PALMDALE WATER DISTRICT
STRATEGIC WATER RESOURCES PLAN

Draft Program Environmental Impact Report
State Clearinghouse No. 2010101091

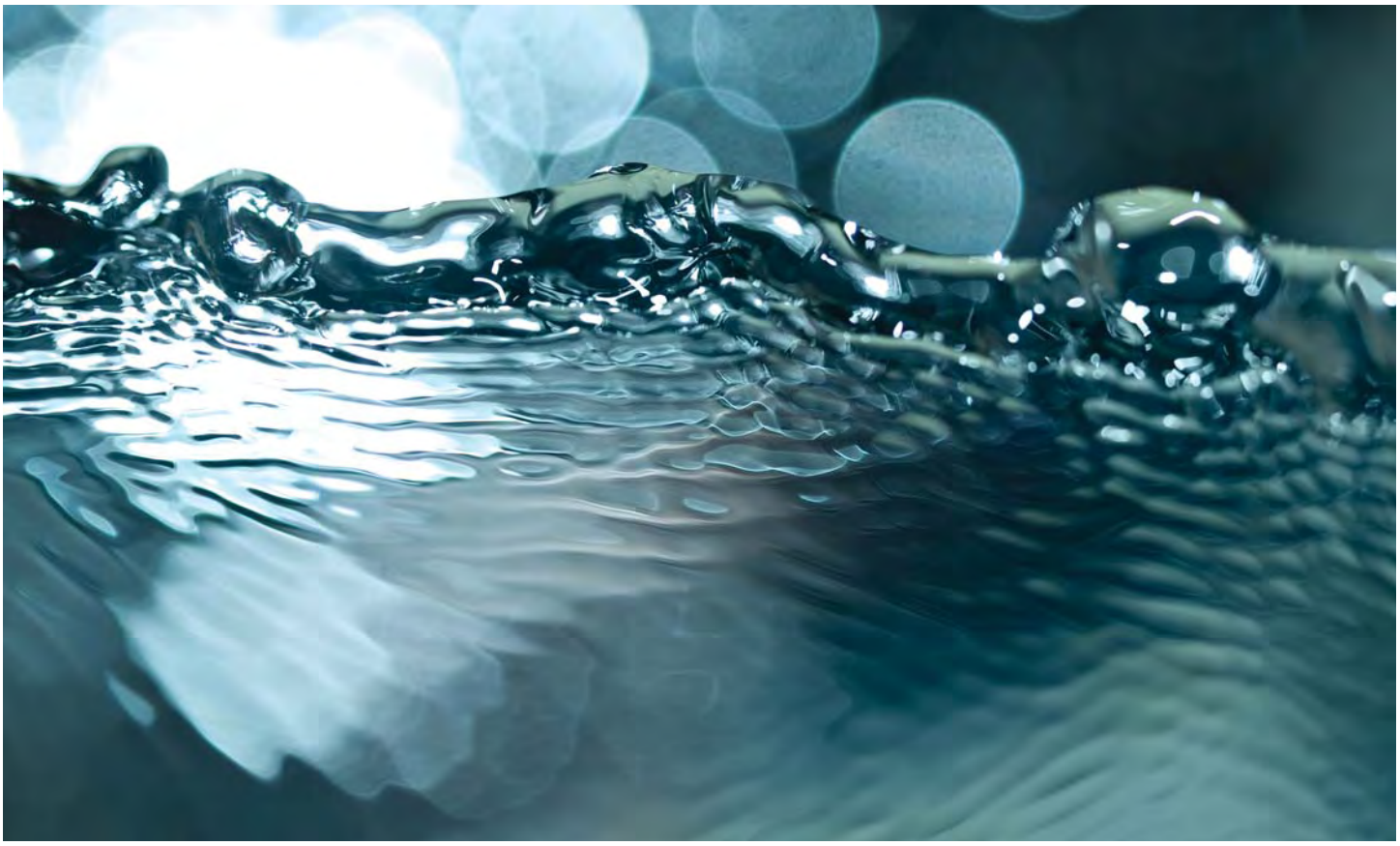
Prepared for
Palmdale Water District

August 2011

ESA

In association with

RMC
Water and Environment



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Draft Program EIR

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Acronyms Used in this Report

AADT	Annual Average Daily Trips
ACI	American Concrete Institute
AFY	Acre-Feet per Year
AIA	Airport Influence Area
AICUZ	Air Installation Compatible Use Zone
AISC	American Institute of Steel Construction
ALUC	Airport Land Use Commission
ALUCPs	Airport Land Use Compatibility Plans
ALUP	Airport Land Use Plan
Amsl	Above Mean Sea Level
APCDs	Air Pollution Control Districts
APZ	Accident Potential Zones
AQAP	Air Quality Attainment Plan
AQMDs	Air Quality Management Districts
AQMP	Air Quality Management Plan
ASCE	American Society of Civil Engineers
ASR	Aquifer Storage and Recovery
AVA	Antelope Valley Areawide
AVAQMD	Antelope Valley Air Quality Management District
AVEK	Antelope Valley-East Kern
AVGB	Antelope Valley Groundwater Basin
AVIM	Antelope Valley Indian Museum
AVTA	Antelope Valley Transit Authority
BLM	Bureau of Land Management
BMPs	Best Management Practices
CalOSHA	California Division of Occupational Safety and Health
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game

CDPH	California Department of Public Health
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERLCA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGS	California Geologic Survey
CH4	Methane
CHP	California Highway Patrol
CIWMB	California Integrated Waste Management Board
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon Monoxide
CUPA	Certified Unified Program Agency
CVC	California Vehicle Code
CWA	Clean Water Act
CZs	Clear Zones
dB	Decibel
dBA	A-weighted Decibels
DPM	Diesel Exhaust Emissions
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-To-Know Act
ET	Evapotranspiration
FAA	Federal Aviation Administration
FCAA	Federal Clean Air Act
FCAAA	Federal Clean Air Act Amendments
FEMA	Federal Emergency Management Act
FHSZ	Fire Hazard Severity Zone
FICON	Federal Interagency Committee on Noise
FIP	Federal Implementation Plan
FMMP	Farmland Monitoring and Mapping Program

FTA	Federal Transit Administration
GHGs	Greenhouse gases
Gpm	Gallons per Minute
GWP	Global Warming Potential
HAPs	Hazardous Air Pollutants
HCP	Habitat Conservation Plan
HE	High-efficiency
HMBPs	Hazardous Materials Business Plans
HSWA	Hazardous and Solid Waste Amendments
HU	Hydrologic Unit
Hz	Hertz
IRP	Installation Restoration Program
kWh/MG	Kilowatt-hours Consumed Per Million Gallons
LACFD	Los Angeles County Fire Department
LACSD	Los Angeles County Sanitation District
LACTC	Los Angeles County Transportation Commission
LACWWD40	Los Angeles County Waterworks District 40
LAWA	Los Angeles World Airports
Ldn	Day-Night Noise Level
Leq	Equivalent Energy Level
LESA	Land Evaluation and Site Assessment Model
LOS	Level of Service
LWRP	Lancaster Water Reclamation Plant
MBTA	Migratory Bird Treaty Act
MCL	Maximum Containment Limit
MDAB	Mojave Desert Air Basin
MEI	Maximally Exposed Individual
MMI	Modified Mercalli Intensity
MMRP	Mitigation Monitoring and Reporting Program
MND	Mitigated Negative Declaration
MRE	Mineral Resource Extraction
MRZ	Mineral Resource Zone
N2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission

NAS	National Airspace System
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO2	Nitrogen Dioxide
NOP	Notice of Preparation
NOx	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Society
O3	Ozone
OAL	Office of Administrative Law
OEHHA	Office of Environmental Health Hazard Assessment
OHP	Office of Historic Preservation
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PAHs	Polynuclear Aromatic Hydrocarbons
PEIR	Program Environmental Impact Report
PM	Particulate Matter
Ppm	parts per million
PUC	Public Utilities Code
PWD	Palmdale Water District
PWRP	Palmdale Water Reclamation Plant
QHWD	Quartz Hill Water District
RCP	Regional Comprehensive Plan
RCRA	Resource Conservation and Recovery Act
RMS	Root Mean Square
ROG	Reactive Organic Gases
ROWs	Right of Ways
RSL	Regional Screening Levels
RTP	Regional Transportation plan
RWMP	Recycled Water Master Plan
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill

SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCGC	Southern California Gas Company
SCH	State Clearing House
SDC	Seismic Design Category
SEA	Sensitive Ecological Area
SEACUP	Sensitive Ecological Area Conditional Use Permit
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act
SO2	Sulfur Dioxide
STLC	Soluble Threshold Limit Concentration
SVE	Soil Vapor Extraction
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWRP	Strategic Water Resources Plan
TACs	Toxic Air Contaminants
TCE	Trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
THMs	Trihalomethanes
TM	Technical Memorandum
TMDL	Total Maximum Daily Load
TTLC	Total Threshold Limit Concentration
USACE	Unite State Army Corps of Engineers
USAF	United States Air Force
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United State Fish and Wildlife Service
USGS	United State Geologic Survey
UWMP	Urban Water Management Plan
V/C	Volume to Capacity
VMT	Vehicle Miles Traveled

VOCs	Volatile Organic Compounds
WDMP	Wildlife Hazard Monitoring Plan
WDR	Waste Discharge Requirements
WET	Waste extraction Test
WMA	Watershed Management Area
WRP	Water Reclamation Plant
WTP	Water Treatment Plant

EXECUTIVE SUMMARY

ES.1 Introduction

The Palmdale Water District (PWD) as the Lead Agency has prepared this Draft Program Environmental Impact Report (Draft PEIR) to provide the public, responsible and trustee agencies with information about the potential effects on the local and regional environment associated with the Strategic Water Resources Plan Project (SWRP). This EIR has been prepared pursuant to the California Environmental Quality Act (CEQA)

Palmdale Water District (PWD), as the Lead Agency pursuant to CEQA, is proposing to implement the SWRP, which outlines a programmatic plan for developing and diversifying PWD's water supply over the next 25 years through 2035. The SWRP anticipates that during that time, despite the current economic recession, the population within its service area will double. Currently, existing supplies are inadequate to meet the projected demand of a growing population. The SWRP therefore establishes a strategy to match overall annual water demand on a year-to-year basis. The SWRP identifies a Recommended Water Resource Strategy that would provide increased water supply reliability and redundancy by increasing the number of water sources available to supplement the system when an individual source of water is unavailable or restricted. The proposed strategy calls for acquisition of additional imported supplies; new groundwater recharge and recovery facilities; aquifer storage and recovery (ASR) wells; potential use of recycled water for agricultural irrigation, groundwater recharge, and other municipal and industrial end uses; expansion of conservation programs; and recovery of storage capacity in Littlerock Reservoir.

This Executive Summary provides an overview of the SWRP's Recommended Strategy (proposed project), its objectives, and a summary of the potential impacts anticipated as a result of project implementation. The summary table (**Table ES-1**) included at the end of this chapter identifies these impacts and lists the mitigation measures recommended to reduce significant adverse impacts. Alternatives to the proposed project are also briefly described.

For a full description of the proposed project, its impacts, and alternatives, please refer to Chapters 2, 3, 4, 5, and 6 of this PEIR.

ES.2 Background

PWD was founded as an irrigation district that supplied water mainly to farms for agricultural use. As a result of Palmdale's rapid population growth during the early 1950s, PWD shifted to providing predominantly municipal and industrial services. PWD provides potable water to municipal, industrial and agricultural customers within a 47-square mile service area in the Antelope Valley of Los Angeles County, California. PWD currently serves 25,000 active customer accounts through three sources of water supply: imported water from the State Water Project (SWP), local groundwater, and local surface runoff collected at the Littlerock Reservoir and conveyed to Lake Palmdale through Palmdale Ditch.

PWD receives SWP water through a turnout on the East Branch of the California Aqueduct. PWD has a Table A contracted amount of 21,300 acre-feet per year (AFY) through the SWP, but generally receives between 41 and 77 percent of this contracted amount. PWD expects to receive approximately 12,000 AFY of imported water based on long-term reliability projections.

PWD uses approximately 25 existing wells in its service area for groundwater extraction from the Antelope Valley groundwater basin. PWD currently extracts about 12,000 AFY from the groundwater basin. Litigation has been ongoing since 1999 regarding groundwater adjudication in the Antelope Valley. Initiated by agricultural interests, the lawsuit is based on a concern that groundwater pumping costs were increasing as a result of increased groundwater withdrawals by municipal users. While an official adoption of a court-ordered adjudication does not appear to be forthcoming, the adjudication process could be completed within the next decade. Other regions of Southern California have adopted groundwater adjudications that allow designated pumpers to increase groundwater withdrawals above their annual pumping allotment by a volume that is equal to what is recharged back to the aquifer on an annual basis. For the proposed local groundwater banking strategy to be successful, it may be necessary that the finalized adjudication judgment allow PWD the capability of increasing groundwater withdrawals over the 2010–2035 timeframe by recharging an equal level of imported or recycled water.

Littlerock Reservoir is located southeast of PWD and is fed by Littlerock Creek and surface runoff. With a storage capacity of 3,500 acre-feet (AF), approximately 30 to 40 AF of storage capacity is lost every year due to sediment build up. PWD extracts on average approximately 4,000 AFY from Littlerock Reservoir. Although Littlerock Creek flows mainly during winter and spring months, water may be stored throughout the year as a buffer against supply fluctuations from the SWP.

ES.3 Project Objectives

The primary objectives of the proposed project are to:

- Ensure a water supply capable of meeting overall annual water demand on a year-to-year basis to a customer base that is projected to double over the next 25 years.
- Improve water reliability by increasing the number of water sources to supplement the system when an individual source (i.e., imported SWP water) becomes restricted or unavailable.

- Increase operational flexibility by creating redundancy within the water conveyance and storage system.

ES.4 Project Description

The SWRP identifies a Recommended Water Resource Strategy that would increase potential water supplies in PWD's service area from approximately 30,000 AFY to up to 67,000 AFY to meet projected demand in 2035. The Recommended Strategy consists of the following implementation actions:

Water Supply

- Acquire and/or develop new imported supplies;
- Implement a recycled water system for non-potable uses including irrigation and possibly some industrial;
- Pursue recycled water exchange program with nearby agriculture in lieu of groundwater pumping;
- Recover storage capacity in Littlerock Reservoir through sediment removal; and
- Expand conservation programs.

Groundwater Storage and Recovery

- Create local raw water spreading facilities to percolate SWP water into the local aquifer;
- Create aquifer storage and recovery (ASR) wells to inject and extract potable water into the local aquifer;
- Expand groundwater pumping with new groundwater production wells to achieve a target of delivering 70 percent of demand to customers; and
- Use treated recycled water to replenish the groundwater basin.

Imported Supplies

Under the Recommended Strategy, PWD would acquire up to approximately 37,000 AFY by 2035, by acquiring new surface water rights through permanent transfers, multi-year leases, and short-term transfers. The initial 10,000 AFY of new imported water supply would maximize PWD's current Table A allocation of 21,300 AFY on an annual basis and would make use of PWD's existing remaining capacity in the aqueduct.[1] Amounts over and above the initial 10,000 afy, up to 25,000 afy, would be acquired through permanent transfers or multi-year leases of other state water contractors' Table A allocations, which would require PWD to acquire or otherwise access additional aqueduct capacity of those contractors. The last increments of imported water

[1] In essence, the first 10,000 AFY of imported supply would make use of PWD's existing remaining capacity in the aqueduct (approximated as the difference between PWD's current Table A allocation of 21,300 AFY and current average PWD withdrawal from the aqueduct of approximately 12,000 AFY).

could be acquired through additional transfers or leases; through a proposed delta conveyance project or other SWP improvements that could lead to an increase in SWP allocations; through acquisition of pre-1914 surface water rights; or through other short-term transfers of wet year water when available. These water supplies likely would be wheeled through the SWP when capacity is available.

To achieve an expanded allocation of imported water supplies, additional aqueduct turnout and additional conveyance and storage facilities would be needed. This would include turnouts on the East Branch of the California Aqueduct or Lake Palmdale; pipelines to convey raw SWP water to existing or new storage tanks, surface impoundments, recharge facilities, or surface water treatment facilities; and booster pump stations.

Groundwater Recharge, Recovery, and Banking

The Recommended Strategy includes implementation of a local groundwater banking program to be supported by increased imported supplies. The banking program would require new facilities for recharge and recovery, including new spreading facilities, extraction wells, and ASR wells. Potential areas for spreading facilities have been identified in the vicinity of Upper and Lower Amargosa Creek, Upper and Lower Littlerock Creek, and Anaverde Creek. New spreading facilities would include raw water conveyance pipelines, earthen basins and berms, flow valves and control structures. Potential ASR (or injection-well) locations have been indentified in the vicinity of PWD's existing North and East Well Field areas. Wells for groundwater extraction only would be located generally in the vicinity of Littlerock Creek or Lower Amargosa Creek. Each new well facility would include a well, well pump, wellhead, disinfection facilities, and distribution piping connecting wells to a network that conveys extracted groundwater to storage facilities or end users.

The Recommended Strategy assumes 70 percent of the 2035 water supply would be obtained through groundwater pumping. PWD's target is to achieve 35,000 AFY of additional groundwater recharge and recovery by 2035. The groundwater banking program is required to sustain this level of pumping, with the majority of additional recharge water provided by new imported water supplies. In addition, PWD plans to implement additional recharge at a rate that exceeds the volume of additional pumping. The objective of a local groundwater banking program is to provide between 105,000 and 120,000 AF of groundwater storage in the Antelope Valley groundwater basin by 2035.

As an alternative, PWD could participate in groundwater banking programs outside of PWD to meet its groundwater recharge and recovery goals. A new surface water treatment facility would be required to treat groundwater pumped outside of PWD and delivered via the California Aqueduct. The new treatment facility would be located on land already owned by PWD and would have an initial treatment capacity of 10 mgd, with the potential for expansion to 30 mgd.

Conservation Programs

The Recommended Strategy includes an active conservation program target of 3,600 AFY and passive conservation program target of 4,100 AFY. Currently, PWD achieves approximately

250 AFY with its existing active conservation program. PWD's goal is to meet the requirements of California Senate Bill 7, the State-mandated 20 percent per capita reduction in water use. Implementing this goal would require significant investments in conservation measures, such as Evapotranspiration (ET) Controller and Multi-Projection (MP) Nozzles; rebates for high-efficiency (HE) toilets, HE clothes washers, water conserving sprinklers and turf replacement; and incentives for recycled water retrofits for landscape irrigation customers.

Littlerock Reservoir Sediment Removal

The Recommended Strategy includes sediment removal at Littlerock Reservoir in order to increase the annual yield from 4,000 AFY to 4,500 AFY by 2035. This project is currently being evaluated at the project level in accordance with CEQA and the National Environmental Policy Act (NEPA) (SCH No. 2005061171). The Draft EIR/EIS for the project is in progress and expected to be released for public review in September 2011.

Recycled Water Storage and Use

Potential recycled water users and uses have been identified in the Palmdale region, which include municipal, industrial, and private agricultural end users, and groundwater recharge. The Recommended Strategy includes a Recycled Water Master Plan that would deliver tertiary-treated recycled water produced at the Palmdale Water Reclamation Plant (PWRP) to end users such as golf courses, parks, schools and local farmers. The Plan would require a new non-potable distribution system including tanks, distribution piping and pump stations. PWD is targeting 2,800 AFY of potable offset with recycled water by 2035. PWD's Recycled Water Master Plan is currently being evaluated separately at the project level in accordance with CEQA. The Mitigated Negative Declaration (MND) for the Plan was circulated for public review for a 30-day period that ended on March 1, 2010 (SCH No. 2010011089). Certification of the MND is pending a determination of the recycled water purveyor within the limits of the City of Palmdale.

The Recommended Strategy also includes a Water Exchange Program with local farmers, to provide them with recycled water for irrigation in-lieu of groundwater pumping. PWD is targeting 5,000 to 6,000 AFY of additional groundwater supply by 2035 as the result of this in-lieu exchange program. Facilities required for the program may include recycled water storage tanks, pumping and conveyance facilities between the PWRP and end users, and blending reservoirs and piping.

As part of its groundwater banking program, PWD may implement recharge with recycled water in addition to raw imported water. The source of recycled water would be the PWRP. PWD has the potential to recharge up to 15,000 AFY of blended tertiary effluent. This component of the Recommended Strategy is optional; PWD is not relying on it to achieve the target 2035 supply

ES.5 Summary of Impacts

Table ES-1, at the end of this chapter, presents a summary of the impacts and mitigation measures identified for the proposed project. The complete impact statements and mitigation measures are presented in Chapters 3, 4, and 5. The level of significance for each impact was

determined using significance criteria (thresholds) developed for each category of impacts; these criteria are presented in the appropriate sections of each chapter. Significant impacts are those adverse environmental impacts that meet or exceed the significance thresholds; less-than-significant impacts would not exceed the thresholds. Table ES-1 indicates the measures that will be implemented to avoid, minimize, or otherwise reduce significant impacts to a less-than-significant level. Potentially significant impacts that may not be reduced below significance thresholds even with the incorporation of mitigation are also identified.

