water resources would be protected through the replacement of failing septic systems with sewer lines. This would remove the potential for contamination of the local groundwater and wells by failed septic systems. Short-term potential impacts to surface water quality associated with excavation and erosion would be minimized through the use of BMPs during construction. Revegetation of disturbed areas along the existing roads would preclude long-term potential impacts associated with erosion.

The proposed sewer pipelines are clearly located outside the floodplain of the San Luis Rey River, but would cross Pala Creek within the Sycamore Lane Bridge and two tributaries to Pala Creek in one location each along Pala-Temecula Road. The lift station and manholes would be located above the floodway of Pala Creek.

Adverse effects to water resources could be avoided through the implementation of Best Management Practices (BMPs). Therefore, BMPs shall be implemented during project construction, with an emphasis on the protection of Pala Creek, its tributaries, and the San Luis Rey River. BMPs may consist of the use of swales, detention basins, hay bales, straw wattles, silt curtains, and gravel bags as well as hydroseeding and the preservation of vegetated buffers between areas of excavation and stream channels. Selection of the appropriate BMPs may be at the discretion of the project engineer and contractor. The distance between the project site and the San Luis Rey River, the location of the project within existing roads, and the implementation of BMPs where these roads cross drainages, would prevent adverse impacts to surface water quality.

### **4.3 Air Quality**

Project impacts would be limited to construction activities and would consist of emissions from gas and diesel engines in construction trucks and equipment as well as dust (PM<sub>10</sub>) associated with trench excavation. Due to the short duration of construction, limited amount of equipment needed, air quality impacts are considered to be less than significant. The project is exempt from the SIP as the emissions would clearly be below de minimis limits.

The Tribe would implement standard dust control measures, such as the watering of exposed dirt areas, 15 mph speed limits for construction vehicles on dirt roads, and cessation of construction activities if wind speeds exceed 25 mph.

## 4.4 Living Resources

### Vegetation

As shown in Table 2, the Preferred Alternative would cause impacts to approximately 1.8 acres. Of the 1.8 acres, only 0.25 acre of impact would be to a native habitat (Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, coast live oak woodland, and sycamore alluvial woodland). The remaining 1.52 acres of impact would be to non-native grasslands, ornamental areas, ruderal areas, agricultural areas, and developed areas. This impact would not be considered to be significant.

**Table 2. Biological Impacts**

<b>Habitat type</b>	<b>Impact (Acres)</b>
Diegan coastal sage scrub	0.05
Disturbed Diegan coastal sage scrub	0.07
Coast live oak woodland	0.05
Sycamore alluvial woodland	0.08
Non-native grassland	0.05
Waters of the U.S.	0.02
Ornamental areas	0.07
Ruderal areas	0.19
Agricultural areas	0.18
Developed areas	1.01
<b>Total</b>	<b>1.77</b>

### Sensitive Species

Construction of the Preferred Alternative would not have any adverse effects on sensitive species, as none were identified at or adjacent to the project site. The southwestern arroyo toad is the only sensitive species that could occur in the project area as Pala Creek provides suitable arroyo toad habitat and is tributary to the San Luis Rey River, which is known to support the arroyo toad.

In addition to the recommendation for focused preconstruction surveys for the arroyo toad, measures shall be taken to avoid “take” of dispersing arroyo toads during construction if arroyo toads are determined to be present. Such measures shall include prohibition of construction during those times in which the arroyo toad is most active in upland areas

(immediately following significant rainfall) and use of exclusion fencing around construction areas within or adjacent to potential arroyo toad habitat.

### **Sensitive Habitats**

Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, sycamore alluvial woodland, and interior live oak woodland are sensitive habitats. The worst-case estimate of project impacts identified 0.25 acre of combined impacts to these three habitats. Actual impacts would be likely to be less, or would not occur, as the ultimate APE is anticipated to be limited to paved and dirt roads and the immediate shoulder, and not within the entire 8-foot corridor from edge of pavement that was used to estimate maximum project impacts.