ES.6 Areas of Known Controversy

The *CEQA Guidelines* Section 15123 requires the Executive Summary of an EIR to identify areas of controversy known to the Lead Agency, including issues raised by agencies and the public. For the proposed project, the areas of known controversy include: determination of the recycled water provider for areas of the City of Palmdale that are within the boundaries of PWD; and adjudication of the Antelope Valley Groundwater Basin.

ES.7 Issues to be Resolved

The *CEQA Guidelines* Section 15123 requires the Executive Summary of an EIR to identify issues to be resolved, including the choice among alternatives and whether or how to mitigate significant environmental effects. A brief overview of alternatives is provided below, including identification of the environmentally-superior alternative. Although the determination of the recycled water provider for areas of the City of Palmdale that are within the boundaries of PWD is still outstanding, the proposed project does not rely on the use of recycled water to meet projected future water demand. There are no other issues that are unresolved.

ES.8 Project Alternatives

An EIR must describe a range of reasonable alternatives to the proposed project or alternative project locations that could feasibly attain most of the basic project objectives and would avoid or substantially lessen any of the significant environmental impacts to the proposed project. The alternatives analysis must include the “No Project Alternative” as a point of comparison. The No Project Alternative includes existing conditions and reasonably foreseeable future conditions that would exist if the proposed project were not approved (*CEQA Guidelines* §15126.6). The following alternatives are discussed further in Chapter 6, Alternatives Analysis. CEQA also requires that an EIR identify an environmentally preferred alternative (*CEQA Guidelines* §15126.6[e][2]).

No-Project Alternative

According to Section §15126.6(e) of the *CEQA Guidelines*, discussion of the No-Project Alternative must include a description of existing conditions and reasonably-foreseeable future conditions that would exist if the project were not approved. Under the No-Project Alternative, no new facilities would be constructed as part of the Recommended Strategy.

Under the No Project Alternative, PWD would not implement the SWRP. The existing supply of water would not be enhanced by increased imported supply, increased groundwater storage, or increased use of recycled water and conservation. Future demands generated by a forecasted increase in population growth would not be met, and current deficiencies in groundwater supply would not be resolved. PWD would not be able to adequately provide water services to its existing or projected customer base. This could result in stalled development and economic growth within the service area, exacerbated overdrafting of the groundwater supply, and reliance on an overall water supply that is undiversified and unreliable. PWD would work with the City and County to coordinate the future rate of development within the service area with the ability of the water provider to meet its demand.

Diversified Storage Alternative (IW-40)

This alternative is classified as having a highly diversified storage system for supplies. It would institute a moderate amount of local groundwater recharge and would utilize out-of-basin banking. In this alternative, 40 percent of demand would be met by pumping existing and recharged (with imported supplies) groundwater.

Local Storage Alternative (IW-70)

The Local Storage Alternative would rely on a large volume of imported water for groundwater recharge. In this alternative, 70 percent of demand would be met using existing and recharged groundwater, and the alternative depends mainly on groundwater pumping to meet demand (as opposed to surface water treatment). The ratio of local groundwater and surface water delivered to customers is much higher than the Diversified Storage Alternative (IW-40) and eliminates the need for external groundwater banking for storage.

High Diversification Alternative (RW-40)

The High Diversification Alternative would have a high level of diversified water supply sources to meet demand. In this alternative, advanced treated recycled water would be used to blend with imported water for a moderate amount of local groundwater recharge, a new water treatment plant would be installed, and out-of-basin water banking would be utilized. As with the Diversified Storage Alternative, 40 percent of demand would be met pumping existing and recharged groundwater. Because of the 40 percent of supply limitation, the majority of demand would still be met through treated surface water and some imported supply would be stored in external water banks. Unlike the Diversified Storage Alternative, the available supply would be comprised of recycled water and imported water, thereby reducing need for imported water.

Self Reliance Alternative (RW-70)

The Self Reliance Alternative would have a lower level of reliance on imported water supplies and external agencies. In this alternative, advanced treated recycled water would be used to blend with imported water for a moderate amount of local groundwater recharge, and 70 percent of

demand would be met using existing and recharged groundwater. This alternative would not require external groundwater banking, given the high ratio of local pumping and recharge.

Recycled Water + Conservation Alternative (MAX RW+CON)

This alternative would have the highest level of reliance on recycled water, both for direct non-potable applications (e.g., irrigation) or indirect potable applications (i.e. groundwater recharge). Similar to the proposed project, this alternative would include 2,800 afy of potable offset associated with PWD's Recycled Water Master Plan, including an additional 6,000 afy for the recycled water/groundwater exchange program, and conservation program targets of 3,600 AFY (active) and 4,100 AFY (passive). Unlike the proposed project, this alternative would rely on 15,000 afy of recycled water for groundwater recharge in a local banking program. No external water bank is included. Due to the level of reliance on recycled water, this alternative includes the lowest amount of imported water.

Summary of Alternatives Analysis

An EIR must identify the environmentally superior alternative. In addition, the *CEQA Guidelines* (Section 15126.6(e)(2)) require that, if the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

The No Project Alternative would result in the least environmental impacts because there would be no physical changes to the environment as a result of the proposed project. All impacts associated with the proposed project would be avoided but none of the project objectives would be met. In accordance with CEQA, an environmentally superior alternative shall be identified among the other SWRP alternatives.

All remaining alternatives would allow PWD to achieve all of the project objectives, including the primary objective of securing adequate water supplies to meet future demand in 2035. The proposed project would have a significant and unavoidable impact to growth by removing an obstacle to growth and indirectly contributing to secondary environmental effects of growth (Chapter 5). By meeting the project objectives, none of the alternatives would avoid this significant and unavoidable impact.

The amount of water imported under the Recommended Strategy would ultimately depend on the amount of recycled water used to offset imported potable water. Under Alternative MAX RW+CON, the use of recycled water would be maximized at up to 23,800 afy for either groundwater recharge (indirect potable use) or other direct non-potable offsets such as landscape or agricultural irrigation. The dedication to maximizing recycled water use, in particular using up to 15,000 afy for groundwater recharge, in addition to maximizing conservation activities would reduce the need for importing water and reduce certain impacts related to importing water, such as to agricultural resources, GHG emissions, and energy. Impacts to these resources due to implementation of the proposed project are not potentially significant, however. Nonetheless, the

MAX RW+CON Alternative would reduce impacts on a relative basis and as such would be considered the environmentally superior alternative.

The proposed project includes this potential to maximize the use of recycled water, including using up to 15,000 afy for groundwater recharge and 8,800 afy for other direct non-potable end uses. However, due to potential regulatory constraints and other hurdles associated with implementing a groundwater recharge reuse project, PWD has chosen not to commit to relying on recycled water as a supply source for local groundwater banking. In addition, due to uncertainties regarding the determination of the recycled water purveyor within the City of Palmdale, PWD also is not relying on maximum use of recycled water for direct non-potable end uses within its service area. As a result, PWD continues to include imported water as a contingency to meet future demand in the event that recycled water use is ultimately restricted.

ES.8 Organization of this EIR

This Draft EIR has been organized into the following chapters:

ES. **Executive Summary.** This chapter summarizes the contents of the Draft EIR.

1. **Introduction and Project Background.** This section discusses the CEQA process and the purpose of the Draft EIR.

2. **Project Description.** This section provides an overview of the proposed project, describes the need for and objectives of the proposed project, and provides detail on the characteristics of the proposed project.

3. **Environmental Setting, Impacts and Mitigation Measures.** This chapter describes the environmental setting and identifies impacts of the proposed project for each of the following environmental resource areas: Aesthetics; Air Quality and Greenhouse Gas Emissions; Biological Resources; Cultural Resources; Geology, Soils, Seismicity and Mineral Resources; Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use, Agricultural Resources and Forestry; Noise; Recreation; Traffic and Transportation; and Utilities and Public Services. Measures to mitigate the impacts of the proposed project are presented for each resource area.

4. **Cumulative Impacts.** This chapter describes the potential impacts of the proposed project when considered together with other related projects in the project area.

5. **Growth Inducement.** This chapter describes the potential for the proposed project to induce growth.

6. **Alternatives Analysis.** This chapter presents an overview of the alternatives development process and describes the alternatives to the proposed project that were considered.

7. **Report Preparers.** This chapter identifies authors and consultants involved in preparing this Final PEIR, including persons and organizations consulted.

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
Aesthetics		
3.1-1: The proposed recharge facilities, production wells, and treatment plant could have a substantial adverse effect on a scenic vista.	**AES-1:** During project design, a landscape plan shall be prepared for proposed recharge basins, production wells, and the treatment plant that affect scenic vistas and/or are visible from scenic roadways. The landscape plan shall include measures to restore disturbed areas by replanting trees and/or reseeding with a native seed mix typical of the surrounding area. Vegetation screening shall also be included in order to assist in shielding the proposed aboveground facilities from public vantage points. **AES-2:** Aboveground buildings/structures shall be designed to have similar aesthetic qualities to existing structures in the vicinity to minimize contrasting features in the visual landscape. **AES-3:** Aboveground buildings/structures shall be designed to have color palettes and vegetation screening as necessary to blend with the surrounding character of the site and to minimize contrasting features in the visual landscape.	Less than significant
3.1-2: The proposed aboveground facilities located in open space areas could degrade the existing visual character or quality of the sites and their surroundings.	Implementation of **Mitigation Measures AES-1, AES-2,** and **AES-3**.	Less than significant
3.1-3: The proposed aboveground facilities could create new sources of lighting that could affect nighttime views in the areas.	**AES-4:** All new permanent exterior lighting associated with proposed project components shall be shielded and directed downward to avoid any light intrusion to surrounding uses. **AES-5:** Lighting used during nighttime construction, including any associated 24-hour well drilling, shall be shielded and pointed away from surrounding light-sensitive land uses. **AES-6:** The proposed treatment plant shall be designed to include non-glare exterior materials and coatings to minimize glare or reflection. **AES-7:** Development of the proposed project and associated facilities shall comply with existing and future lighting ordinances.	Less than significant
Air Quality and Greenhouse Gas (GHG) Emissions		
3.2-1: Construction activities associated with development of the proposed project would generate short-term emissions of criteria pollutants.	**AQ-1a:** General contractors shall implement a fugitive dust control program pursuant to the provisions of AVAQMD Rule 403. **AQ-1b:** All construction equipment shall be properly tuned and maintained in accordance with manufacturer's specifications. **AQ-1c:** General contractors shall maintain and operate construction equipment so as to minimize exhaust emissions. During construction,	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	trucks and vehicles in loading and unloading queues shall turn their engines off when not in use to reduce vehicle emissions. Construction activities shall be phased and scheduled to avoid emissions peaks and discontinued during second-stage smog alerts. **AQ-1d:** Electricity from power poles rather than temporary diesel- or gasoline-powered generators shall be used to the extent feasible. **AQ-1e:** All construction vehicles shall be prohibited from idling in excess of five minutes, both on- and off-site. **AQ-1f:** PMD shall require the construction contractor to utilize coatings and solvents that are consistent with applicable AVAQMD rules and regulations. **AQ-1g:** PMD shall implement construction of project components in non-overlapping phases to minimize daily emissions of NOx below the AVAQMD thresholds of significance (i.e. 137 lbs/day).	
3.2-2: Operation of the proposed project could generate criteria air pollutant emissions that could contribute to existing nonattainment conditions and degrade air quality.	None required.	Less than significant
3.2-3: Construction and/or operation of the proposed project could expose sensitive receptors to substantial pollutant concentrations.	None required.	Less than significant
3.2-4: The proposed project could create objectionable odors affecting a substantial number of people.	None required.	Less than significant
3.2-5: The proposed project could result in a cumulatively considerable increase in greenhouse gas emissions and conflict with State goals for GHG reductions.	**AQ-2:** PWD shall require the use of energy efficient equipment, including pumps and lighting in new water facilities. The PWD system should be designed and operated to shift energy demands to off-peak periods whenever possible. **AQ-3:** PWD shall promote and encourage the use of recycled water to offset imported water requirements.	Less than significant
Biological Resources		
3.3-1: Activities associated with the construction and operation of the proposed project could result in substantial adverse effects, either directly or through habitat modifications, on wildlife species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.	**BIO-1a:** Prior to ground disturbing activities for individual projects, a habitat assessment shall be conducted by a qualified biologist to determine the potential for special-status wildlife species to occur within affected areas. If the habitat assessment determines that a special-status species has the potential to be present within a minimum of 500 feet of the construction zone, a focused survey shall be conducted by a qualified biologist prior to the project implementation to determine presence or absence. **BIO-1b:** If a special-status wildlife species is determined present within the limits of construction activities, a qualified biologist shall conduct	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	pre-construction surveys of proposed work zones and the 500-foot buffer around each area within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species, such as burrows, shall be flagged for avoidance, as necessary; any additional habitat features, if any, shall also be identified and flagged as necessary. The results of these pre-construction surveys shall be submitted to CDFG and USFWS for their review. **BIO-1c:** If the habitat assessment concludes that there is potential for listed wildlife species to occur and the area of potential presence cannot be avoided, appropriate protocol-level surveys shall be conducted by a qualified biologist under a Memorandum of Understanding by the appropriate regulating agency (USFWS or CDFG) to determine presence or absence. If a listed species is determined to have the potential to be present in or adjacent to the area of disturbance, an avoidance plan shall be prepared by a qualified biologist and approved by the USFWS and/or the CDFG prior to any ground disturbing activities. **BIO-1d:** Every effort shall be made to avoid potential impacts to special-status wildlife species by eliminating construction activities to the greatest extent possible within areas where those species ARE detected through surveys. Tunneling or jack and bore construction methods under drainages that may support listed special-status wildlife species shall be recommended in areas where those species have the potential to occur or where presence has been confirmed. **BIO-1e:** All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special-status wildlife species as determined by a qualified biologist. **BIO-1f:** Silt fencing or similar impermeable barriers to exclude small wildlife species from entering the active work areas shall be installed around future work areas that occur within or adjacent to undisturbed habitats, or near areas of documented occurrences of special-status wildlife as determined during pre-construction surveys by a qualified biologist. Such impermeable barriers shall be verified by a qualified biologist prior to initiating construction activities. **BIO-1g:** In areas where pre-construction surveys determine that burrowing owls have the potential to occur, the following measures shall be implemented to mitigate for potential impacts to burrowing owls. The following measures shall be implemented as part of the approval for a grading or building permit. Appropriate notes shall be included on any grading permit, building permit or final map.	

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	To avoid impacts on western burrowing owl, the following guidelines, adapted from the *CDFG Staff Report on Burrowing Owl Mitigation* (CDFG, 1995), shall be implemented: 1. A qualified wildlife biologist (i.e., a wildlife biologist with previous burrowing owl survey experience) shall conduct a preconstruction survey to locate any breeding or wintering burrowing owls no more than 30 days prior to the start of construction. 2. If no burrowing owls are detected, no further mitigation is necessary. If burrowing owls are detected, no ground-disturbing activities, such as road construction or installation of turbines or ancillary facilities, shall be permitted within 250 feet of an active burrow during the breeding season (February 1–August 31), unless otherwise authorized by the CDFG. Occupied burrows should not be disturbed during the nesting season unless a qualified biologist approved by CDFG, verifies through noninvasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. 3. During the non-breeding (winter) season (September 1–January 31), ground-disturbing work can proceed near active burrows as long as the work occurs no closer than 160 feet from the burrow and the site is not directly affected by the project activity. If active winter burrows are found that would be directly affected by ground-disturbing activities, owls can be displaced from winter burrows. A qualified wildlife biologist shall install one-way doors at the entrance to the active burrow and other potentially active burrows within 150 feet of the active burrow. Forty-eight hours after the installation of the one-way doors, the doors can be removed, and ground-disturbing activities can proceed. 4. Should burrowing owls be found on-site, and if it is determined that the proposed project would reduce suitable habitat on-site below CDFG threshold levels, the habitat shall be replaced off-site if no suitable on-site habitat is available. Off-site habitat must consist of suitable burrowing owl habitat, as defined in the Burrowing Owl Survey Protocol, and the location shall be approved by the CDFG. The appropriate replacement ratio will be determined through consultation with the CDFG.	
3.3-2: Activities associated with the construction and operation of the proposed project could interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, such as birds and bats, or impede the use of native wildlife nursery sites.	**BIO-2a:** If construction and vegetation removal is proposed between February 1 and August 31, then a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds within 500-feet of the construction limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	located during the pre-construction surveys shall be avoided and a non-disturbance buffer zone shall be established, consisting of 300 feet for any passerine (or similar) species and 500 feet for any raptor or special-status species, or distances otherwise determined by a qualified biologist and approved by the CDFG. Nest sites shall be avoided with approved non-disturbance buffer zones until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist. **BIO-2b:** All active bird nest buffer areas shall be clearly demarcated with stakes, flag, or fence material. The installation of buffer areas shall be verified by a qualified biologist prior to the initiation of ground disturbance activities. **BIO-2c:** A qualified biologist shall conduct a survey for bat roost sites prior to the initiation of any construction activities in areas where potential roost sites may occur, such as abandoned structures, bridges, or hollow trees. If a bat roost is identified, a minimum 300 foot buffer shall be established by a qualified biologist or as otherwise determined in consultation with the CDFG.	
3.3-3: Activities associated with the construction and operation of the proposed project could result in adverse impacts to special-status plant species.	**BIO-3a:** To the extent feasible, PWD shall avoid and/or reduce the footprint of construction and staging areas in areas having potential occurrences of special-status plant species. **BIO-3b:** A qualified botanist shall conduct a pre-construction floristic inventory and focused rare plant survey of project areas to determine and map the location and extent of special-status plant species populations within the disturbance area. This survey shall occur during the typical blooming periods of special-status plants with the potential to occur. The plant survey shall follow the CDFG Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (November 24, 2009). **BIO-3c:** The limits of construction shall be staked, flagged, fenced, or otherwise clearly delineated to avoid and minimize impacts on adjacent habitats that may support special-status plant species. **BIO-3d:** Earth-moving equipment shall avoid maneuvering in areas outside the identified limits of construction in order to avoid disturbing areas that will remain undeveloped. These limits of natural open space areas that are adjacent to the limits of construction shall be identified on the site plans. **BIO-3e:** If permanent unavoidable impacts to special-status plant populations are identified within a disturbance area, PWD shall develop and implement a detailed plant restoration program. This program shall contain the following items: responsibilities and qualifications of the	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	personnel to implement and supervise the program; site selection; site preparation and planting implementation; schedule; maintenance plan/guidelines; monitoring plan; long-term preservation; and performance standards. **BIO-3f:** If temporary construction-related impacts to special-status plant populations are identified within a disturbance area, PWD shall prepare and implement a special-status species salvage and replanting plan. The salvage and replanting plan shall include measures to salvage, replant, and monitor the disturbance area until native vegetation is re-established under the direction of CDFG and USFWS.	
3.3-4: Activities associated with the construction and operation of the proposed project could result in adverse impacts to sensitive natural communities.	**BIO-4a:** To the extent feasible, project components shall be placed in areas exhibiting absence or a low density of Joshua trees and other native desert vegetation. **BIO-4b:** Should a project require the removal of any Joshua trees, the applicant will have to prepare a desert vegetation preservation plan that will include numbers and locations of all Joshua trees, detailed landscaping plan, preservation areas, transplant procedures, a two-year maintenance and monitoring program including contingency measures to ensure that the plan is successful, and funding to ensure that it will be maintained and preserved in perpetuity. The plan shall depict the location of each Joshua tree that may be subjected to impacts, including the approximate age of the tree and health, and identification of which trees can be saved and maintained on the site or relocated. **BIO-4c:** Where Joshua trees cannot be retained on site, the applicant must make them available to the City for landscaping uses related to City property. Joshua trees should also be made available by 30-day public notice to other commercial, industrial, or residential developments and to the general public for landscaping uses. Joshua trees remaining after the above options have been exhausted may be transplanted to an offsite location approved by the City. **BIO-4d:** If trees cannot be transplanted to an off-site location, the proponent may pay an in-lieu fee to the City, which shall be determined by resolution of the City Council.	Less than significant
3.3-5: Activities associated with the construction and operation of the proposed project could result in adverse impacts on riparian habitats.	**BIO-5a:** Prior to construction, a qualified wetland delineator shall be retained to conduct a formal wetland delineation in areas where potential jurisdictional resources (i.e., wetlands or drainages) may occur. If jurisdictional resources are identified in the project area and would be directly or indirectly impacted by construction of individual projects, the qualified wetland delineator shall prepare a jurisdictional delineation report outlining mitigation and compensation requirements to be implemented prior to construction.	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	BIO-5b: Proposed projects shall avoid impacting previously undisturbed areas where possible. This would include employing tunneling or jack and bore methods under drainages. The construction zone(s) shall be modified if feasible to minimize disturbance of any wetland or drainage. **BIO-5c:** Where jurisdictional wetlands and other waters cannot be avoided, a restoration plan shall be prepared that provides for replanting and monitoring for a minimum three-year period following construction to ensure riparian habitat is re-established. **BIO-5d:** PWD shall obtain wetland determination from CDFG and/or RWQCB prior to project implementation for project features that may impact waters of the State.	
Cultural Resources		
3.4-1: The proposed project could impact known and/or unknown cultural resources, including prehistoric and historic archaeological sites, historic architectural resources, and Native American sacred sites.	**CUL-1a:** PWD shall retain a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Standards for professional archaeology to conduct a study of the project area(s) for all project components that involve ground disturbance. The archaeologist shall conduct a cultural resources inventory designed to identify potentially significant resources. The cultural resources inventory would consist of: a cultural resources records search to be conducted at the South Central Coastal Information Center located at California State University Fullerton; consultation with the Native American Heritage Commission (NAHC) and with interested Native Americans identified by the NAHC; a field survey where deemed appropriate by the archaeologist; and recordation of all identified archaeological resources on California Department of Parks and Recreation 523 Site Record forms. The archaeologist shall provide recommendations regarding resource significance and additional work for those resources that may be affected by a project. **CUL-1b:** For project components that include or affect existing structures that are 50 years old or greater, PWD shall retain a qualified architectural historian, defined as an architectural historian meeting the Secretary of the Interior's Standards for historic architecture, to determine the need for a project-specific historic architectural study. If warranted, the architectural historian shall identify and evaluate potentially affected historic resources prior to project implementation. **CUL-1c:** PWD shall avoid impacts, if feasible, on identified cultural resources including prehistoric and historic archaeological sites, locations of importance to Native Americans, human remains, and historical buildings, structures and landscapes. Methods of avoidance may include, but should not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	capping or fencing. **CUL-1d:** PWD shall retain archaeological monitors (and Native American monitors, where deemed appropriate) during project-related ground-disturbing activities that have the potential to impact significant archaeological resources as determined by a qualified archaeologist.	
3.4-2: The proposed project could impact human remains.	**CUL-2a:** If human remains are encountered unexpectedly during construction excavation and grading activities, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 48 hours to notify the Native American Heritage Commission (NAHC). The NAHC will then identify the designated Most Likely Descendent of the deceased Native American, who will engage in consultation to determine the disposition of the remains.	Less than significant.
3.4-3: The proposed project could impact known and/or unknown paleontological resources.	**CUL-3a:** For all project components that involve ground disturbance, PWD shall retain a qualified paleontologist to determine the necessity of conducting a study of the project area(s) based on the potential sensitivity of the project site for paleontological resources. If deemed necessary, the paleontologist shall conduct a paleontological resources inventory designed to identify potentially significant resources. The paleontological resources inventory would consist of: a paleontological resources records search to be conducted at the San Bernardino County Museum; a field survey where deemed appropriate by the paleontologist; and recordation of all identified paleontological resources. The paleontologist shall provide recommendations regarding additional work for the project. **CUL-3b:** PWD shall avoid impacts, if feasible, on identified paleontological resources. Methods of avoidance may include, but not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing. **CUL-3c:** PWD shall retain paleontological monitors during construction for ground-disturbing activities that have the potential to impact significant paleontological resources as determined by a qualified paleontologist.	Less than significant
Geology, Soils, Seismicity, and Mineral Resources		
3.5-1: The proposed project could expose people or structures to potential substantial adverse effects of fault rupture, strong seismic ground shaking or seismic related ground failure, including liquefaction.	**GEO-1:** Prior to the approval of construction plans for any individual project, a design-level geotechnical investigation, including collection of site specific subsurface data shall be completed. The geotechnical evalution shall identify all potential seismic hazards including fault	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	rupture and characterize the soil profiles, including liquefaction potential and expansive soil potential. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual proposed projects.	
3.5-2: Construction of the proposed project could result in substantial soil erosion or the loss of topsoils.	Implementation of **Mitigation Measure HYD-1.** **GEO-2:** All topsoil stripped from the ground surface during construction shall be used, to the extent feasible, for construction of other project elements and not hauled offsite. Any temporary stockpiles shall be managed through the use of best management practices, which shall include but not be limited to wetting and/or covering stockpiles to prevent wind erosion.	Less than significant
3.5-3: The proposed project could be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite lateral spreading, subsidence or collapse.	None required.	Less than significant
3.5-4: The proposed project could be located on expansive soil that creates substantial risks to life or property.	Implement **Mitigation Measure GEO-1**.	Less than significant
3.5-5: The proposed project could substantially impact the availability of known mineral resources within the region or the availability of locally important mineral resource recovery sites.	**GEO-3:** Construction and operation of facilities that are located within or adjacent to known Mineral Resource Zones shall comply with City policies requiring the continued access to these areas. Buffers shall be installed around development occurring in the vicinity of mining operations to prevent interruptions or impacts to the existing mining operations.	Less than significant
Hazards and Hazardous Materials		
3.6-1: The proposed project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	None required.	Less than significant
3.6-2: The proposed project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	**HAZ-1: Contingency Plan for Contaminated Soil or Groundwater.** Prior to commencement of construction, PWD shall require its construction contractor to consult with appropriate regulatory agencies to prepare a Contingency Plan that outlines how to dispose of any contaminated soil or groundwater that may be encountered during construction. If contaminated soil and/or groundwater are encountered or if suspected contamination is encountered during project construction, work shall be halted in the area, and the Contingency Plan shall be implemented.	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	HAZ-2: Hazardous Materials Management Spill Prevention and Control Plan. Before commencement of construction, PWD shall require its construction contractor to prepare a Hazardous Materials Management Spill Prevention and Control Plan that includes a project-specific contingency plan for hazardous materials and waste operations. The Plan shall be applicable to all construction activities, and shall establish policies and procedures according to federal and California OSHA regulations for hazardous materials. Elements of the Plan shall include, but not be limited to the following: • A discussion of hazardous materials management, including delineation of hazardous material storage areas, access and egress routes, waterways, emergency assembly areas, and temporary hazardous waste storage areas; • Notification and documentation of procedures; and • Spill control and countermeasures, including employee spill prevention/response training.	
3.6-3: The proposed project could emit hazardous emissions or handle hazardous or acutely hazardous material, substances, or waste within one-quarter mile of an existing or proposed school.	Implementation of **Mitigation Measures HAZ-1, HAZ-2** and **TR-1**.	Less than significant
3.6-4: The proposed project could be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, could create a significant hazard to the public or the environment.	Implementation of **Mitigation Measures HAZ-1** and **HAZ-2.** **HAZ-3: Conduct Environmental Site Assessments in AFP 42 Vicinity.** Before beginning construction, PWD shall complete a Phase I Environmental Site Assessment (ESA) for soil and groundwater contamination in areas where production wells and pipelines are located within the vicinity of U.S. Air Force Plant 42. The recommendations set forth in the Phase I ESA shall be implemented to the satisfaction of applicable agencies before construction begins. If the Phase I ESA indicates the potential for contamination within the construction zone of the pipelines, Phase II studies shall be completed and recommendations implemented before construction begins. Phase II studies shall include soil and groundwater sampling and analysis for anticipated contaminants. The Phase II sampling is intended to identify how to dispose of any potentially harmful material from excavations, and to determine if construction workers need specialized personal protective equipment while constructing the pipeline through that area. All recommendations of the Phase II analysis shall be implemented prior to or during construction to ensure that health hazards are reduced to levels that are deemed acceptable by the applicable regulators.	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
3.6-5: Construction of the proposed project could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	**HAZ-4:** In conjunction with Mitigation Measure TR-1, prior to initiating construction of proposed facilities, PWD shall prepare and implement a Traffic Control Plan that contains comprehensive strategies for maintaining emergency access. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches and identification of alternate routing around construction zones. In addition, police, fire, and other emergency service providers shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. The PWD shall ensure that the Traffic Control Plan and other construction activities are consistent with the Los Angeles County Operational Area Emergency Response Plan.	Less than significant
3.6-6: Construction of the proposed project in wildland areas could expose people or structures to a significant risk of loss, injury or death involving wildland fires.	**HAZ-5: Implement Fire Hazard Reduction Measures**. During construction of facilities located in areas designated as "Wildland Area with Substantial Fire Risk" by Los Angeles County Fire Department, PWD shall require that all staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that includes a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the SWRP facilities, contractors shall require all vehicles and crews working at the project site to have access to functional fire extinguishers at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks.	Less than significant.
Hydrology and Water Quality		
3.7-1: The proposed project could violate water quality standards or waste discharge requirements.	**HYD-1: Construction Best Management Practices (BMPs).** PWD shall require the construction contractor to develop and implement BMPs to reduce the potential for storm water runoff from construction sites to deliver pollutants into adjacent water bodies or groundwater. PWD shall include in contractor specifications that the contractor is responsible for developing and implementing the BMPs. The BMPs shall be maintained at the site for the entire duration of construction. The objectives of the BMPs are to identify pollutant sources that may affect the quality of storm water discharge and to implement measures to reduce or eliminate construction-related water quality effects. Mitigation also shall include monitoring activities to ensure that BMPs are properly implemented and maintained. The BMPs for the proposed project shall represent the best available technology that is economically feasible and include, but not be limited to, the implementation of the following:	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	• Identification of all pollutant sources, including sources of sediment that may affect the quality of storm water discharges associated with construction activity from the construction site; • Identification of non-storm water discharges; • Estimation of the construction area and impervious surface area; • Preparation of a site map and maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs); • Implementation of all applicable erosion and sedimentation control measures, waste management practices, and spill prevention and control measures that are acceptable to the Lahontan RWQCB, such as those identified in the California Stormwater Quality Association's *Construction Best Management Practices Handbook/Portal* (2009); • Maintenance and training practices; and • A sampling and analysis strategy and sampling schedule for discharges from construction activities. The construction contractor shall perform routine inspections of the construction areas to verify that the BMPs are properly implemented and maintained. The construction contractor shall notify PWD immediately if there is a noncompliance issue that requires correction. **HYD-2: Groundwater Quality Monitoring Program.** PWD shall develop and implement a Groundwater Monitoring Program to monitor the impact of groundwater recharge strategies identified in the SWRP on groundwater quality and to ensure that groundwater storage and recovery activities do not substantially degrade groundwater quality. PWD shall be responsible for developing a Groundwater Monitoring Program that details monitoring and groundwater sampling frequency, parameters to be monitored and/or analyzed, detailed monitoring and operational constraints. Prior to development of the plan, PWD shall conduct a basin-wide survey to identify existing wells that are suitable (based on construction criteria, location and accessibility) for use in a long-term monitoring program. No significant long-term impacts are expected from these monitoring activities as no pumping or injection facilities will be installed as part of these efforts and the well locations will be visited on, at most, a monthly basis. In addition, PWD shall ensure that the project operates under the Waste Discharge Requirements (WDRs) established by the Lahontan	

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	RWQCB. These requirements include application and effluent management requirements that will ensure there is no runoff to surface water and that groundwater is protected. If necessary, PWD will construct and maintain an additional water treatment plant to protect water quality and associated beneficial uses within the project area. **HYD-3: Salt and Nutrient Management Program.** PWD shall prepare and/or participate in the preparation of a Salt Nutrient Management Plan for the AVGB, which is designed to minimize potential impacts of salt buildup in the basin related to recharge of imported and treated water supplies. Such plans are required under the SWRCB's Recycled Water Policy in basins using significant amounts of reclaimed water, and are intended to aid in addressing just these types of issues. As specific projects are developed, an analysis shall be performed to evaluate potential patterns in seasonal changes in treated surface water quality as it relates to local groundwater quality. Recharge operations shall be conducted to the degree possible so that higher TDS water is percolated in areas of higher salinity groundwater, and near larger extraction wells where subsequent removal of the water is more extensive. **HYD-4: Groundwater Injection Operations Protocol.** PWD shall prepare a protocol for the injection and extraction of stored groundwater to define operational parameters and conditions under which injection and/or extraction operations are to be modified and/or cease. This protocol shall be implemented in order to minimize any potential impacts to the AVGB that may result in significant changes to either groundwater quality (i.e. increased concentrations of constituents of concern) and/or groundwater levels (i.e. decreased groundwater levels resulting in adverse impacts such as land subsidence).	
3.7-2: The proposed project could substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.	**HYD-5: Groundwater Supply Monitoring Program.** As specific groundwater recharge and extraction projects are developed, PWD shall implement a Groundwater Supply Monitoring Program to ensure that implementation of the SWRP does not pose a significant threat to groundwater supplies within the AVGB. This program shall include modeling efforts that will identify and assess water level fluctuations near proposed project facilities. The program shall also provide details regarding existing wells located near project facilities, including structural details, well use, and operational characteristics (including pumping rates and associated drawdown). Results of detailed modeling in these areas shall be used to assess potential site-specific impacts. In the event that modeling efforts demonstrate that potential impacts to local groundwater supplies would occur as a result of implementation of the SWRP, PWD shall implement all necessary actions to mitigate for	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	this impact. Such mitigation may include deepening wells or pump settings, and/or supplying local well users with water from project wells at times when drawdown from their wells is excessive.	
3.7-3: The proposed project could substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river in a manner that would result in substantial erosion or siltation.	Implementation of **Mitigation Measure HYD-1**.	Less than significant
3.7-4: The proposed project could alter the existing drainage pattern of facility sites, through the alteration of the course of a stream or river or by other means, increasing surface runoff and resulting in onsite or offsite flooding.	**HYD-6: Implementation of a Drainage Plan.** Prior to construction of any facilities that would potentially alter drainage pattern, the applicant must submit a drainage plan to the City of Palmdale and/or the County of Los Angeles Department of Public Works. In addition, all new drainage should be designed in accordance with standards and regulations set forth in the Hydrology Manual of the Los Angeles County Department of Public Works. Drainage shall be designed such that alterations to the course of a stream or river will not result in flooding within or outside of the project area, and drainage will not contribute to runoff which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	Less than significant
3.7-5: The proposed project could create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	Implementation of **Mitigation Measure HYD-6.**	Less than significant
3.7-6: The proposed project could expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.	None required.	Less than significant
Land Use, Agricultural Resources, and Forestry		
3.8-1: Installation of proposed production wells could convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or other lands under agricultural production to non-agricultural use.	**LU-1:** As part of the siting of the production wells, PWD shall ensure that the proposed production wells do not limit the use of Prime Farmland or result in conversion of significant acres of land to non-agricultural uses as determined through use of the LESA model.	Less than significant
3.8-2: The proposed importation of water through the State Water Project could result in the conversion of farmland to non-agricultural use.	None required.	Less than significant
3.8-3: The proposed project would construct new structures within the airport influence area (AIA) for PMD and could conflict with the Los Angeles County Airport Land Use Plan policies.	**LU-2:** For project components occurring within the AIA, PWD shall submit their proposed project plans to the Los Angeles County ALUC for review and comment prior to final design. **LU-3:** Prior to conducting construction activities within an AIA, PWD	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	shall prepare an airport construction safety plan that would identify best management practices. The plan may include construction timeframes and hours, lighting and flagging requirements, air traffic control communication requirements, access and egress restrictions, equipment staging area requirements, personal safety equipment requirements for construction workers, and appropriate notification to aviators. The plan would be reviewed and approved by airport staff. **LU-4:** Prior to final design of the project components within an AIA, PMD shall identify the ground elevation associated with each project component and submit their project plans to airport staff for review and comment. Working with airport staff, PMD shall submit their design plans for airspace analysis (FAA Part 7460 review) to determine whether any of the proposed project components or proposed construction equipment would protrude into protected airspace. If such objects are identified, the implementing agencies, airport staff, and FAA will identify appropriate steps to adjust project plans or include appropriate markings to identify hazards to aviators pursuant to FAA Part 7460. **LU-5:** PWD shall reduce the potential attraction of its proposed facilities to wildlife through project design features and ongoing monitoring. PWD shall coordinate with the Palmdale Municipal Airport to develop a Wildlife Hazard Management Plan for recharge basins located in areas determined to pose a risk to aviation pursuant to FAA guidelines. The Plan shall include wildlife deterrent design measures to minimize attracting wildlife. Measures could include installation of a wire grid over the proposed recharge basin as well as other mechanical means of deterring avian wildlife. The Plan also shall include maintenance, monitoring, and reporting requirements.	
3.8-4: The proposed project could conflict with County development policies within Sensitive Ecological Area #49.	None required.	Less than significant
Noise		
3.9-1: Project construction could temporarily increase noise levels at nearby sensitive receptor locations.	**NOISE-1**: PWD shall require the construction contractor to implement the following measures, as applicable, during construction of proposed facilities: • Construction activities in the City of Palmdale shall meet municipal code requirements related to noise. Construction activities shall be limited to between 6:30 a.m. and 8:00 p.m. Monday through Saturday to avoid noise-sensitive hours of the day. Construction activities shall be prohibited on Sundays and holidays. • Construction activities in Los Angeles County shall meet county code	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	requirements related to noise. Construction activities shall be limited to between 6:30 a.m. and 8 p.m. Monday through Saturday to avoid noise-sensitive hours of the day. Construction activities shall be prohibited on Sundays and holidays. • Prior to nighttime construction activities that would generate noise in excess of noise standards, the construction contractor shall secure a noise waiver from the relevant jurisdiction (City or County) and comply with any terms and conditions of the waiver • Construction equipment noise shall be minimized by muffling and shielding intakes and exhaust on construction equipment (per the manufacturer's specifications) and by shrouding or shielding impact tools. • Construction contractors shall locate fixed construction equipment (such as compressors and generators) and construction staging areas as far as possible from nearby sensitive receptors including residences, schools, and hospitals. • Where feasible, construct barriers between noise sources and noise-sensitive land uses to block sound transmission. Enclose construction equipment where practicable. • If construction were to occur near a school, the construction contractor shall coordinate the most noise producing construction activities with school administration in order to limit disturbance to the campus. **NOISE-2:** PWD shall require the construction contractor notify in writing all landowners and occupants of properties within 500 feet of the construction area of the construction schedule at least two weeks prior to groundbreaking. The construction contractor shall designate a Noise Complaint Coordinator who will be responsible for responding to complaints regarding construction noise. The Coordinator shall ensure that reasonable measures are implemented to correct any problems. A contact telephone number for the Coordinator shall be conspicuously posted at the construction site and included in the written notification of the construction schedule sent to surrounding properties.	
3.9-2: Project construction could expose persons and structures to ground-borne vibration or ground-borne noise levels.	**NOISE-3:** PWD shall require the construction contractor to implement the following measures, as applicable, during construction of proposed facilities: • Limit jack and bore drilling to 45 feet from sensitive receptors and 15 feet from any structures; or • If jack and bore drilling must occur within 15 feet of any structure, the construction contractor shall conduct crack surveys before drilling to identify existing potential architectural damage to nearby structures	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	and implement measures to prevent any additional damange during project construction. The surveys shall be done by photographs, video tape, or visual inventory, and shall include inside as well as outside locations. All existing cracks in walls, floors, and driveways shall be documented with sufficient detail for comparison after construction to determine whether actual vibration damage occurred. A post-construction survey shall be conducted to document the condition of the surrounding buildings after the construction is complete.	
3.9-3: Activities associated with operation of proposed project facilities including treatment facilities and pump stations could increase ambient noise levels at nearby land uses.	**NOISE-4:** PWD shall conduct post-construction noise surveys to ensure that operation of new equipment is in compliance with local noise ordinances at the property boundary. If operational noise exceeds local thresholds, then PWD shall implement further noise-reducing measures, such as enclosing noise generating-equipment, until facilities are in compliance with local ordinances.	Less than significant
3.9-4: Operation of project facilities adjacent to an airport could expose employees to excessive noise levels.	None required.	Less than significant
Recreation		
3.10-1: The proposed project could include recreational facilities, which might have an adverse physical effect on the environment.	**REC-1**: For implementation actions that would construct new facilities on public lands designated as open spaces or parkland, PWD shall coordinate with the appropriate recreation or park agency to identify ways to minimize impacts of project construction and operation on recreational activities. Measures may include but are not limited to: **Project Construction** • Posting of signage indicating dates during which use of recreational areas would be restricted due to construction • Placement of fencing to isolate construction areas and allow continued use of other areas of recreational parks and facilities • Timing of construction activities to avoid peak recreational seasons **Project Operation** • Use of vegetation to screen proposed facilities from view of adjacent recreational land uses • Security fencing to enclose new PWD facilities, as necessary • Potential land swaps for large projects that may displace substantial amounts of park land or open space **REC-2**: For implementation actions that would construct pipelines or other new facilities within designated bikeways, PWD shall coordinate with the applicable jurisdiction to determine whether circulation and	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
	detour plans are required to minimize impacts to access to local bikeways. Circulation and detour plans may include the use of signage and flagging of cyclists through and/or around the construction zone.	
Transportation and Traffic		
3.11-1: Implementation of the proposed project could increase traffic volume on local roadways and affect circulation.	**TR-1:** PWD shall require the construction contractor to prepare and implement a Traffic Control/Traffic Management Plan subject to approval by the appropriate local jurisdiction prior to construction. The plan shall: • Identify hours of construction and hours for deliveries, potentially avoiding the A.M. and P.M. peak hours to minimize disturbance on traffic flow. • Specify both construction-related vehicle and oversize haul routes; alternative routes shall be proposed to avoid traffic disruption. • Identify limits on the length of open trench, work area delineation, traffic control, flagging, and signage requirements. • Identify all access and parking restrictions. • Maintain access and minimize disruption to residence and business driveways at all times to the extent feasible. • Layout a plan for notifications and a process for communication with affected residents and businesses prior to the start of construction. Advance public notification shall include posting of notices and appropriate signage of construction activities. The written notification shall include the construction schedule, the exact location and duration of activities within each street (i.e., which lanes and access point/driveways would be blocked on which days and for how long), and a toll-free telephone number for receiving questions or complaints; • For construction activities within one-quarter mile of a school facility, include a plan to coordinate all construction activities with the Antelope Valley Union High School District and Palmdale School District, at least two months in advance. The Antelope Valley Union High School District and the Palmdale School District shall be notified of the timing, location, and duration of construction activities. The implementing agencies shall require its contractor to maintain vehicle, pedestrian, and school bus service during construction through inclusion of such provisions in the construction contract; and • Specify street restoration requirements pursuant to agreements with the local jurisdictions.	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
3.11-2: Implementation of the proposed project could conflict with the Los Angeles County Congestion Management Program.	None required.	Less than significant
3.11-3: Construction of the proposed project could conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.	**TR-2:** PWD shall require the construction contractor to consult with local jurisdictions if bicycle or pedestrian -facilities would be directly affected by construction activities. If required, the construction contractor shall develop circulation and detour plans to minimize impacts to bikeways and pedestrian facilities. This may include the use of signing and flagging to guide vehicles, cyclists, and pedestrians through and/or around the construction zone. **TR-3:** PWD shall require the construction contractor to consult and coordinate with the Antelope Valley Transit Authority at least one month prior to construction of pipelines within roadways that coincide with bus routes, to determine whether construction of the proposed project would affect bus stop locations or otherwise disrupt public transit routes. A plan shall be developed to relocate bus stops or reroute buses to avoid disruption of transit service.	Less than significant
3.11-4: The proposed project could result in inadequate emergency access.	**TR-4**: PWD shall require the construction contractor to coordinate all construction activities with emergency service providers in the area at least one month in advance. Emergency service providers shall be notified of the timing, location, and duration of construction activities. All roads shall remain passable to emergency service vehicles at all times.	Less than significant
3.11-5: Construction of the proposed project may substantially increase hazards due to incompatible roadway uses.	None required.	Less than significant
Utilities and Public Services		
3.12-1: The proposed project could result in the construction or expansion of storm water drainage facilities to accommodate storm water runoff.	None required.	Less than significant
3.12-2: Construction activities associated with the proposed project would generate solid waste that would increase the demand for landfill capacity.	**UTIL-1:** Project facility design and construction methods that produce less waste or that produce waste that could be recycled or reused more readily, shall be encouraged. **UTIL-2:** The contractor shall be required to describe plans for recovering, reusing, and recycling wastes produced through construction, demolition, and excavation activities described in the construction specifications.	Less than significant
3.12-3: Operation of the proposed project would require additional power that could affect local and regional energy supplies.	Implementation of **Mitigation Measures AQ-2** and **AQ-3.**	Less than significant