Wetlands and creek beds are under the jurisdiction of the ACOE pursuant to Section 404 of the Clean Water Act. Furthermore, on Indian lands, the EPA exerts jurisdiction over similar habitats pursuant to Section 401 of the Clean Water Act. Pala Creek and its tributaries would be considered waters of the U.S. and would be considered to be jurisdictional by both agencies. Project impacts to sensitive habitats would be avoided through the use of the existing Sycamore Lane Bridge and existing culverts within Pala-Temecula Road.

## **4.5 Cultural Resources**

A determination of no adverse effect is recommended for the Proposed Action as a record search and intensive field survey did not identify any cultural resources within the APE. However, a single site was identified adjacent to the APE along Sycamore Lane. Therefore, archaeological and Native American monitoring during ground disturbing activities along Sycamore Lane is recommended.

## **4.6 Socioeconomic Conditions and Environmental Justice**

Implementation of the Preferred Alternative does not pose a disproportionate risk to any individuals or groups of persons, regardless of income or ethnicity. In fact, project impacts would be temporary and would be limited to dirt and paved roads and front yards of homes on the Reservation. The Proposed Action would result in improved sanitary conditions, ultimately improving the quality of life for Tribal members and guests on the Reservation.

## **4.7 Resource Use Patterns**

### **4.7.1 Transportation Networks**

The Proposed Action would have minor short-term impacts on transportation networks, as the sewer pipelines would be placed within the shoulder of existing roads. While all roads would remain open during construction, the presence of construction vehicles, equipment, and workers could result in lane closures and temporary delays for motorists. A traffic

management plan would be prepared and implemented by the selected contractor. All road surfaces disturbed by project construction would be repaired. These measures would avoid any adverse consequences to traffic or the transportation network.

#### **4.7.2 Land Use**

The Proposed Action would not have any adverse effects to land, as all improvements would be located belowground within existing road right-of-ways. The sewage lift station would be located on vacant land adjacent to the road right-of-way. There would be no change in land use.

#### **4.7.3 Public Services**

The Proposed Action would not have an adverse effect on the disposal of solid waste, provision of electricity and natural gas, wastewater service, or the availability of water service. Existing sewer service would be extended to the Pala-Temecula Road Area (Area 1) and the Cactus Road Area (Area 4) on the Reservation.

#### **4.7.4 Other Resource Use Patterns**

The Proposed Action would not have an adverse effect on hunting, fishing, or gathering activities, timber harvesting, agriculture, mining, or recreation. Nor would the project have an effect on any prime farmland, unique farmland or farmland of statewide importance or any agricultural operations.

### **4.8 Other Values**

#### **4.8.1 Sound and Noise**

The Proposed Action would result in temporary construction noise. Construction would consist of trenching and backfilling with standard diesel powered equipment. Work would be within and adjacent to existing road right-of-way. Construction noise would be noticeable at residential sensitive receptors during the installation of 50 sewer lateral lines that would connect to the homes at the location of the existing septic systems. This temporary construction noise would not be adverse because it would be limited to 7:00 a.m. to 7:00 p.m. Monday through Saturday and would not last more than several days at any one location.

#### **4.8.2 Public Health and Safety**

The Proposed Action would not introduce the storage, transport or use of hazardous materials to the project area and vicinity. Sanitary conditions would be improved through the replacement of failing septic systems with sewer lines. Construction activities would comply with Occupational Safety and Health Administration (OSHA) standards.



### **4.8.3 Visual Resources/Aesthetics**

The Proposed Action would be constructed within and adjacent to existing roads and would be belowground. Visual impacts would be limited to temporary trenches and backfill within the shoulder of existing dirt and paved roads on the Reservation.

## **4.9 Environmental Effects of the No Action Alternative**

Under the No Action Alternative, the existing septic systems would continue to represent a threat to the environment and public health. Under the No Action Alternative, there would not be any construction activities and all potential impacts associated with construction, such as living resources, noise and air quality, would be avoided.

As with the Proposed Action, under the No Action Alternative, there would not be any adverse effects to cultural resources, the transportation network on the Reservation, land use, or on public services. Further, the No Action Alternative would not have an adverse effect on hunting, fishing, or gathering activities, timber harvesting, agriculture, mining, recreation, or prime farmland, unique farmland or farmland of statewide importance or any agricultural operations.