TABLE ES-1 (continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PALMDALE WATER DISTRICT'S STRATEGIC WATER RESOURCES PLAN

Impacts	Mitigation Measures	Significance after Mitigation
Cumulative Impacts		
4-1: Concurrent construction of the proposed project and related projects in the Antelope Valley could result in cumulative short-term impacts to air quality.	Implementation of **Mitigation Measures AQ-1a** through **AQ-1g.**	Less than significant
4-2: Concurrent construction of the proposed project and related projects in the Antelope Valley could result in cumulative short-term impacts to noise.	Implementation of **Mitigation Measure NOISE-1, NOISE-2,** and **NOISE-4.**	Less than significant
4-3: Concurrent construction of the proposed project and related projects in the Antelope Valley could result in cumulative short-term impacts to traffic and transportation.	Implementation of **Mitigation Measure TR-1**. **CUM-1**: PWD shall communicate and coordinate project construction activities with other municipalities (e.g., City of Palmdale, County of Los Angeles) and agencies (e.g., Caltrans, LA County DPW) in the Antelope Valley. Phasing of project construction shall be coordinated to minimize cumulative impacts to traffic and transportation.	Less than significant
4-4: Concurrent construction of the proposed project and related projects in the Antelope Valley could result in cumulative short-term impacts to hydrology and water quality.	Implementation of **Mitigation Measures HYD-1, HAZ-1,** and **HAZ-2.**	Less than significant
4-5: Operation of the proposed groundwater recharge facilities together with other groundwater recharge projects in the Antelope Valley could result in cumulative impacts to groundwater quality.	Implementation of **Mitigation Measure HYD-2, HYD-3,** and **HYD-4.**	Less than significant
4-6: Operation of the proposed groundwater recharge and recovery facilities together with similar projects in the Antelope Valley could result in cumulative impacts to groundwater levels.	Implementation of **Mitigation Measure HYD-5**.	Less than significant
Growth Inducement		
The proposed project could result in the importation of more water than needed to meet demands and could directly impact growth. The proposed project would acquire new water supplies and remove an obstacle to growth that would indirectly contribute to secondary effects of such growth.	**GROWTH-1**: PWD will update the implementation schedule for the SWRP every five years or as necessary to ensure that water supplies do not out-pace actual demands.	Significant and unavoidable

CHAPTER 1
Introduction and Project Background

1.1 Introduction

The Palmdale Water District (PWD) has developed a Strategic Water Resources Plan (SWRP) to identify reliable and sustainable water supply resources for the District, which has forecast that its population will more than double through 2035. PWD relies on three sources for their water supply including imported water, groundwater, and local surface water. The SWRP identifies a Recommended Strategy that includes proposed implementation actions for increasing the District's water supply from those three sources, as well as supplementing them with new sources, to meet the future demand for potable water.

PWD, as the Lead Agency, has prepared this Draft Program Environmental Impact Report (PEIR) to provide the public and trustee agencies with information about the potential effects on the local and regional environment associated with implementation of the SWRP Recommended Strategy (proposed project). This Draft PEIR has been prepared in compliance with the California Environmental Quality Act (CEQA) of 1970 (as amended), codified at California Public Resources Code Sections 21000 et. Seq. and the *CEQA Guidelines* in the Code of Regulations, Title 14, Division 6, Chapter 3.

1.2 Purpose of the Environmental Impact Report

This PEIR has been prepared to address the potential environmental impacts associated with implementing the proposed project. Since the SWRP Recommended Strategy consists of numerous management strategies that involve implementation of projects over a long time period, a Program EIR (PEIR) has been prepared. The *CEQA Guidelines*, Section 15168, state that a PEIR may be used to evaluate a plan or program that has multiple components (projects and actions) or addresses a series of actions that are related:

- Geographically,
- As logical parts in the chain of contemplated actions,
- In connection with the issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, or
- As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental affects that can be mitigated in similar ways.

A PEIR can provide the following additional advantages:

- Provide for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action;
- Ensure consideration of cumulative impacts that might not be evident in a case-by-case or project-by-project analysis;
- Avoid duplicative consideration of basic policy issues;
- Allow the lead agency to consider broad policy alternatives and program-wide mitigation measures early in the process when the agency has greater flexibility to deal with basic problems or cumulative impacts;
- Facilitate a reduction in paperwork.

A PEIR may be prepared for a plan before the details of each and every project within the long-term plan have been developed. For the proposed project, most management strategies are only in the concept development or planning phase. The PEIR analysis is not intended to focus on the site-specific construction and operation details of each management strategy and project included in the Recommended Strategy. Rather, this PEIR serves as a first-tier environmental document that focuses on the overall effects of implementing the proposed project as a plan to provide reliable water supply for future demand.

1.3 CEQA Environmental Review Process

1.3.1 CEQA Process Overview

The basic purposes of CEQA are to (1) inform the public and governmental decision makers regarding potential significant environmental effects of proposed activities, (2) identify ways in which potential environmental damage can be avoided or significantly reduced, (3) prevent significant, avoidable environmental damage by requiring changes in projects through the use of alternatives or mitigation measures, and (4) disclose to the public the reasons why a governmental agency approved the project if significant environmental effects are involved.

An environmental impact report (EIR) should use a multidisciplinary approach applying social and natural sciences to make a qualitative and quantitative analysis of all the foreseeable environmental impacts that a proposed project would exert on the surrounding area. As stated in *CEQA Guidelines* Section 15151:

> An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which intelligently takes an account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonable feasible.

This PEIR was prepared to comply with CEQA regulations, and is to be used by local regulators and the public in their review of the potential environmental impacts of the proposed project and alternatives, and mitigation measures that would minimize or avoid the potential environmental

effects. PWD will consider the information presented in this PEIR, along with other factors, prior to approving the Recommended Strategy and related projects for implementation.

1.3.2 Required Permits and Approvals

Construction and operation of proposed facilities would occur within existing roadway rights-of-way, on vacant lands, or on other private lands. Ultimate locations of necessary facilities would be determined during the design and implementation phases, and would be evaluated in subsequent CEQA review. Potential regulatory agencies that may have approval requirements are identified in **Table 1-1**, and this list may be expanded for individual activities.

TABLE 1-1
REGULATORY REQUIREMENTS AND AUTHORIZATIONS

Agency	Type of Approval
California Department of Fish and Game	Section 1602 Streambed Alteration Agreement
South Coast Air Quality Management District (SCAQMD)	Permit to Construct and Operate
California Department of Transportation (Caltrans)	Encroachment Permit
Los Angeles County	Encroachment Permit
City of Palmdale	Encroachment Permit

1.3.3 Notice of Preparation

A Notice of Preparation (NOP) for this PEIR was published by the PWD on October 28, 2010. The NOP was circulated to federal, state, and local agencies, as well as other interested parties, for a period of 30 days. The NOP discussed the SWRP Recommended Strategy identified the SWRP study area, and provided a brief and preliminary list of environmental issue areas that could be affected. A public scoping meeting was held on November 17, 2010 to receive comments on the NOP.

The NOP was made available in print and electronic form, and the PWD accepted comments on the NOP for a 30-day period, closing on November 26, 2010. **Appendix A** includes a copy of the NOP and includes a report containing summaries of the comments received during the scoping meeting, as well as written comments on the NOP. Due to undeliverable NOPs, some recipients were notified at a later date of the public comment period, and therefore PWD extended the public comment period in order to provide ample opportunity for input during the scoping period for the EIR. The public comment period for the NOP was extended for two-weeks through December 10, 2010. All previously-notified interested parties were notified of the extension with an additional notice, which is included as part of Appendix A.

1.3.4 Draft PEIR

As described above, a PEIR can be prepared on a series of related actions characterized as one large project or program (*CEQA Guidelines* Section 15168(a)). Prior to implementation, each action in the program must be evaluated to determine if additional environmental documentation is required (*CEQA Guidelines* Section 15168(c)). If the environmental effects resulting from an action are fully covered by the analysis in the PEIR and no new mitigation measures are required, then the action is within the scope of the PEIR and no additional environmental documentation is necessary (*CEQA Guidelines* Section 15168(c)(2)). If an action would result in environmental effects not included in the PEIR then additional environmental documentation, such as a Negative Declaration or EIR, would be required (*CEQA Guidelines* Section 15168(c)(1)). The mitigation measures developed in a PEIR may be incorporated into subsequent environmental documents (*CEQA Guidelines* Section 15168(c)(3)).

This Draft PEIR provides an analysis of potential impacts of all construction and operational actions reasonably foreseeable with implementation of the proposed SWRP Recommended Strategy. The environmental baseline for determining potential impacts is the date the NOP for the proposed project is published (*CEQA Guidelines* Section 15125(a)), in this case October 2010. For each resource area assessed in this PEIR, the environmental setting describes existing conditions as of October 2010, unless otherwise indicated. The impact analysis is based on changes to existing conditions that result due to implementation of the proposed project.

It is the intention of this PEIR to provide program-level assessments of the proposed management strategies and projects contained in the SWRP Recommended Strategy, unless otherwise noted. Prior to implementation of these strategies and projects, additional analysis is required to determine the need for subsequent environmental documentation.

Other CEQA Requirements

This Draft PEIR describes the proposed project and the existing environmental setting, identifies short-term, long-term, and cumulative environmental impacts, identifies mitigation measures for impacts found to be significant, and provides an analysis of project alternatives.

Significance criteria have been developed for each environmental resource analyzed in this Draft PEIR. The significance criteria are defined at the beginning of each impact analysis section. Impacts are categorized as follows:

Significant and Unavoidable: mitigation might be recommended but impacts are still significant;

Potentially Significant: mitigation might be recommended but impacts are potentially significant at the programmatic level;

Less than Significant with Mitigation: potentially significant impact but mitigated to a less-than-significant level;

Less than Significant: mitigation is not required under CEQA but may be recommended; or

No Impact.

1.3.5 Public Review

In accordance with Section 15105 of the CEQA Guidelines, the Draft PEIR is available for public review and comment for a 45-day review period. The Draft PEIR has been circulated to federal, state, and local agencies and interested parties, who may wish to review and issue comments on its contents. All comments should be sent to:

Jon Pernula, Water & Energy Resources Manager
Palmdale Water District
2029 East Avenue Q
Palmdale, CA 93550

During the 45-day public review period, the PWD will conduct one public meeting open to the general public to answer questions and receive oral comments on the Draft PEIR. The meeting will be held at the following location:

Date: **August 31, 2011**

Time: **7:00 p.m.**

Location: **Palmdale Water District – Board Room**
2029 East Avenue Q
Palmdale, CA 93550

All oral and written comments received on the Draft PEIR will be commented on and included in the Final PEIR. Comments on the Draft PEIR must be received by 5:00 p.m. on the last day of the 45-day review period.

1.3.6 Final PEIR Publication and Certification

Written and oral comments received on the Draft PEIR will be addressed in a Response to Comments document which, together with the Draft PEIR and changes and corrections to the Draft PEIR, will constitute the Final PEIR. Following review of the Final PEIR, the PWD will decide whether to certify the Final PEIR. If the PEIR identifies environmental impacts that are considered significant and unavoidable, the PWD must state in writing, the reasons for certifying the PEIR in a Statement of Overriding Considerations, which will be included in the record of the project approval, and mentioned in the Notice of Determination (*CEQA Guidelines* Section 15093[c]).

1.3.7 Mitigation Monitoring and Reporting Program

CEQA Guidelines Section 21081.6(a) requires lead agencies to "adopt a reporting and mitigation monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment." Throughout the EIR, mitigation measures are clearly identified and presented in language that will facilitate establishment of a monitoring and reporting program. Any mitigation measures adopted by the

PWD will be included in a Mitigation Monitoring and Reporting Program (MMRP) to verify compliance. The MMRP will be included within the Final EIR.

1.4 PEIR Organization

This Draft PEIR is organized into the following chapters and appendices:

Executive Summary. This chapter summarizes the contents of the Draft PEIR.

Chapter 1, Introduction and Project Background. This chapter discusses the CEQA process and the purpose of the PEIR and provides background info on the proposed project.

Chapter 2, Project Description. This chapter provides an overview of the proposed project, describes the need for and objectives of the proposed project, and provides detail on the characteristics of the proposed project.

Chapter 3, Environmental Setting, Impacts and Mitigation Measures. This chapter describes the environmental setting and identifies impacts of the proposed project for each of the following environmental resource areas; Aesthetics; Air Quality and Greenhouse Gas Emissions; Biological Resources; Cultural Resources; Geology, Soils, Seismicity and Mineral Resources; Hazards and Hazardous Materials; Hydrology and Water Quality; Land Use, Agricultural Resources, and Forestry; Noise; Recreation; Transportation and Traffic; and Utilities and Public Services. Measures to mitigate the impacts of the proposed project are presented for each resource area.

Chapter 4, Cumulative Impacts. This chapter describes the cumulative impacts of the proposed project with respect to past, current, and probable future projects within the region.

Chapter 5, Growth Inducement. This chapter describes the potential for the proposed project to induce growth.

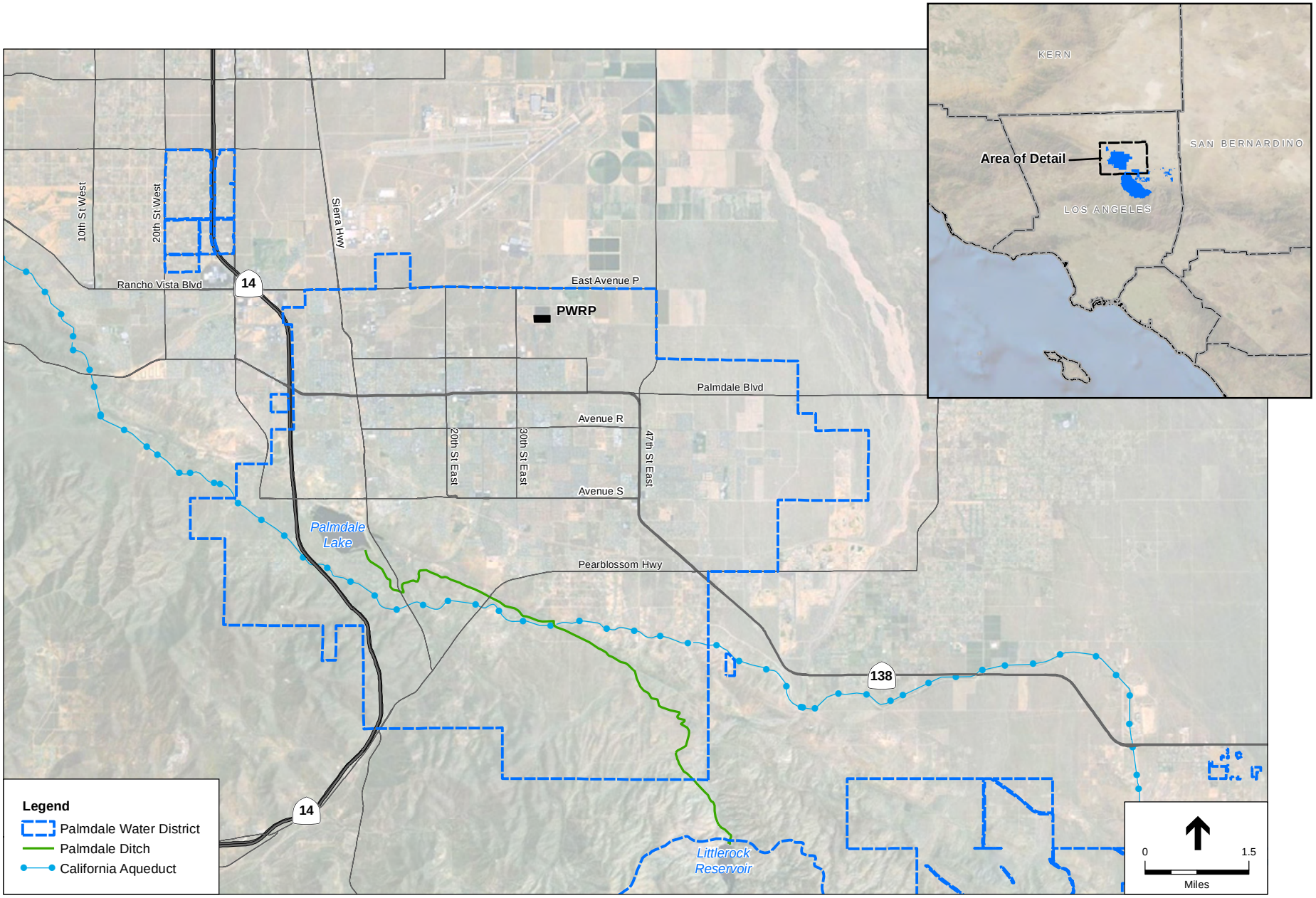
Chapter 6, Alternatives Analysis. This chapter presents an overview of the alternatives development process and describes the alternatives to the proposed project that were considered.

Chapter 7, Report Preparers. This chapter identifies authors involved in preparing this Draft DEIR, including persons and organizations consulted.

1.5 Project Background

Palmdale Water District Service Area

PWD provides potable water to municipal and industrial customers within a 47-square mile service area in the Antelope Valley of Los Angeles County, California (**Figure 1-1**). PWD and Los Angeles County Waterworks District No. 40 are the two primary water districts serving the region. PWD's service area includes lands within the incorporated portion of the City of Palmdale, as well as adjacent unincorporated areas of Los Angeles County within the City's Sphere of Influence. PWD was founded as an irrigation district that supplied water mainly to



SOURCE: ESA, 2011.

Palmdale Water District SWRP. 210170

Figure 1-1

Project Location Map

farms for agricultural use. As a result of Palmdale's rapid population growth during the early 1950s, PWD shifted to providing predominantly municipal and industrial services. The mission, vision, and core values of PWD are listed below:

Mission: The Mission of the Palmdale Water District is to provide high quality water to our current and future customers at a reasonable cost.

Vision: The PWD will strive for excellence in providing high quality, reasonably priced water in a growing Antelope Valley by being a strong advocate for our customers in local water issues, public education, asset management, water conservation, planning and securing additional water supplies, continuing our commitment to operate efficiently with the help of emerging technologies, challenging, motivating, and rewarding our employees, and offering premium customer service in all that we do.

Core Values: Efficiency, fiscal responsibility, natural resource management, integrity, customer service, water conservation, continuous improvement, stakeholder trust, a safe, productive, and rewarding workplace.

Palmdale Water District Supply

PWD currently serves 25,000 active customer accounts through three sources of water supply: imported water from the State Water Project (SWP), local groundwater, and local surface runoff collected at the Littlerock Reservoir and conveyed to Lake Palmdale through Palmdale Ditch. A comprehensive discussion of the SWP is discussed in more detail in Section 2.3 below.

State Water Project Supply

The majority of potable water supplied by PWD is imported water received through the SWP. The amount of water received annually varies due to weather conditions and policy. PWD has a Table A contracted amount of 21,300 AFY through the SWP, but generally receives between 41 and 77 percent of this contracted amount. PWD receives SWP water through a turnout on the East Branch of the California Aqueduct (**Figure 1-2**). PWD receives an average of 12,000 AFY of imported water based on long-term reliability projections (historical flows from 1940 to 2003).

Local Groundwater

PWD uses approximately 25 existing wells in its service area for groundwater extraction from the Antelope Valley Groundwater Basin. PWD currently extracts about 12,000 AFY from the groundwater basin. In contrast to SWP supply, the groundwater supply does not vary significantly seasonally or annually. Litigation has been ongoing since 1999 regarding groundwater adjudication in the Antelope Valley. Initiated by agricultural interests, the lawsuit is based on a concern that groundwater pumping costs were increasing as a result of increased groundwater withdrawals by municipal users. While an official adoption of a court-ordered adjudication does not appear to be forthcoming, the adjudication process could be completed within the next decade. Other regions of Southern California have adopted groundwater adjudications that allow designated pumpers to increase groundwater withdrawals above their annual pumping allotment

SOURCE: DWR; ESA, 2010

Palmdale Water District SWRP . 210170

Figure 1-2

State Water Project Overview

by a volume that is equal to what is recharged back to the aquifer on an annual basis. For the proposed local groundwater banking strategy to be successful, it may be necessary that the finalized adjudication judgment allow PWD the capability of increasing groundwater withdrawals over the 2010–2035 timeframe by recharging an equal level of imported or recycled water.

Littlerock Reservoir

Littlerock Reservoir is located southeast of PWD and is fed by Littlerock Creek and surface runoff. With a storage capacity of 3,500 acre-feet (AF), approximately 30 to 40 AF of storage capacity is lost every year due to sediment build up. PWD is currently in the planning phases for removal and management of excess sediment within Littlerock Reservoir in order to increase capacity. PWD extracts on average approximately 4,000 AFY from Littlerock Reservoir. Although Littlerock Creek flows mainly during winter and spring months, water may be stored throughout the year as a buffer against supply fluctuations from the SWP.

1.6 State Water Project

The SWP began in 1960 with California voter approval for a statewide distribution system to meet growing water needs. The SWP is managed by the California Department of Water Resources (DWR) and is the nation's largest state-built water conveyance system, which includes reservoirs, lakes, and storage tanks; canals, tunnels and pipelines; and pumping and power plants. The system conveys water to 29 State Water Contractors (contractors), including PWD. The contractors then deliver water directly to agricultural and urban water users or to water wholesalers and retailers. For the contractors, the SWP serves as an additional source of water within their service areas that is supplemental to their local sources. As previously mentioned, PWD has a Table A contracted amount of 21,300 AFY (6.94 billion gallons) through the SWP.

Facilities

A significant portion of the SWP's water supply is obtained from Lake Oroville, located on the Feather River in Butte County, which has a storage capacity of approximately 3.5 million AF. The lake stores winter runoff and spring snowmelt from the Feather River watershed. Releases from Lake Oroville flow down the Feather River then merge with the Sacramento River. The Sacramento River flows into the Sacramento-San Joaquin Delta which is comprised of 738,000 acres of land interlaced with channels that receive runoff from approximately 40 percent of the state's land area. Water from the northern Delta is diverted to the North Bay Aqueduct by the Barker Slough Pumping Plant to serve the counties of Napa and Solano. The SWP diverts water in the southern Delta to the Clifton Court Forebay for delivery south of the Delta. From the Clifton Court Forebay, water flows to the Skinner Fish Facility, which diverts fish away from the Delta pumps. The Harvey O. Banks Delta Pumping Plant then lifts water into the California Aqueduct, which then flows to the Bethany Reservoir. From Bethany Reservoir, the South Bay Pumping Plant pumps water into the South Bay Aqueduct to serve portions of Alameda and Santa Clara counties. The remaining water in Bethany Reservoir continues on to the California Aqueduct.

The 444 mile-long California Aqueduct winds along the west side of the San Joaquin Valley and transports water to agricultural lands in the Valley and the urban regions of Southern California. As water traverses the San Joaquin Valley, it is delivered to farmlands and to the Coastal Branch Aqueduct. The remainder is pumped to the foot of the Tehachapi Mountains where pumps lift the water 1,926 feet up and over the Tehachapi Mountains. As water reaches the southern base of the Tehachapis, the aqueduct splits into two branches (the East Branch and West Branch). The West Branch carries water to Pyramid Lake in Los Angeles County and from there to Castaic Lake, the western terminus of the SWP.

The East Branch continues through the Tehachapi East Afterbay, Alamo Powerplant, Pearblossom Pumping Plant, and Mojave Siphon Powerplant and discharges into Lake Silverwood near the Cajon Pass. The water is conveyed through a tunnel under the San Bernardino Mountains. The 28-mile-long Santa Ana Pipeline then takes it underground to Lake Perris, the southernmost termination of the SWP. The East Branch Extension delivers water from the Devil Canyon Power Plant Afterbay to the eastern part of San Bernardino Valley, Yucaipa Valley and the San Gorgonio Pass area in San Bernardino and Riverside counties. PWD receives SWP water through a turnout on the East Branch of the California Aqueduct

Operation of Storage and Conveyance Facilities

Most of the SWP water is obtained from Lake Oroville, north of the Delta, while about 97 percent of the demand for SWP water is located south of the Delta, including the demand generated to PWD. San Luis Reservoir is the primary storage facility south of the Delta. It is used to store water pumped by the Banks Pumping Plant that exceeds contractors' current demands. This generally occurs during winter and spring.

During the summer and fall, water is released from San Luis Reservoir to the California Aqueduct when pumping at the Banks Pumping Plant is insufficient to meet contractors' peak demands. The San Luis Reservoir usually reaches its low point in late August or early September. From September to mid-October contractors' demands normally drop and the reservoir begins refilling again. A second seasonal decrease in the reservoir may occur before fall and winter storms increase runoff in the Delta.

Allocations and Reliability

The amount of water available to the SWP fluctuates widely each year due to factors such as hydrologic conditions, flood management needs, the capacity of SWP storage and conveyance facilities, changing weather-temperature conditions, water quality, and environmental requirements. Water deliveries are based on the long-term water supply contracts that DWR has with each of the 29 contractors. The contractors are divided between agricultural and municipal and industrial (M&I) water supply agencies. PWD is primarily a M&I water supply agency. The contracts outline how the contractors will repay all SWP capital and operating costs in exchange for the state's financing, constructing and operating the SWP. The contracts also cover issues such as how water is allocated in the event of either a surplus or shortage of supplies and DWR's obligation to make all reasonable effort to complete needed SWP facilities. The contracts were

modified in 1994 under the Monterey Agreement, a set of 14 principles having the ultimate goals of increasing reliability of existing water supplies, providing stronger financial management, and increasing water management flexibility. The Monterey Agreement was agreed upon by DWR and SWP contractor representatives.

Article 6 of the contracts defines Table A amounts as the amount of water a contractor has contracted for with DWR for each year the contract is in effect. Table A amounts are used in allocating among contractors the total SWP water supply that is determined to be available for delivery each year. Table A amounts also indicate the maximum amount of dependable SWP water DWR agrees to deliver to a contractor during a year. Each year, each contractor may request an amount not to exceed its Table A amount. Under the Monterey Agreement, the sum of the maximum Table A amounts of all contractors is not to exceed 4.185 million af. PWD has a Table A contracted amount of 21,300 acre-feet per year (AFY) through the SWP, but generally receives between 41 and 77 percent of this contracted amount.

Articles 18 and 21 specify how DWR should allocate water to contractors during a temporary shortage or surplus of water supply. Shortages and surpluses are required to be shared among all contractors in proportion to their Table A amounts. Article 21 allows for surplus water deliveries only after all Table A deliveries have been fully met. Article 56(d) of the Monterey Agreement established a turnback pool for annual transfers of Table A among contractors. The turnback pool provides a mechanism for contractors that do not need all of their Table A to turn that water back for sale to another contractor or DWR early enough in the year for it to be put to use.

The total Table A water supply for each year is estimated based on a variety of factors including storage reservoir levels, surface water flow levels, Delta conditions, and contractor delivery requests. DWR determines an initial Table A allocation percentage, based on Table A amounts, the water supply, and contractor requests. The allocation percentage determines the percentage of Table A amounts that will be allocated to contractors for the year. The initial allocation of water is based on a conservative assumption of future precipitation and is typically increased over the course of the year as hydrological conditions become more defined. Table A allocations are not the same as Table A deliveries, as contractors may not take delivery of all the water allocated to them.

From 1980 to 1989, DWR was able to meet 100 percent of the contractors' requests for Table A water. Between 1990 and 1994, DWR had greater difficulty meeting demand as several dry years occurred. Contractors received less than 50 percent of their requests in 1991 and 1992. In recent years, the SWP has been able to deliver full Table A amounts only in wet years. SWP deliveries can be substantially less than full Table A amounts during dry years. This has been the result of a rise in contractors' demand levels, more stringent water quality requirements, and environmental constraints.

Recent developments regarding the Delta have introduced uncertainty into the SWP's ability to convey water to the contractors, which may in turn affect future Table A allocations. The recent decrease in deliveries is driven by the current fish restrictions and potential climatic changes. In 2004, the Bureau of Reclamation and DWR developed a new Operating Criteria Plan (OCAP) for

the SWP and the Central Valley Project (CVP). The OCAP included the project descriptions required for a comprehensive biological assessment of the effects of SWP and CVP operations on listed species. In 2004, USFWS issued a non-jeopardy biological opinion (BO) with regards to impacts to the Delta smelt caused by revised operations of the CVP and SWP. The BO concluded that adverse effects to the Delta smelt would be avoided or minimized by the conservation and adaptive management measures included in the OCAP. In May 2007, the Wagner decision made by the U.S. District Court found the OCAP BO for Delta smelt to be inconsistent with the Federal Endangered Species Act and required that it be rewritten. On December 15, 2008, the revised BO concluded that the long term operations of the CVP and SWP pumping, as proposed, would jeopardize the continued existence of the delta smelt without further flow conditions in the Delta. The current regulatory framework is focused on restricting flow; this is described by in the recent OCAP BO requirements for reduced exports to restrictive Reverse Old and Middle River (OMR) flows (FWS 2008). The CVP and SWP operations in the Delta are constrained by regulatory conditions by the State of California and the biological opinions by the FWS and NMFS.

In addition to the constrained requirements in the USFWS and NMFS biological opinions, the Delta levels are susceptible to failure at times of high floods, earthquakes, or the piping of water through the levee. These potential disruptions could lead to significant water quality degradation such as increased salt water intrusion into the Delta. As a result, the Delta would require more fresh water to prevent saline water from extending into the Delta (State Water Project Delivery Reliability Report, 2009). The SWP and CVP pumping would have to decrease below the allotted pumping amount in order to prevent water quality degradation in the Delta. This would affect water supply reliability by limiting pumping. A similar situation occurred in 2004, when a levee break on the Middle River led to the flooding of Upper Jones Tract, which subsequently led to Delta pumping curtailment for several days to prevent saline intrusion (SWP Delivery Reliability Report, 2009). The vulnerability of the long term viability of the Delta's levee has been a concern about future allocations and reliability.

SWP reliability may also be affected by climate change as it may cause the timing and quantity of available water supplies to be less predictable in the coming decades. Reservoir flood control operations may require adjustment if more precipitation begins to occur as rain instead of snow. A shift from snow to rain would move the timing of the peak runoff toward the winter resulting in less spring and summer Delta inflows and an increase in Delta salinity. A rise in sea level could also increase Delta salinity. In order to maintain the current in-Delta water quality standards, upstream reservoirs would need to be utilized to provide more water in the Delta for controlling seasonal salinity changes. This may result in lower reservoir levels and reduced water supply reliability during dry periods (DWR, 2007d).

References – Introduction

City of Palmdale, *Palmdale General Plan*. Adopted January 25, 1993.

California Department of Water Resources (DWR), 2007. *Draft The State Water Project Reliability Report*. December 2007.

Greater Antelope Valley Economic Alliance 2010. Population Detail, accessed on November 2, 2010 at http://www.aveconomy.org/index.cfm?page=Population%20Detail.

RMC, *Strategic Water Resources Plan Final Report*. March 2010.

RMC, *Palmdale Water District, 2010 Urban Water Management Plan*. June 2011.

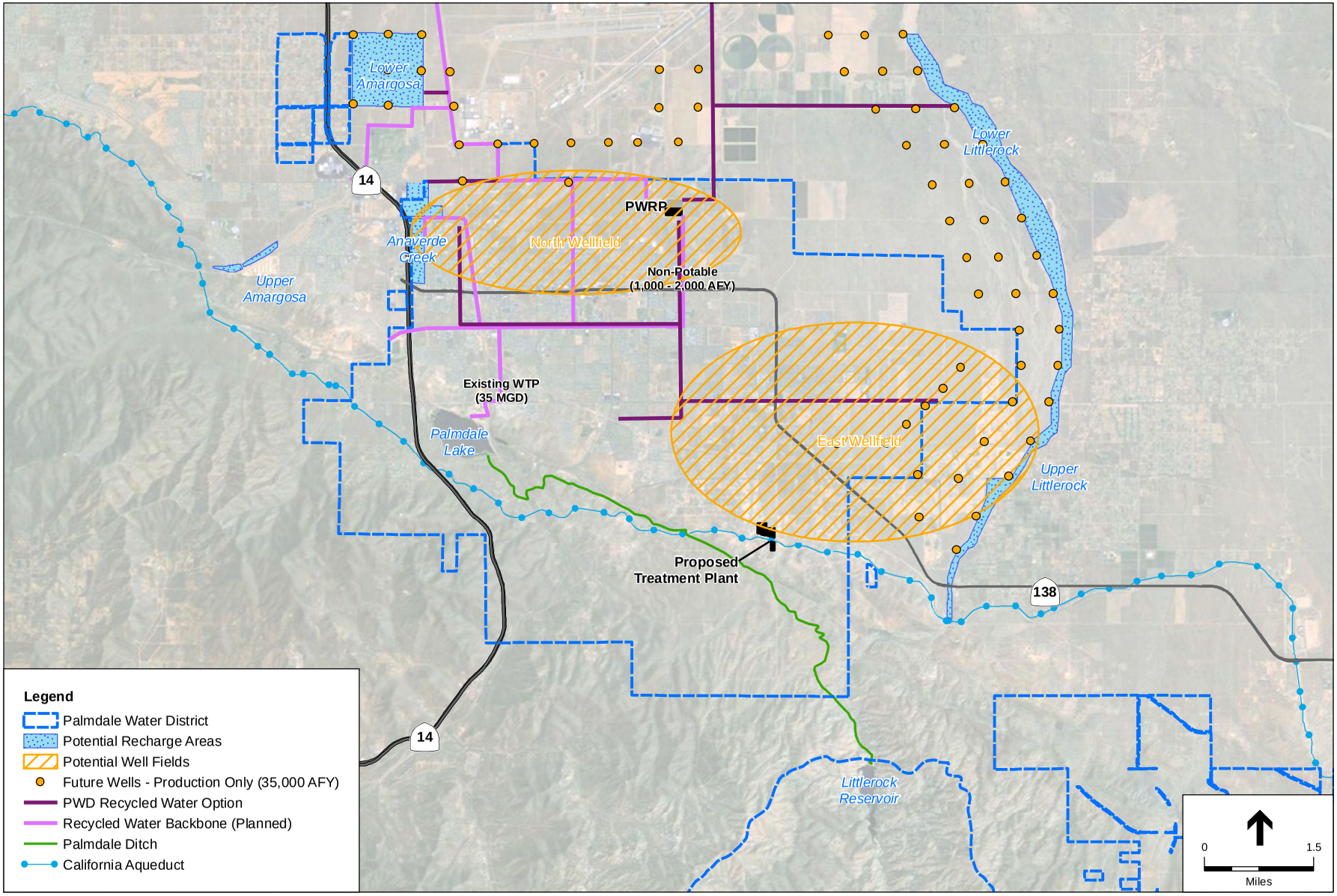
CHAPTER 2
Project Description

2.1 Introduction

PWD, as the Lead Agency pursuant to CEQA, is proposing to implement the SWRP Recommended Strategy that outlines a programmatic plan for developing and diversifying PWD's water supply over the next 25 years through 2035 (RMC, 2010). Recent projections indicate that during that time, despite the current economic recession, the population within PWD's service area will more than double. Existing supplies are inadequate to meet the projected demand of a growing population. The SWRP therefore establishes a strategy to match overall annual water demand on a year-to-year basis. The Recommended Strategy would provide increased water supply reliability and redundancy by increasing the number of water sources available to supplement the system when an individual source of water is unavailable or restricted. The Recommended Strategy calls for acquisition of additional imported supplies; new groundwater recharge and recovery facilities; aquifer storage and recovery (ASR) wells; potential use of recycled water for agricultural irrigation, groundwater recharge, and other municipal and industrial end uses; expansion of conservation programs; and recovery of storage capacity in Littlerock Reservoir.

2.2 Project Location

The PWD service area is located in southern California, approximately 60 miles northeast of the City of Los Angeles, within the Antelope Valley. The District's primary service area includes the majority of the City of Palmdale and portions of unincorporated Los Angeles County. The District is bordered to the south and west by the San Gabriel Mountain Range, the north by the City of Lancaster, and the east by the unincorporated community of Littlerock. The District encompasses 47 square miles of mainly developed areas of the City and surrounding sphere of influence, with agricultural uses around its perimeter. The proposed project includes facilities that would be located outside of PWD boundaries in either the City of Palmdale or unincorporated Los Angeles County. Therefore, for purposes of this PEIR, the "project area" includes both the PWD service area and any outlying areas where project facilities may be built, as depicted in **Figure 2-1**.



SOURCE: ESA, 2011.

Palmdale Water District SWRP. 210170

Figure 2-1

SWRP Proposed Facilities

2.3 Project Objectives

The primary objectives of the proposed project are to:

- Ensure a water supply capable of meeting overall annual water demand on a year-to-year basis through 2035.
- Improve water reliability by increasing the number of water sources to supplement the system when an individual source (i.e., imported SWP water) becomes restricted or unavailable.
- Increase operational flexibility by creating redundancy within the water conveyance and storage system.
- Implement a water supply strategy that is consistent with the mission, vision, and core values of PWD.

2.4 Proposed Project

The SWRP Recommended Strategy would increase potential water supplies in PWD's service area from approximately 30,000 AFY to up to 67,000 AFY to meet projected demand in 2035. The Recommended Strategy consists of two primary components with nine individual but interconnected actions, as outlined in **Table 2-1** and described in more detail below. **Table 2-2** outlines current and future targets for local water supply and storage.