## 5.0 CUMULATIVE EFFECTS

Cumulative effects are effects on the environment that result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

Anticipated growth on the Reservation will occur as individual projects are developed by the Tribal Council. The replacement of septic systems with connections to the existing wastewater treatment plant is not expected to result in or contribute to any significant unmitigable direct, indirect, or cumulative impacts. The Tribe recently constructed the Pala Spa Casino Resort, which included a new wastewater treatment plant. The Tribe approved an upgrade of the wastewater treatment plant from secondary to tertiary along with an expansion of capacity to meet the Tribe's projected future wastewater treatment needs. The Tribe also recently approved the expansion of the casino. Other recent projects have included a new Tribal Administration Center and recreational facilities and a new fire station is nearing completion. In addition, many tribal members are replacing existing substandard homes with new homes.

Subsequent plans to abandon septic systems and connect Areas 3, 5 and 6 to the wastewater treatment facility are anticipated as funds become available.

## **6.0 MITIGATION MEASURES**

### **6.1 Land Resources**

None required.

### **6.2 Water Resources**

Adverse effects to water resources were found to be avoided through the implementation of Best Management Practices (BMPs). BMPs are to be implemented in conformance with a National Pollution Discharge Elimination System (NPDES) Phase 2 permit, which will include the preparation of a Stormwater Pollution Prevention Plan (SWPPP). The BMPs shall be implemented during project construction, with an emphasis on the protection of Pala Creek and the San Luis Rey River. BMPs may consist of the use of swales, detention basins, hay bales, straw waddles, silt curtains, and gravel bags as well as hydroseeding and the preservation of vegetated buffers between areas of excavation and stream channels. Selection of the appropriate BMPs may be at the discretion of the project engineer and contractor.

### **6.3 Air Quality**

Air quality impacts were found to be de minimis. However, the Tribe would implement standard dust control measures, such as the watering of exposed dirt areas, 15 mph speed limits for construction vehicles on dirt roads, and cessation of construction activities if wind speeds exceed 25 mph.

### **6.4 Living Resources**

Measures shall be taken to avoid “take” of dispersing arroyo toads during construction during the breeding season (March 15-July 1) in the Pala-Temecula Road Area (Area 1). Such measures shall include prohibition of construction during those times in which the arroyo toad is most active in upland areas (immediately following significant rainfall) and use of exclusion fencing around construction areas within or adjacent to potential arroyo toad habitat. This mitigation measure is limited to the Pala-Temecula Road Area (Area 1).

### **6.5 Cultural Resources**

Archaeological and Native American monitoring shall be conducted during ground disturbing activities that take place along Sycamore Lane.

## **6.6 Socioeconomic Conditions and Environmental Justice**

None required.

## **6.7 Resource Use Patterns**

The Tribe shall prepare and implement a Traffic Control Plan for all work on or along Pala-Temecula Road and Pala Mission Road.

## **6.8 Other Values**

### **6.8.1 Sound and Noise**

Construction shall be limited to the hours between 7:00 a.m. and 7:00 p.m. to avoid impacts to the residences to be served by the proposed sewer pipelines.

### **6.8.2 Public Health and Safety**

None required.

### **6.8.3 Visual Resources/Aesthetics**

None required.

## 7.0 REFERENCES

Bean, Lowell John and Florence Shippek

- 1978 Luiseño. In *California*, edited by Robert F. Heizer, pp 550-563. Handbook of North American Indians, vol. 8. Smithsonian Institution, Washington, D.C.

Bowman, R.H.

- 1973 *Soil Survey of San Diego, California*. U.S. Department of Agriculture, Soil Conservation Service and Forest Service.

Bureau of Indian Affairs

- 2003 Report on Service Population and Labor Force. U.S. Department of the Interior.

California Department of Fish and Game.

- 2004 Natural Diversity Data Base RareFind Report.

California Native Plant Society (CNPS)

- 2001 *Inventory for Rare and Endangered Plants of California* (sixth edition). Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. Sacramento, CA. X = 338 pp.

California Regional Water Quality Control Board

- 1994 The Water Quality Control Plan for the San Diego Basin (9) (Basin Plan)

Federal Register

- 1997 Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Laguna Mountain Skipper and Quino Checkerspot Butterfly. Vol. 62, No. 11, Final Rule. January 16.
- 1993 Proposed Rule to List the Southwestern Willow Flycatcher as Endangered with Critical Habitat. Federal Register 58, July 23.