TABLE 2-1
RECOMMENDED STRATEGY IMPLEMENTATION ACTIONS

Water Supply	
1.	Acquire and/or develop new imported supplies
2.	Implement a recycled water system for non-potable uses including irrigation and possibly some industrial
3.	Pursue recycled water exchange program with nearby agriculture in lieu of groundwater pumping
4.	Recover storage capacity in Littlerock Reservoir through sediment removal
5.	Expand conservation programs
Groundwater Storage and Recovery	
6.	Create local raw water spreading facilities to percolate SWP water into the local aquifer
7.	Create aquifer storage and recovery (ASR) wells to inject and extract potable water into the local aquifer
8.	Expand groundwater pumping with new groundwater production wells to achieve a target of delivering 70 percent of demand to customers
9.	Use treated recycled water to replenish the groundwater basin

2.4.1 Water Supply

Water supply augmentation is centered on policy actions and water transfers that would result in additional water supplies to meet the future demand. The descriptions below provide context for the water supply augmentation, and the necessary infrastructure to support this increased supply. The effects of augmenting the existing supply with additional sources and volumes could have direct environmental impacts associated with the required new infrastructure, as well as indirect

TABLE 2-2
WATER RESOURCE TARGETS FOR RECOMMENDED STRATEGY

Implementation Action Number	Water Supply Elements	Current Volumes	Target for 2035
Water Supply			
1	Imported Water	12,000 AFY (avg)	47,000 AFY (avg)[a]
2	Recycled Water Master Plan	None	2,800 AFY[a,c]
3	Recycled Water/Groundwater Exchange	None	6,000 AFY[a,c]
4	Littlerock Reservoir	4,000 AFY (avg)	4,500 AFY (avg)
5	Conservation Programs: Active	250 AFY	3,600 AFY
	Conservation Programs: Passive	None[b]	4,100 AFY
	Native Groundwater Production	12,000 AFY (avg)	---
	TOTAL WATER SUPPLY	**28,250 AFY**	**67,000 AFY**
Groundwater Storage and Recovery			
6	Surface Recharge Facilities	None	35,000 AFY (avg)
7	ASR Injection Facilities	None	6,000 gpm
8	Groundwater Production Wells	12,000 AFY (avg)	47,000 AFY (avg)
9	Recycled Water Replenishment	None	15,000 AFY[a,d]

a The volume of imported water used is dependent on the volume of recycled water that is used for non-potable uses, in-lieu groundwater exchange with agriculture, and/or groundwater recharge.
b Prior passive conservation measures (e.g. plumbing code changes) were not evaluated but have been taken into account for future actions.
c Development of recycled water facilities should be considered an option for PWD.
d The Recommended Strategy does not rely on this implementation action as a source of water and is considered an optional component.

SOURCE: RMC, 2010

impacts associated with the redirecting of water uses and water delivery. These potential impacts are evaluated at a programmatic level in this PEIR. Figure 2-1 shows a conceptual layout for future water facilities including wells and potential recycled water pipeline routes.

Action 1: New Imported Supplies

Under the Recommended Strategy, PWD would acquire approximately 25,000 AFY of additional imported supplies by 2020 and 37,000 AFY by 2035, by acquiring new imported water rights through permanent transfers, multi-year leases, and short-term transfers. Additional supplies could also be made available through a proposed delta conveyance project and other SWP improvements that could lead to an increase in SWP allocations. PWD would also consider short-term transfers of wet year water when available.

Additional imported water supplies would be phased in as needed. The initial 10,000 AFY of new imported water supply would maximize PWD's current Table A allocation of 21,300 AFY on an

annual basis and would make use of PWD's existing remaining capacity in the aqueduct.[1] Amounts over and above the initial 10,000 afy, up to 25,000 afy, would be acquired through permanent transfers or multi-year leases of other state water contractors' Table A allocations, which would require PWD to acquire or otherwise access additional aqueduct capacity of those contractors. The last incremental 12,000 afy of imported water could be acquired through additional transfers or leases; through a proposed delta conveyance project or other SWP improvements that could lead to an increase in SWP allocations; through acquisition of pre-1914 surface water rights; or through other short-term transfers of wet year water when available. These water supplies likely would be wheeled through the SWP when capacity is available.

To achieve an expanded allocation of imported water supplies beyond the initial 10,000 AFY, additional local facilities would be needed, including aqueduct turnouts, additional conveyance capacity, and storage facilities. These individual local projects would require construction activities and new facilities that have the potential to result in environmental impacts. The ultimate location and design of these facilities is not known at this time and they are evaluated programmatically in this PEIR. The projects would include the following:

- Turnouts on the East Branch of the California Aqueduct or Lake Palmdale consisting of flow control gates, weirs, or valves along with continuous flow measurement facilities. At some point during acquisition of the first 15,000 AFY of imported water (after the initial 10,000 AFY is exceeded), construction of a new turnout facility on Lake Palmdale would be required. By 2020, a third turnout would also be required near the eastern boundary of the PWD service area.
- Buried pipelines to convey raw SWP water to existing or new storage tanks, surface impoundments, recharge facilities, or surface water treatment facilities; and booster pump stations.
- Local surface spreading facilities consisting of flat earthen excavations of large areal extent, with a network of piping, earthen berms, flow vaults, sluice gates, valves, and other flow control structures.
- Interconnections within existing raw water piping.
- Raw water surface impoundments, storage ponds, or engineered tanks to provide raw water storage.
- Water pumping stations to convey the increased volume of imported water. A typical booster station consists of a single-story small masonry building with a height of 15 feet or less, above-grade electrical panels, above-grade exposed piping, and pumping equipment either inside or outside of the building. The overall footprint would range from 500 to 3,000 square feet, depending on pumping capacity.

In addition to these facilities, the delivery of this additional imported water to the PWD service area would result in increased energy demands (see Section 2.5.2 below). Lastly, a portion of

[1] In essence, the first 10,000 AFY of imported supply would make use of PWD's existing remaining capacity in the aqueduct (approximated as the difference between PWD's current Table A allotment of 21,300 AFY and current average PWD withdrawal from the aqueduct of approximately 12,000 AFY).

PWD's acquired imported water may consist of agricultural-to-urban transfers, which could result in the ultimate removal of lands from agricultural production. This potential conversion of agricultural lands is evaluated at a programmatic level in this PEIR.

Action 2: Recycled Water Master Plan for Non-Potable Uses

Potential recycled water users and uses have been identified in the Palmdale region, including municipal, industrial, and private agricultural end users, and groundwater recharge (RMC, 2009). The Recommended Strategy includes implementation of a Recycled Water Master Plan (RWMP) that would deliver 2,800 AFY of non-potable water to end users such as golf courses, parks, schools and local farmers, through a series of local distribution pipelines and laterals, storage tanks, and pump stations. Potential environmental impacts associated with implementation of the RWMP were evaluated in the PWD Recycled Water Master Plan Mitigated Negative Declaration (MND) (PWD, 2010). The MND for the RWMP was circulated for public review for a 30-day period that ended on March 1, 2010 (SCH No. 2010011089). Certification of the MND is pending a determination of the recycled water purveyor within the limits of the City of Palmdale. The MND for the RWMP is hereby incorporated by reference into this PEIR, including all mitigation measures.

The RWMP proposed construction of approximately 79,830 linear feet of 8-inch and 16-inch distribution pipe and 49,840 linear feet of 4-inch to 12-inch laterals. Two 1.0 MG storage tanks are proposed at Avenue S/35th Street East and Avenue S/70th Street East. Two new pump stations at or near the PWRP would be needed to facilitate recycled water storage for 14 hours each day and serve future demands.

Recycled water would be provided by the Sanitation Districts of Los Angeles County (LACSD), which owns and operates the Palmdale Water Reclamation Plant (PWRP) and the Lancaster Water Reclamation Plant (LWRP). Both the PWRP and LWRP would provide disinfected tertiary-treated recycled water. As required by the State Water Resources Control Board (SWRCB), a salt and nutrient management plan would also be required, to address environmental concerns associated with the concentration of salts and nutrients from recycled water use. PWD would need to obtain an agreement with LACSD to obtain the recycled water. PWD is targeting 2,800 AFY of potable offset with recycled water by 2035.

In order to maximize the use of recycled water within PWD's service area to limit the need for imported water, a recycled water (non-potable) distribution system would need to be designed and installed to deliver the water to end users. The Recycled Water Master Plan has identified the ultimate location, capacity, and design of the pipelines and distribution system, and a conceptual location for pipelines is shown in Figure 2-1. Facilities necessary to serve recycled water to irrigation and industrial customers include the following:

- A non-potable distribution systems with tanks, distribution piping, and pump stations.
- Dual plumbing at recycled water user sites.
- Supplemental potable water facilities consisting of air gap piping and possible extension of the existing potable water distribution system.

Action 3: Recycled Water/Groundwater Exchange Program

The Recommended Strategy also includes a Water Exchange Program with local farmers, to provide them with recycled water for irrigation in-lieu of groundwater pumping. Although the local groundwater is not currently adjudicated, an adjudication proceeding for the area is in process. As such, it can be anticipated that farmers with an adjudicated pumping rate would at some point in time between 2010 and 2035 timeframe be given the option by PWD to pump less than their adjudicated allocation in exchange for recycled water and/or monetary compensation on a per-acre-foot basis. PWD is targeting 5,000 to 6,000 AFY of additional groundwater supply by 2035 as the result of this in-lieu exchange program. PWD currently extracts about 12,000 AFY from the groundwater basin through 25 existing wells.

Fodder crops, such as alfalfa, are especially amenable to irrigation with recycled water. Root crops, such as carrots, are more sensitive to salinity that is generally higher in recycled water than groundwater or imported water. As such, blending facilities would be necessary to dilute recycled water with potable water before agricultural applications. In general, the following facilities would be necessary:

- Recycled water storage tanks or ponds.
- Recycled water pumping and conveyance facilities between the Palmdale Water Reclamation Plant and end users.
- Blending reservoirs and piping.

The Water Exchange Program is part of PWD's Recycled Water Master Plan (Action 2 above), and thus the environmental impacts associated with implementation of the Water Exchange Program were evaluated in the PWD Recycled Water Master Plan MND (PWD, 2010). The MND for the RWMP is hereby incorporated by reference into this PEIR, including all mitigation measures.

Action 4: Littlerock Reservoir Sediment Removal

The Recommended Strategy includes sediment removal at Littlerock Reservoir in order to increase the average annual yield from 4,000 AFY to 4,500 AFY by 2035. This would be achieved by excavating up to 540,000 cubic yards of accumulated sediment within the reservoir, which is located in the Angeles National Forest, followed by excavation of approximately 54,000 cubic yards annually. Sediment excavation will begin on the upstream side of the Littlerock Dam and extend approximately 3,040 feet upstream of the Dam. A grade control structure would be constructed near Rocky Point which is at River Station 4,235 along Littlerock Creek (Figure 2-1). Grade control structures are improvements made within the streambed that provide stability and resistance to erosive and scouring forces that otherwise result in downstream sedimentation. Surface water from Littlerock Creek would continue to flow unimpeded over the proposed grade control structure into Littlerock Reservoir. This project is currently being evaluated separately at the project level in accordance with CEQA and NEPA (SCH No. 2005061171). The Draft EIR/EIS for the project is in progress and expected to be released for public review in September 2011.

Action 5: Expand Conservation Programs

PWD's goal is to meet the requirements of California Senate Bill (SB) 7, which is a state-mandated 20 percent per capita reduction in water use. As such, the Recommended Strategy includes an active conservation program target of 3,600 AFY and passive conservation program target of 4,100 AFY.

Currently, PWD achieves an estimated 250 AFY with its existing active conservation program. Implementing the 20 percent per capita reduction would require significant investments in conservation measures, such as Evapotranspiration (ET) Controller and Multi-Projection Nozzles; rebates for high-efficiency (HE) toilets, HE clothes washers, water conserving sprinklers and turf replacement; landscape management; and incentives for recycled water retrofits for landscape irrigation customers. As part of this conservation component, PWD would regularly review and coordinate their policies and the ordinances of the City of Palmdale, pursue grant funding to improve program cost effectiveness, coordinate communications with other Antelope Valley water purveyors, and monitor and report effectiveness of conservation programs. Implementation of this recommended action would not result in ground-disturbing activities, but rather is a policy effort to reduce water consumption.

2.4.2 Groundwater Storage and Recovery

The additional water supply that is proposed as described above would require storage before delivery to consumers. The Recommended Strategy focuses on groundwater storage of this additional supply. This would be in the form of using new imported supplies or possibly recycled water for groundwater recharge, and installation of necessary infrastructure to inject the supply into the groundwater aquifer, and then draw it when ready for delivery. The effects of this groundwater storage could have direct environmental impacts associated with the required new infrastructure. These potential impacts are evaluated at a programmatic level in this PEIR.

Action 6: Surface Recharge Facilities

The Recommended Strategy includes implementation of a local groundwater storage and recovery (banking) program to be supported by increased imported supplies. The Recommended Strategy assumes 70 percent of the 2035 water supply would be obtained through groundwater pumping. PWD's target is to achieve 35,000 AFY of additional groundwater recharge and recovery by 2035. The groundwater banking program is required to sustain this level of pumping, with the majority of additional recharge water provided by new imported water supplies. In addition, PWD plans to implement additional recharge at a rate that exceeds the volume of additional pumping. The objective of a local groundwater banking program is to provide between 105,000 and 120,000 AF of groundwater storage in the Antelope Valley groundwater basin by 2035.

Although a local groundwater banking program is preferred, as an alternative, PWD could participate in groundwater banking programs outside of PWD to meet its groundwater recharge and recovery goals. A new surface water treatment facility would be required to treat groundwater pumped outside of PWD and delivered via the California Aqueduct. The new treatment facility would be located on land already owned by PWD on 47th Street East, just south

of Ave T-8 at the aqueduct. (**Figure 2-2**) The property is primarily undeveloped vacant land, with the exception of two existing PWD storage tanks located south of the aqueduct. The treatment facility would have an initial treatment capacity of 10 mgd, with the potential for expansion to 30 mgd. Up to 20 acres would be required to accommodate a 30-mgd treatment plant, including parking areas, offices, and finished water storage, assuming conventional treatment processes are utilized. The plant footprint would be smaller if alternative treatment technologies, such as membranes, are implemented.

The construction of new groundwater spreading basins would be necessary to develop a local groundwater banking program and recharge the imported water. Spreading basins would be located within the potential recharge areas shown in Figure 2-1. Precise locations and configurations of facilities would be determined during later implementation phases. The City of Palmdale is already in the initial implementation stages of establishing a groundwater recharge area in Upper Amargosa Creek. Other potential areas include:

- Lower Amargosa
- Upper Amargosa
- Along Anaverde Creek
- Lower Littlerock
- Upper Littlerock

Local surface spreading facilities would consist of flat earthen excavations of large areal extent, with a network of piping, earthen berms, flow vaults, sluice gates, valves, and other flow control structures. Pump stations and new transmission pipelines would be required to convey water to the recharge facilities. Potential recharge locations have been selected based on land availability and the ability to maintain a groundwater flow path toward a portion of the aquifer that regularly experiences drawdown from existing groundwater withdraws.

Action 7: ASR Wells

To increase the amount of additional imported water that would be stored in the local groundwater basin, ASR wells would be installed. ASR wells would be used for both injection of water into the groundwater aquifer (during winter and transitional months of lower demand) and extraction of stored groundwater (during the summer months of peak demand). Figure 2-1 shows the recommended areas for ASR wells, in the North Wellfield and East Wellfield areas. The proposed injection capacity is 6,000 gallons per minute (gpm). It is estimated that between 4 and 12 wells of this capacity would be necessary, and the exact location and number would be determined by site-specific hydrogeologic conditions.

Each ASR facility would include a well, well pump (either submersible or open lineshaft), wellhead, sodium hypochlorite disinfection facilities, above-ground and buried piping, and electrical control equipment. A dechlorination facility would also be required. Each ASR well facility would occupy a footprint of between 900 and 2,500 square feet, depending on capacity and land availability. Structures would be housed in a one-story masonry building between 10 and 15 feet tall. Additional facilities required for ASR wells include:

SOURCE: ESA, 2011.

Palmdale Water District SWRP . 210170

Figure 2-2

Proposed Water Treatment Plant Location

- Booster pumping stations to convey potable water to the injection locations and recovered water back to the distribution system.
- Pipelines between potable water conveyance/distribution facilities and the ASR wells, delivering water to the wells for injection.
- Pipelines connecting the ASR wells as a source of supply to the potable water system, which would deliver the extracted water for domestic consumption.
- Tanks to provide operational distribution storage of recovered water.

Action 8: New Groundwater Production Wells

In order to achieve the target of 35,000 AFY of additional groundwater supply by 2035, it is estimated that between 60 and 90 new groundwater production wells would be required. Additional well capacity would be installed in the areas shown in Figure 2-1. The ultimate number and location of wells would be determined during design and implementation phases, and are dependent on land availability and hydrologic conditions. The locations shown in Figure 2-1 are based on an initial assessment of potential recharge locations and lack of development potential.

Well pumps typically consist of either submersible turbine or open line-shaft vertical turbine pumps with electrical/telemetry equipment at the ground surface, along with above-grade piping, chlorination facilities, and flow metering equipment. The wells may also have adjacent buried seepage pits for disposal of routine operational well purge water at well start-up.

In addition, a piping network, with both above-grade and below-grade storage tanks, would be necessary to interconnect the new wells. Each new wells, or cluster of wells, would have separate sodium hypochlorite storage and additional facilities to disinfect the water prior to introducing it into the potable water distribution network. New storage tanks would be required to provide operational storage of the additional supply volume, and piping would be required to convey the extracted water to the existing potable distribution system.

Action 9: Groundwater Recharge with Recycled Water

As part of its local groundwater banking program, PWD may choose to recharge recycled water at the new spreading basins, in addition to raw water. The Recommended Strategy does not rely on this implementation action as a source of water, and is considered an optional component. The source of the recycled water would be the PWRP, the LWRP, or a combination of both. All recycled water that would be used for groundwater recharge would meet the specific requirements of the Draft California Water Recycling Regulations that are issued by the California Department of Public Health, and California Title 22 requirements.

PWD would pursue a strategy of recharging recycled water using surface spreading which could require that recycled water be blended with either potable or raw water. For surface spreading, the recycled water can be treated to conventional disinfected tertiary standards (as provided by the PWRP and LWRP) or advanced tertiary standards. For direct injection, advanced tertiary

treatment is required. The following facilities would be required to implement groundwater recharge with recycled water:

- Recycled water distribution pipelines from the PWRP or LWRP backbone pipeline to either, or both, surface spreading basins or injections wells.
- Potable water pipelines to provide water for blending with recycled water prior to recharge.
- Recycled/potable water storage and blending facilities.
- Wells to monitor water quality and migration to demonstrate compliance with regulations, including residence times in the ground prior to extraction of recharged recycled water.
- Advanced treatment facilities if direct injection of recycled water is implemented.

2.5 Project Implementation

2.5.1 Construction Activities

For most of the implementation actions, construction activities would be required for the installation of new water facilities throughout the PWD service area and surrounding areas. As shown in Figure 2-1, new recharge facilities, pipelines, storage tanks, and wells would be installed throughout the SWRP implementation process, as needed. Implementation of the Recommended Strategy would also likely require the construction of a treatment plant and aqueduct turnouts. Construction activities would involve drilling of additional wells, trenching for new pipelines, and installation of any additional supporting infrastructure. Specific construction equipment lists, material lists, construction methods, construction schedules, and workforce details would be developed in the future as specific projects are planned and designed according to the Implementation Actions above. All facilities would be built in accordance with PWD's Standard Specifications for Water Distribution System Construction (July 2008).

The following provides a general overview of construction equipment, materials, and methods associated with installation of pipelines, spreading basins, groundwater wells, pump stations, storage tanks, and a new treatment plant.

Pipelines

Construction of proposed potable or recycled water pipelines would involve trenching using a conventional cut and cover technique, or jack-and-bore or directional drilling techniques where necessary to avoid sensitive land features or roadway intersections. Dewatering may be required depending on location. Pipelines would be installed primarily within existing roadway right-of-way to the extent feasible. The trenching technique would include saw cutting of the pavement where applicable, trench excavation, pipe installation, backfill operations, and re-surfacing to the original condition.

Trench width and depth would depend on the size of the pipe to be installed, which would range from six to 36 inches. Excavation depths would be six inches below the bottom of the pipes, and typically, the top of all water mains would be 42 inches below the curb at the street surface.

Trench width would be at least 12 inches greater than pipe diameters. The construction corridor would be wide enough to accommodate the trench and to allow for staging areas and vehicle access. Offsite construction staging areas would be identified by contractors for pipe lay-down, soil stockpiling, and equipment storage. The length of an open trench would not exceed 500 feet at any time, and on average 50 to 500 feet of pipeline would be installed per day.

Trenches would be backfilled at the end of each work day or temporarily closed by covering with steel trench plates. The construction equipment needed for pipeline installations generally includes: backhoes, excavators, dump trucks, shoring equipment, steam roller, and plate compactor. Typically, 15 to 20 workers would be required for pipeline installations. Excavated soils would be reused as backfill and otherwise disposed offsite.

Traffic control would be necessary during pipeline construction within city and county roadways. Typically five to 10 workers would be required for traffic control during pipeline installation. Equipment necessary for traffic control includes changeable message signs, delineators, arrow boards, and K-Rails. The traffic control plan for each pipeline project would be coordinated with the applicable jurisdictions, including the City of Palmdale and County of Los Angeles.

Spreading Basins

Spreading basins would be constructed in locations where soils are suitable for percolation of water and where the local geology allows a hydrologic connection to the underlying aquifer. Figure 2-1 shows general areas that are ideal for surface spreading facilities. Typically, construction of spreading basins involves excavation of basins and recontouring of the site soils to form earthen berms. Basin walls would vary in height but could be as high as six feet above ground level. Construction equipment typically would include back hoes, front-end loaders, dump trucks, excavators, bulldozers, earth movers, compactors, and water trucks. Production wells would extract the groundwater for later treatment and delivery to end users (see below).

Groundwater Wells

Construction of ASR and production wells would include site preparation, mobilization of equipment to the well site, well drilling, water quality testing, installation of the well casing, gravel packing and finishing with a cement seal. Water discharged during well drilling is conveyed to onsite settling basins, recycled back into the well borehole during drilling, and discharged to the storm drain after drilling is complete under a permit from the Regional Water Quality Control Board. Construction equipment typically would include an auger rig, drill rig, small crane, welder, all-wheel drive forklift, pipe trailer, generator, Baker tanks, circulation pits and a backhoe. The duration of the well drilling/testing operation is estimated at approximately three months.

For approximately one month, daily 24-hour drilling would be required. To drill the well, the drill rig must run 24 hours-a-day otherwise the walls of the borehole can collapse. Temporary overhead nighttime lighting would be installed during the well drilling period. All lighting would be directed downward to avoid light and glare impacts associated with construction.

Pump Stations

Pump stations would be housed in single-story buildings that may include pump rooms, an electric control room, and a room for disinfection facilities. Pump station exteriors typically would be built in accordance with standard construction methods for roofed masonry buildings. Construction of pump stations would involve installation of piping and electrical equipment, excavation and structural foundation installation, pump house construction, pump and motor installation, and final site restoration. Pump stations would be equipped with portable emergency generator connections and manual transfer switches. Power to the pump station would be provided through underground service to minimize possibility of damage during fires.

The construction equipment needed for pump station installation generally includes: auger truck, backhoe, boom lift truck, excavator, plate compactor, and scaffolding. Approximately five to 10 workers would be required during various phases of pump station construction. Excavated soils would be reused onsite to the extent feasible and otherwise disposed offsite. Concrete would be required for construction of pump station foundations and pads.

Storage Tanks

Construction of storage tanks would require site preparation and clearing, excavation, grading, tank erection and painting, and site restoration. Tanks typically would be constructed of prefabricated steel rings, stacked and welded to the desired height. Once erected, each tank would be sandblasted, primed, painted and treated.

The construction equipment needed for tank installation generally includes: backhoes, excavators, bulldozers, compactors, dump trucks, girth welder, iron worker, truck crane, boom lift truck, and scaffolding. Approximately five to 10 workers would be required at a time during various phases of tank construction. Excavated soils would be reused onsite to the extent feasible and otherwise disposed offsite. Concrete would be required for construction of tank foundations and pads.

Treatment Plant

Construction phases for the new treatment plant would consist of site clearing and grading, excavation, construction and installment of treatment buildings and equipment, and site restoration. A treatment plant with a 30 mgd capacity would require up to 20 acres to accommodate conventional treatment equipment and ancillary facilities. The footprint of the treatment would be smaller if alternative treatment technologies are implemented. Construction equipment may include (but not be limited to) the following: backhoe, loader, dump trucks, crew trucks, concrete trucks, crane, personal vehicles, compactor, delivery trucks, and a water truck. Excavated soils would require offsite disposal; concrete would be required for construction of foundations, pads, and possibly storage reservoirs (e.g., partially buried forebay or clearwell). Approximately 10 to 20 construction workers would be onsite at a time, including electrical, building, piping and mechanical workers, one administrator and two foremen. Staging and parking would be available at the treatment plant site.

2.5.2 Operation and Maintenance

Operation of most proposed facilities, such as storage tanks, pump stations, groundwater wells, and recharge basins, would not require daily staffing but rather require only periodic maintenance. Operation of the proposed treatment plant would require five dedicated staff that would commute daily to and from the site.

Chemical Delivery and Storage

Operation of the proposed treatment plant and wellhead treatment facilities would involve onsite chemical use and storage. At the treatment plant, chemicals would be stored in a chemical storage building in aboveground tanks in a dedicated containment area with secondary containment areas to confine accidental spills and prevent exposure to the environment. The containment areas would be sized to accommodate storage tank volumes and sprinkler system operations to prevent accidental spills. Operation of the proposed treatment plant would require chemical and material deliveries, approximately once per week, similar to PWD's existing treatment plant. At the wellhead treatment facilities, chemicals also would be stored in appropriate containers with secondary containment. Routine chemical deliveries would be approximately once per month.

Energy Consumption

Operation of the proposed project would result in an increase in energy consumption, requiring approximately 25 million kilowatt hours (kWh) per year to run the treatment plant (assuming operation 50 weeks per year) and approximately 285 kWh per year to run each well. Assuming the Recommended Strategy would involve construction and operation of up to 100 new wells, up to 28,500 kWh per year would be required to operate the new wells.

2.6 Incorporation by Reference

As permitted by Section 15150 of the CEQA Guidelines, this Draft PEIR includes by reference the IS/MND prepared for PWD's 2009 Recycled Water Master Plan (RMC, 2010).

References – Project Description

RMC, *Strategic Water Resources Plan Final Report*. March 2010.

Palmdale Water District. *2009 Recycled Water Master Plan Initial Study/Mitigated Negative Declaration*. January 2010.

Palmdale Water District. *Standard Specifications for Water Distribution System Construction*, July 2008.

CHAPTER 3
Environmental Setting, Impacts, and Mitigation Measures

This Draft PEIR is prepared in accordance with CEQA (California Public Resources Code, Section 21000 et seq.), the *CEQA Guidelines* (California Code of Regulations, Title 14, Section 15000 et seq.), and applicable rules and regulations of regional and local entities. This Draft PEIR evaluates the potential environmental impacts associated with the construction and operation of the SWRP Recommended Strategy or proposed project. This Draft PEIR is intended to serve as an informational document for the public agency decision-makers and the public regarding the proposed project.

Scope of the Environmental Impact Analysis

In accordance with Section 15126 of the *CEQA Guidelines*, Chapter 3 provides an analysis of the direct and indirect environmental effects of the proposed project with respect to existing conditions at the time the Notice of Preparation (NOP) was published (**Appendix A**). The determination of whether an impact is significant has been made based on the physical conditions established at the time the NOP was published (*CEQA Guidelines*, Section 15125(a)). The proposed project consists of management strategies and implementation actions that would require construction of various water facilities and infrastructure. The specific locations and design elements of these facilities have yet to be finalized. As such, the proposed project is evaluated in this PEIR at a programmatic level, in accordance with *CEQA Guidelines*, Section 15168. As previously stated in Chapter 1, the PEIR analysis is not intended to focus on the site-specific construction and operation details of each management strategy and project included in the SWRP. Rather, this PEIR serves as a first-tier environmental document that focuses on the effects of implementing the overall SWRP as a plan to provide reliable water supply for future demand.

The following environmental resources are assessed in this chapter in accordance with Appendix G of the *CEQA Guidelines:*

- Aesthetics
- Air Quality and Greenhouse Gas Emissions
- Biological Resources
- Cultural Resources
- Geology, Soils and Seismicity

- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use, Agriculture and Forestry Resources
- Noise and Vibration
- Recreation
- Traffic and Transportation
- Utilities and Public Services

The cumulative environmental effects associated with the proposed project are discussed separately in **Chapter 4, Cumulative Impacts**.

The proposed project would have no impact on Population and Housing, and therefore an assessment of project impacts on Population and Housing is not included in Chapter 3. The proposed project does not propose new homes or businesses that would directly induce population growth to the area. The proposed project would not displace substantial numbers of existing houses or people and would not necessitate construction of replacement housing. The potential for the proposed project to induce population growth indirectly is discussed in **Chapter 5, Growth Inducement**.

Format of the Environmental Analysis

Implementation actions associated with the Recommended Strategy are identified in the SWRP to achieve the goals and objectives of increasing water supplies in the District's service area. These actions would require the construction of various water facilities and infrastructure as outlined in **Table 3-1**. Environmental analysis will include discussion of potential construction and operational impacts associated with these proposed facilities at a programmatic level. The exact timing, locations, and design of some facilities are not known at this time, with the exception of the proposed treatment plant location (Implementation Action 6), grade control structure (Implementation Action 4), and facilities associated with the Recycled Water Master Plan (Implementation Actions 2 and 3). The conservation component of the SWRP (Implementation Action 5) involves policy-only actions and would not result in ground-disturbing activities.

Each environmental resource section includes the following subsections:

- Environmental Setting
- Regulatory Framework
- Impacts and Mitigation Measures

Environmental Setting

According to Section 15125(a) of the *CEQA Guidelines*, an EIR must include a description of the existing physical environmental conditions in the vicinity of the proposed project to provide the "baseline condition" against which project-related impacts are compared. Normally, the baseline condition is the physical condition that exists when the NOP is published. The NOP for the

TABLE 3-1
PROPOSED FACILITIES ASSOCIATED WITH RECOMMENDED STRATEGY IMPLEMENTATION ACTIONS

	Implementation Action No.								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Aqueduct Turnouts • *Above-grade electrical panels* • *Pumping equipment* • *Exposed piping* • *Height: Single-story building (15 ft. or less)* • *Footprint: ranges 500 - 3,000 sq. ft. (depending on capacity)*	x								
Conveyance Pipelines • *Various linear lengths of distribution pipes and laterals* • *Above and/or below-ground* • *Pipeline diameter: ~8-in. – 16-in.* • *Lateral diameter: ~4-in. – 12-in.*	x	x	x			x	x	x	x
Pump Stations • *Above-ground pumping equipment* • *Above/below-ground piping* • *Size: ~100 – 300 horsepower* • *Footprint: ~3 acres*	x	x	x			x	x		
Storage Tanks/Ponds • *Above-ground constructed steel tank* • *Capacity: ~1.0 – 2.0 million gallons* • *Height: ~30 – 40 ft. (diameter ~150 - 200 ft.)* • *Footprint: ~3 acres*	x	x	x				x	x	
Recharge Facilities • *Flat earthen excavations* • *Network of piping, earthen berms, flow vaults, other flow control structures* • *Footprint: ranges 100 acres – 600 acres of recharge basins (up to 35,000 acre feet per year capacity by year 2035)*						x			x
Production Wells/ASR Wells/Injection Wells/Extraction Wells • *Submersible turbine or open lineshaft well pumps, wellheads* • *Disinfection facilities, decholorination facility* • *Above/below-ground piping, electrical control equipment* • *Height: Single-story building (10-15 ft.)* • *Footprint: ~900 - 2,500 sq. ft. (depending on capacity)*							x	x	
Grade Control Structure • *Earthen, wooden, or concrete stabilizing structure* • *Height: ~15 feet or less*				x					
Treatment Plant • *Treatment facilities, residuals facility, oxidation ditches, influent pumps, secondary clarifiers* • *Height: Single-story(15-20 ft)* • *Footrprint:~20-30 acres*	x					x			

SOURCE: RMC, *Strategic Water Resources Plan Final Report*. March 2010; RMC, *Conceptual Design TM for EIR, Palmdale Water District Strategic Water Resources Plan*, September 15, 2010.

proposed project was published in October 2010, which is considered the baseline for the analysis contained in this PEIR (**Appendix A**).

Regulatory Framework

The Regulatory Framework provides a summary of regulations, plans, policies, and laws that are relevant to each issue area at the federal, state, and local levels.

Impacts and Mitigation Measures

The Impacts and Mitigation Measures subsection describes the potential environmental impacts of the proposed project and, based upon the thresholds of significance, concludes whether the environmental impacts would be considered significant, potentially significant, or less than significant. Each resource that is analyzed is divided into issues, based on potential impacts. Each issue is addressed in its own subsection and mitigation measures are also included and discussed when applicable.

Significance Criteria

Significance criteria have been developed for each environmental resource in accordance with Appendix G of the *CEQA Guidelines* and are defined at the beginning of each impact analysis section. Impacts are categorized as follows:

- **Significant and Unavoidable:** mitigation might be recommended but impacts are still significant;
- **Potentially Significant:** mitigation might be recommended but impacts are potentially significant at the programmatic level;
- **Less than Significant with Mitigation:** potentially significant impact but mitigated to a less-than-significant level;
- **Less than Significant:** mitigation is not required under CEQA but may be recommended; or
- **No Impact**.

References

Sources relied upon for each environmental topic analyzed in this document are provided at the end of each section.

3.1 Aesthetics

This section addresses the aesthetic and visual impacts associated with implementation of the proposed project, which would include the construction and operation of water storage, conveyance, and treatment facilities (see Table 3-1). This section includes a description of existing visual resources and aesthetic conditions in the project area and an evaluation of potential effects on visual resources, including scenic vistas and views, and on the visual character of project sites and surrounding areas that would support aboveground facilities.

3.1.1 Environmental Setting

Regional Setting

Visual resources consist of natural landscapes and scenic views, including landforms, vegetation, and water features, as well as unique elements of the built environment. The proposed project would be located in the Antelope Valley in northern Los Angeles County. The topography of the Antelope Valley provides scenic views from various public vantage points. Key regional visual resources include the San Gabriel Mountains to the southwest, Tehachapi Mountains to the northwest, the extensive flatlands of the Mojave Desert, and the hills and buttes of San Bernardino County. The general aesthetic and visual character of the project area consist of an expansive desert horizon and sparsely inhabited landscape with views of the surrounding Tehachapi and San Gabriel Mountain ranges. The urbanized aesthetic and visual character of the project area is defined by development within the City of Palmdale and the City of Lancaster and some communities in unincorporated Los Angeles County, such as Littlerock and Alpine. The built environment is dominated by low-lying residential, industrial and commercial buildings with local views of the surrounding buttes and panoramas of the San Gabriel Mountains and desert expanses.

Project Area

The project area is characterized primarily by residential land uses interspersed among open space, and distant mountain vistas. Specifically, the Palmdale area is characterized by three distinct landscape types: mountainous areas, open space landforms of the desert slope and rift zone of the San Andreas Fault, and high desert plain, buttes, and alkali sinks (City of Palmdale, 1993). Vegetation is typical of the western Mojave Desert that includes creosote and desert shrubs with some portions of the valley containing large stands of Joshua Trees. The perimeter of the valley includes low brush covered hills that transition into the Tehachapi Mountains and San Gabriel Mountains to the west and south. The project area has views of the Tehachapi Mountains to the northwest and the San Gabriel Mountains to the south from various public vantage points and roadways. In the City of Palmdale, the Lamon Odett Vista Point, just off the Antelope Valley Freeway, provides a view of Lake Palmdale and the city (City of Palmdale, 1993). Views from the mountains capture the project area's natural and built-up landscape characterized by residential land uses and open space. Residential lots are a mix of planned communities with uniform architectural characteristics and typical ranch-style homes. This is a unique feature of the

desert communities that can be viewed regionally and locally within the project area from the surrounding mountains.

The Recommended Strategy includes pumps stations, storage tanks/ponds, and pipelines in locations to be determined throughout the project area. The locations of other project components have been generally located in areas identified in Figure 2-1. The visual character of these areas is as follows:

Recharge Areas

- Upper and Lower Littlerock Creek is characterized by Littlerock Wash within a large expanse of open space and views of residences in the immediate vicinity.
- Lower Amargosa Creek and Anaverde Creek are two other recharge sites characterized by open space and desert vegetation with low-density residential community lots and commercial buildings.
- Anaverde Creek recharge area is located adjacent to an established residential community lot to the east and a commercial auto dealership to the west.

ASR Wells

- North well field area is characterized by urbanized developments with open spaces providing a separation from developments such as the Palmdale airport located to the north. The north well field area is generally located near residential developments to the south but is primarily dominated by the open space desert landscape.
- East well field area is characterized by residential development with some vacant land and open space around the outer edges of the well field area.

Production Wells

- Production wells generally would be located (1) west of recharge areas on Littlerock Creek, primarily within open space washes and agricultural areas. The associated stream beds, flood plains and alluvial fans of this area are mined for sand aggregate. Mining activities are located toward the southwestern edge of the well field area; (2) in the vicinity of the Lower Amargosa recharge area, characterized by open space and desert vegetation with low-density residential community lots; and (3) in and around the Air Force Plant 42 and Palmdale Regional Airport property.

Treatment Plant

- The proposed water treatment plant is located adjacent to the California Aqueduct and residential properties. The site is characterized by desert vegetation scrubs and Joshua trees.

Grade Control Structure

- The proposed grade control structure would be located within Littlerock Reservoir, which is a man-made feature on Littlerock Creek formed by the impoundment of water behind Littlerock Dam. The Reservoir is located in the San Gabriel Mountains within Angeles National Forest. Littlerock Creek is an intermittent stream, and as such the water surface elevation of the Reservoir fluctuations annually based on precipitation conditions. During the dry season, the site of the proposed grade control structure is characterized by the uniform dirt surface of the Reservoir bottom, surrounded by rolling hills and trees, with picnic kiosks located nearby associated with Rocky Point.

3.1.2 Regulatory Framework

State

State Scenic Highway Program

In 1963, the California legislature created the Scenic Highway Program to protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to the highways. The state regulations and guidelines governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. A highway is designated under this program when a local jurisdiction adopts a scenic corridor protection program, applies to the California Department of Transportation (Caltrans) for scenic highway approval, and receives notification from Caltrans that the highway has been designated as a Scenic Highway. When a city or county nominates an eligible scenic highway for official designation, it defines the scenic corridor, which is land generally adjacent to and visible to a motorist on the highway. There are no officially-designated State scenic highways or eligible State scenic highways within the project area (Caltrans, 2010).

Local

County of Los Angeles General Plan

The following policy within the Conservation and Open Space Element of the County of Los Angeles General Plan is related to scenic resources:

> **Policy 16:** Protect the visual quality of scenic areas including ridge-lines and scenic views from public roads, trails, and key vantage points.

City of Palmdale Hillside Management Zoning Ordinance

The Palmdale Hillside Management Zoning Ordinance was designed to help maintain the visual, open space, and recreational amenities provided by hillside areas bordering the city. The ordinance protects against insensitive development and contains standards which apply to areas with a natural slope of ten percent or more. The standards were designed to preserve open space, natural grades, scenic views, and visually prominent landforms.

> **Section 100.18D:** Development is sited in a manner that substantially retains the visual qualities and natural elevations of the significant ridgelines and prominent landforms

forming the City's skyline backdrop, as defined in this Article, and preserves those portions of the ridgelines visible from the Antelope Valley floor, or adjacent valleys, as a scenic skyline backdrop to the City.