Garcia, Guillermo

- 2000 Personal Communication. Principal Engineer, Cathcart Garcia von Langen Engineers, Irvine, California.

Hickman, J.C.

- 1993 *The Jepson Manual - Higher Plants of California*. University of California Press, Berkeley and Los Angeles.

Holland, R.F.

- 1986 Preliminary Descriptions of the Terrestrial Natural Communities of California. Non-game Heritage Program. State of California, The Resources Agency, Department of Fish and Game.



- Jameson, E.W. and H.J. Peeters  
1988 California Mammals. University of California Press, Berkeley, California.
- Komex H2O Science, Inc  
2005 Groundwater Study Report Pala Groundwater Basin. October 20.
- Luna, Juan  
1998 Personal Communication. Captain, Pala Fire Department, Pala, California. October 14, 1998.
- O'Farrel, M.J. and C.E. Uptain  
1989 Assessment of population and habitat status of the Stephens' kangaroo rat (*Dipodomys stephensi*). California Department of Fish and Game Non-game Bird and Mammal Section. Report 19 pp+appendices.
- Ponder, Bill  
2000 Personal Communication. Staff, California Coastal Commission, San Diego Area. February 17, 2000.
- Reiser, Craig  
1994 *Rare Plants of San Diego County*. Aquifer Press.
- Shackelton, Tamara  
1998 Personal Communication. Public Relations, Palomar-Pomerado Hospital, Escondido, California. November 4, 1998.
- Sibley, A.S.  
2000 National Audubon Society. The Sibley Guide to Birds. Chanticleer Press, Alfred A. Knopf, New York.
- Sparkman, Phillip S.  
1908 The Culture of the Luiseño Indians. *University of California Publications in Archaeology*, Vol. 8. UC Press, Berkeley.
- Spier, Leslie  
1923 Southern Diegueño Customs. *University of California Publications in American Archaeology and Ethnology* 20:292-358.
- Springer & Anderson  
2000 Pala Band of Mission Indians Preliminary Engineering Report. November.
- State of California  
2000 The Resources Agency, Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program.

- State of California Department of Housing and Community Development  
2002 Field Directory of the California Indian Community, California Indian Assistance Program. March.
- Tierra Environmental Services  
2006a Biological Resources Technical Report for the Pala Wastewater System Rehabilitation Project. February.
- 2006b Cultural Resources Technical Report for the Pala Wastewater System Rehabilitation Project. February.
- Unitt, P.  
2004 The Birds of San Diego County. San Diego Natural History Museum.
- 1984 The Birds of San Diego County. San Diego Natural History Museum.
- U.S. Fish and Wildlife Service  
2002 Quino Checkerspot Butterfly (*Euphydryas editha quino*) Survey Protocol Information. February.
- 1999 Arroyo Southwestern Toad (*Bufo microscaphus californicus*) Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon. vi+119pp.
- U.S. Forest Service  
1999 Status and Breeding Activities of the Southwestern Willow Flycatcher at the Cleveland National Forest in 1999. November 29.
- Western Regional Climate Center  
2002 Web site: [www.wrcc.dri.edu/](http://www.wrcc.dri.edu/) for climate and weather information. December.
- White, Raymond C.  
1963 Luiseño Social Organization. *University of California Publications in American Archaeology and Ethnology* Vol. 48. University of California Press, Berkeley.
- Winterrowd, Cathy L. and Florence C. Shipek  
1986 Ethnographic Investigation: Pala Sand and Gravel Extraction Project. RBR and Associates, Inc. San Diego.

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### **8.1 Personnel**

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The following agencies and persons were consulted for their input regarding existing environmental conditions and analyses of the proposed actions' environmental consequences:

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**ENVIRONMENTAL ASSESSMENT  
FOR THE  
PALA TRIBAL WASTEWATER SYSTEM  
REHABILITATION PROJECT**

**(APPENDICES A AND B)**

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**APPENDIX A**  
**BIOLOGICAL RESOURCES DOCUMENTATION**



**APPENDIX B**  
**CULTURAL RESOURCES DOCUMENTATION**