City of Palmdale General Plan

The Environmental Resources section of the City of Palmdale General Plan (City of Palmdale, 1993) governs the aesthetic resources of the city. The City of Palmdale General Plan policy that is related to scenic resources is as follows:

> **Policy ER1.2.2:** The following roadways are designated as City scenic highways. Apply special design standards for projects adjacent to these highways (as contained in the implementation section) in order to protect their scenic qualities. (*General Plan Amendment 98-3, adopted by City Council June 10, 1998.*)
>
> - Barrel Springs Road
> - Tierra Subida Highway
> - Sierra Highway, South of Avenue S
> - Elizabeth Lake Road
> - Pearblossom Highway
> - Bouquet Canyon Road
> - Godde Hill Road
> - Antelope Valley Freeway, south of Rayburn Road
>
> **Policy ER1.2.3:** Encourage all new development along scenic highways to maintain sufficient spacing between buildings, perimeter walls and large growing vegetation in order to maintain scenic view corridors of hillsides and open space to the maximum extent feasible. (*General Plan Amendment 04-01, adopted by City Council April 14, 2004.*)

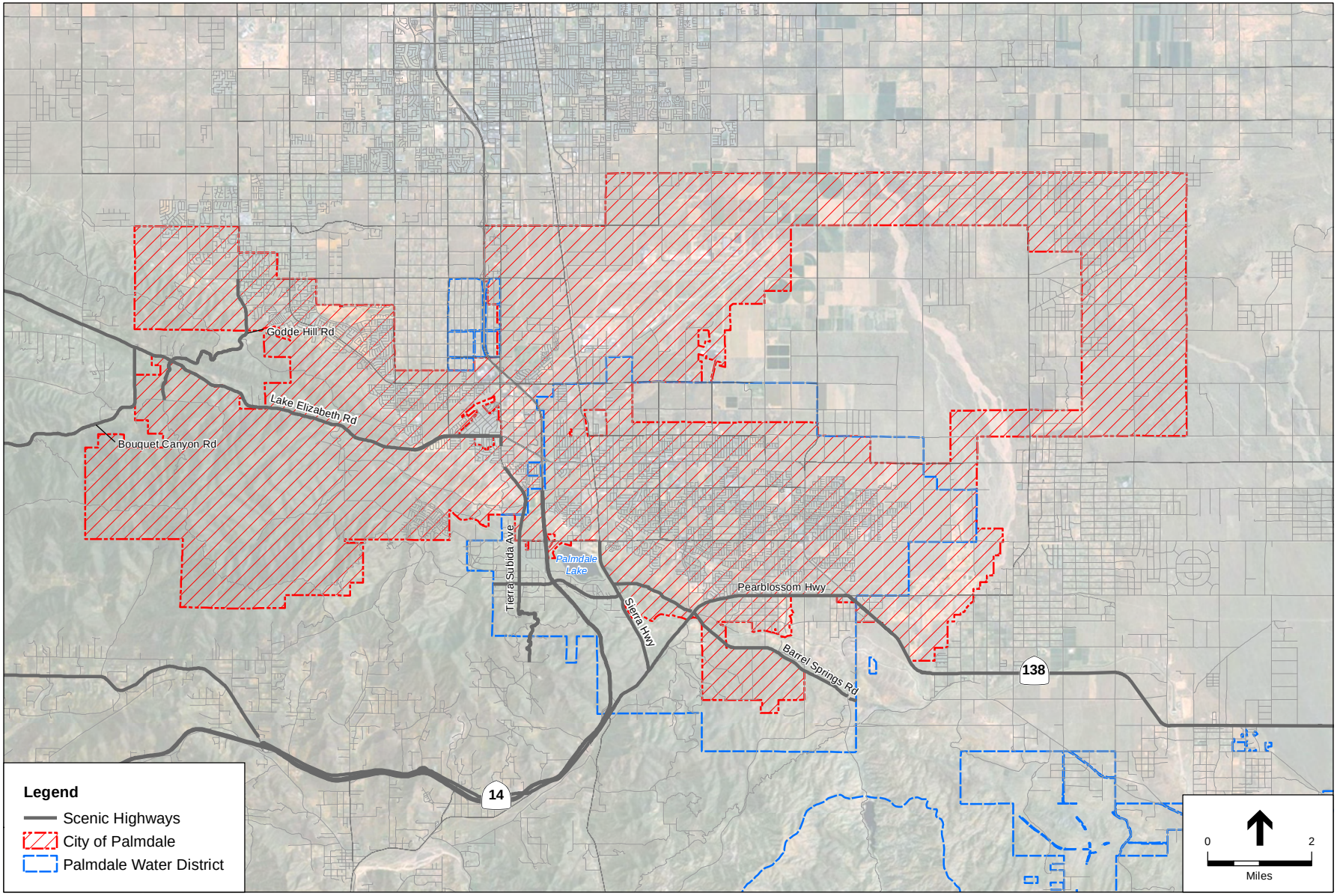
Sierra Highway south of Avenue S, Antelope Valley Freeway (SR 14) south of Rayburn Road, and Pearblossom Highway (SR 138) are City-designated scenic highways that traverse the project area, as shown in **Figure 3.1-1**. Potential impacts associated with scenic views from these highways are analyzed below.

3.1.3 Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the significance of impacts related to aesthetics are based on Appendix G of the *CEQA Guidelines*. The proposed project would result in a significant impact to aesthetics if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or



SOURCE: City of Palmdale General Plan, 1993. ESA, 2011.

Palmdale Water District SWRP . 210170

Figure 3.1-1

City-Designated Scenic Highways

- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Impacts Discussion

State Scenic Highways

There are no officially-designated State scenic highways or eligible State scenic highways within the project area (Caltrans, 2010). Therefore, the project would not impact scenic resources within a State scenic highway corridor. There would be no impact.

Scenic Vistas

Impact 3.1-1: The proposed recharge facilities, production wells, and treatment plant could have a substantial adverse effect on a scenic vista. (Less than Significant with Mitigation)

The Recommended Strategy would provide increased water supply reliability and redundancy by increasing the availability of various sources of water. Implementation of actions under this strategy would require the construction of various aboveground facilities and support infrastructure that include but are not limited to storage tanks, recharge facilities, wells, pump stations, and a treatment plant. With the exception of the facilities associated with the Recycled Water Master Plan, the specific locations and design for the proposed facilities are not established at this time and are therefore evaluated programmatically. Based on the conceptual layout for these future water facilities and typical sizing for such facilities, the proposed project may potentially affect scenic vistas.

Recharge Areas

Construction of recharge facilities currently proposed in areas east of State Route 14, within the Lower Amargosa Creek and along Anaverde Creek, could result in potentially significant impacts to scenic views from publically accessible areas along Sierra Highway, a City-designated scenic highway. While the recharge basins are typically flat, earthen excavations, there may be ancillary facilities associated with the basins that could obstruct views of the distant vistas. Implementation of **Mitigation Measure AES-1** would require landscaping and revegetation of recharge basin berms and vegetation screening for ancillary facilities to reduce impacts to less than significant levels

Conveyance pipelines

Construction of conveyance pipelines would require temporary ground-disturbance but would be anticipated to be located underground and not visible once construction is complete. Pipelines would therefore not affect views from publically-accessible vantage points. Impacts to scenic vistas as a result of the construction and operation of pipelines would be less than significant.

ASR Wells / Production Wells

The proposed ASR and productions wells would generally be housed within single-story buildings, with heights of 10 to 15 feet. The proposed locations of future ASR wells in the north well field would be in an area sparsely developed with commercial, industrial, and business park buildings. Future ASR wells in the east well field would be located in and around residential areas or adjacent open spaces. Although these wells would be visible from public vantage points, the well housing likely would be located in areas that generally are flat, proximate to land already developed, and not expected to obstruct scenic vistas. ASR well housing would not be visible from any City–designated scenic roadways. Impacts would be less than significant.

In general, production wells would be located in more open space areas, including the flood plain and alluvial fans of Littlerock Creek and Lower Amargosa Creek and the vacant lands in and around Air Force Plant 42 and Palmdale Regional Airport. Production well housing in the southern portion of Littlerock Creek could be visible from Pearblossom Highway (SR-138) and other production wells would be visible from various public vantage points. Production wells have the potential to obstruct scenic vistas and views, depending on location and the well housing design and sizing. The final design of the recharge facilities is not yet determined and could exceed significant thresholds for aesthetic resources relating to the obstruction of scenic vistas. Therefore, impacts are potentially significant. Implementation of **Mitigation Measure AES-1** would require a landscape plan for production wells to screen facilities from public view and reduce impacts to less than significant levels. Implementation of **Mitigation Measure AES-2** and **AES-3** would require aboveground buildings to be designed to minimize contrasting features and blend with the surrounding landscape. Impacts would be less than significant with mitigation.

Treatment Plant

The proposed treatment plant would be located on District-owned property in the southern portion of the service area, south of Avenue T-8 and west of 47th Street East. Typical sizing for treatment facilities is estimated as single-story facilities, between 15 to 20 feet tall, with a footprint that covers a range from 20 to 30 acres. Associated ancillary facilities (i.e., residuals facility, oxidation ditches, influent pumps, secondary clarifiers) are typically no more than 15 feet tall and would all appear as light industrial facilities on the property. The proposed treatment plant location would be visible by adjacent ranch-style homes to the east and west.

The treatment plant would be the largest structure to be constructed and could result in potentially significant impacts to scenic vistas. Specifically, the structures would appear substantially different than the existing open space land uses currently in the area and could potentially obstruct views of the surrounding landscape, including distant views of the San Gabriel Mountains and Tehachapi Mountains. The proposed treatment plant could obstruct views of the San Gabriel Mountains when viewed from Pearblossom Highway, a City-designated scenic highway, located north of the proposed location of the plant. Implementation of **Mitigation Measure AES-1** would require a landscape plan for the treatment plant to screen facilities from public view and reduce impacts to less than significant levels. Implementation of **Mitigation Measure AES-2** and **AES-3** would require the treatment plant buildings/structures to be designed

to minimize contrasting features and blend with the surrounding landscape. Impacts would be less than significant with mitigation.

Grade Control Structure

The proposed grade control structure would be built within Littlerock Reservoir in Angeles National Forest. The grade control structure would be flush with the ground surface of the Reservoir bottom and would not obstruct scenic vistas or views of surrounding hillsides..

Mitigation Measures

AES-1: During project design, a landscape plan shall be prepared for proposed recharge basins, production wells, and the treatment plant that affect scenic vistas and/or are visible from scenic roadways. The landscape plan shall include measures to restore disturbed areas by replanting trees and/or reseeding with a native seed mix typical of the surrounding area. Vegetation screening shall also be included in order to assist in shielding the proposed aboveground facilities from public vantage points.

AES-2: Aboveground buildings/structures shall be designed to have similar aesthetic qualities to existing structures in the vicinity to minimize contrasting features in the visual landscape.

AES-3: Aboveground buildings/structures shall be designed to have color palettes and vegetation screening as necessary to blend with the surrounding character of the site and to minimize contrasting features in the visual landscape.

Significance after Mitigation: Less than significant

Visual Character

Impact 3.1-2: The proposed aboveground facilities located in open space areas could degrade the existing visual character or quality of the sites and their surroundings. (Less than Significant with Mitigation)

Construction activities would result in short-term impacts to aesthetic resources. Construction activities would require the use of construction equipment and storage of materials onsite at various sites for project components. Excavated areas, stockpiled soils and other materials generated during construction would present negative aesthetic elements to the existing visual landscape. However, these effects would be temporary and therefore not substantially affect the existing visual character of the surrounding area. Impacts would be less than significant.

Some proposed facilities may be constructed in urban areas, such as ASR wells in the north and east well field areas, pipelines, and storage tanks. Any aboveground structures within these urban areas would be constructed on or adjacent to existing developed and built-up landscapes. Therefore, there would be no impact to the visual character within these urban areas.

Some above-ground facilities may be constructed in open space areas (e.g., aqueduct turnouts, recharge areas, treatment plant, production wells west of Littlerock Creek, pump stations, storage tanks). Such facilities may contrast with the visual character of open space areas and potentially remove desert vegetation that is a notable characteristic of the area. **Mitigation Measures AES-1, AES-2,** and **AES-3** would reduce impacts to the visual character to a less than significant level by incorporating unique design features for above-ground facilities that would blend structures with the surrounding landscape. Impacts would be less than significant with mitigation.

The proposed grade control structure would be constructed within Angeles National Forest, The grade control structure would be flush with the ground surface of the Reservoir bottom. The grade control structure would be submerged by water for a large percentage of the year and not visible. During the dry season, the proposed structure would be visible only to visitors of the Reservoir but would not substantially change the visual character of the otherwise exposed and visible dirt bottom. Impacts would be less than significant.

Mitigation Measures

Implementation of **Mitigation Measures AES-1, AES-2,** and **AES-3**.

Significance after Mitigation: Less than significant

Light and Glare

Impact 3.1-3: The proposed aboveground facilities could create new sources of lighting that could affect nighttime views in the areas. (Less than Significant with Mitigation)

A significant impact would occur if the proposed project caused a substantial increase in ambient light levels near light-sensitive land uses such as residential and natural/open space areas. Visible nighttime lighting would be limited to the exterior of the proposed aboveground water facilities. Implementation of **Mitigation Measure AES-4** would require any permanent lighting on buildings/structures to be shielded and directed downward to avoid light intrusion onto surrounding oand uses. Lighting impacts from operation or for security purposes would therefore be reduced to a less than significant level.

Security lighting used during the construction phase of the proposed project may introduce new sources of light and glare to the existing views of the area. Nighttime construction, such as 24-hour drilling required during construction of new wells, would cause a potentially significant impact. However, with implementation of **Mitigation Measure AES-5**, nighttime construction lighting would be shielded and pointed away from surrounding light-sensitive land uses. As a result, impacts associated with light and glare during construction activities would be reduced to a less than significant level.

The proposed future treatment plant would be located on District-owned property, south of Avenue T-8 and west of 47th Street East. Aside from the proposed treatment plant, other proposed

facilities would not include aboveground structures that would include large uninterrupted expanses of glass or other highly-reflective construction material. Recharge basins are relatively flat, earthen excavations that are surrounded by earthen berms. The surface water within the basins would not be visible from any neighboring property. However, the potential for glare from recharge spreading facilities containing surface water to affect specific residences and/or view sheds for short periods of time is low and would not substantially change the existing conditions. Implementation of **Mitigation Measure AES-6** would ensure the treatment plant is designed to minimize glare or reflection, including non-glare exterior materials or coatings. Impacts would be less than significant with mitigation.

The County of Los Angeles does not have an outdoor nighttime lighting ordinance; however, on December 14, 2010, the County of Los Angeles Board of Supervisors approved a motion to prepare an ordinance that would establish a "rural lighting" zoning overlay to manage and preserve the natural darkness of night skies for residents of the County's rural areas (County, 2011). Implementation of **Mitigation Measure AES-7** would ensure any future development associated with the proposed project complies with existing and future lighting ordinances... Implementation of the above mitigation measures would ensure proposed project impacts associated with light or glare are reduced to a less than significant level.

Mitigation Measures

AES-4: All new permanent exterior lighting associated with proposed project components shall be shielded and directed downward to avoid any light intrusion to surrounding uses.

AES-5: Lighting used during nighttime construction, including any associated 24-hour well drilling, shall be shielded and pointed away from surrounding light-sensitive land uses.

AES-6: The proposed treatment plant shall be designed to include non-glare exterior materials and coatings to minimize glare or reflection.

AES-7: Development of the proposed project and associated facilities shall comply with existing and future lighting ordinances.

Significance after Mitigation: Less than significant

References – Aesthetics

City of Palmdale, General Plan, adopted January 25, 1993.

City of Palmdale, Zoning Ordinance, *Hillside Management*, adopted December 14, 1994, last amended August 2010.

California Department of Transportation (Caltrans), Eligible and Officially Designated Routes, accessed at http://www.dot.ca.gov/hq/LandArch/scenic/cahisys.htm, December 3, 2010.

California Department of Transportation (Caltrans), Officially Designated State Scenic Highways, accessed at http://www.dot.ca.gov/hq/LandArch/scenic/schwy.htm, December 3, 2010.

California Highways, County Route N-3 Angeles Forest Highway, accessed at www.cahighways.org/countyn.html, January 5, 2011.

County of Los Angeles Board of Supervisors (County), Statement of Proceedings, Tuesday, December 14, 2010, accessed at: http://portal.lacounty.gov/wps/portal/sop/, January 10, 2011.

3.2 Air Quality and Greenhouse Gas Emissions

This section provides an overview of existing air quality conditions within the proposed project area and surrounding region, regulatory framework applicable to air pollutant emissions, and an analysis of potential air quality impacts that would result from implementation of the proposed project.

3.2.1 Environmental Setting

Climate and Meteorology

The primary factors that determine air quality are the locations of air pollutant sources and the amounts of pollutants emitted. Meteorological and topographical conditions, however, are also important. Factors such as wind speed and direction, and air temperature gradients interact with physical landscape features to determine the movement and dispersal of criteria air pollutants.

The proposed project is located in the western portion of the Mojave Desert Air Basin (MDAB.) The Antelope Valley Air Quality Management District (AVAQMD) is the local air district with jurisdiction over air pollution sources in the City of Palmdale. The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains which dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north; air masses pushed onshore in Southern California by differential heating are channeled through the MDAB. The MDAB is separated from the southern California coastal and central California Valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses. Antelope Valley is bordered on the northwest by the Tehachapi Mountains, separated from the Sierra Nevada Mountains to the north by the Tehachapi Pass (3,800 foot elevation). The Antelope Valley is bordered to the south by the San Gabriel Mountains, bisected by Soledad Canyon (3,300 foot elevation).

During the summer, the MDAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. The MDAB averages between three and seven inches of precipitation per year. The MDAB is classified as a dry-hot desert climate, with portions classified as dry-very hot desert, to indicate at least three months have maximum average temperatures over 100.4° F.

Existing Conditions

The AVAQMD maintains monitoring stations within the City of Lancaster that monitor air quality and compliance with associated ambient standards. The closest station to the proposed project site is at 43301 Division Street. The following pollutants are monitored at this station: ozone (O_3), particulate matter less than 10 and less than 2.5 microns (PM10 and PM2.5, respectively). The most recent published data for the monitoring station are presented in

Table 3.2-1. In addition, air pollutants of interest to the regulatory agencies for their potential adverse impacts on sensitive receptors are described below.

TABLE 3.2-1
AIR QUALITY DATA SUMMARY (2007–2009)

		Monitoring Data by Year		
Pollutant	**Standard**[a]	**2007**	**2008**	**2009**
Ozone– 43301 Division Street				
Highest 1 Hour Average (ppm)[b]		**0.118**	**0.116**	**0.112**
Days over State Standard	0.09	16	18	22
Highest 8 Hour Average (ppm)[b]		**0.101**	**0.102**	**0.102**
Days over National Standard	0.075	42	34	44
Days over State Standard	0.070	63	59	70
Particulate Matter (PM10) – 43301 Division Street				
Highest 24 Hour Average ($\mu g/m^3$)[b] – State Measurement		**181**	**70**	**56**
Est. Days over State Standard[c]	50	3	1	1
Highest 24 Hour Average ($\mu g/m^3$)[b] – National Measurement		**188**	73	60
Est. Days over National Standard[c]	150	1	0	0
State Annual Average ($\mu g/m^3$)[b]	20	**28.3**	NA	NA
Particulate Matter (PM2.5) – 43301 Division Street				
Highest 24 Hour Average ($\mu g/m^3$)[b]		25	24	20
Est. Days over National Standard[c]	35	0	NA	0
State Annual Average ($\mu g/m^3$)[b]	12	8	NA	7.8

a Generally, state standards and national standards are not to be exceeded more than once per year.
b ppm = parts per million; μg/m3 = micrograms per cubic meter.
c PM10 and PM2.5 are not measured every day of the year. Number of estimated days over the standard is based on 365 days per year.

Values in **bold** are in excess of at least one applicable standard. NA = Not Available.

SOURCE: California Air Resources Board, 2010a. *Summaries of Air Quality Data*, 2007 through 2009; http://www.arb.ca.gov/adam/cgi-bin/db2www/polltrendsb.d2w/start

Criteria Air Pollutants

Criteria air pollutants are those pollutants for which standards have been established to meet specific public health and welfare criteria set forth in the Federal Clean Air Act (FCAA). California has adopted more stringent ambient air quality standards for the criteria air pollutants (referred to as State Ambient Air Quality Standards, or state standards) and has adopted air quality standards for some pollutants for which there is no corresponding national standard.

Ozone. Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NOx). ROG and NOx are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NOx under the influence of wind and sunlight.

Carbon Monoxide. Ambient CO concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence carbon monoxide concentrations. Under inversion conditions, CO concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses.

CO concentrations have declined dramatically in California due to existing controls and programs and most areas of the state including the proposed project region have no problem meeting the carbon monoxide state and federal standards. CO measurements and modeling were important in the early 1980's when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, fewer emissions from new vehicles and improvements in fuels. The clear success in reducing CO levels is evident in the first paragraph of the executive summary of the California Air Resources Board *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas* (CARB, 2004), shown below:

> "The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (CARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the State designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard."

Respirable Particulate Matter (PM10 and PM2.5). PM10 and PM2.5 consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. (A micron is one-millionth of a meter). PM10 and PM2.5 represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility. Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a health hazard. The remaining fraction, PM10 and PM2.5, are a health concern particularly at levels above the federal and state ambient air quality standards. PM2.5 (including diesel exhaust particles) is thought to have greater effects on health, because these particles are so small and thus, are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Recent studies have shown an association between morbidity and

mortality and daily concentrations of particulate matter in the air. Children are more susceptible to the health risks of PM10 and PM2.5 because their immune and respiratory systems are still developing.

Mortality studies since the 1990s have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge and continued reasons for some skepticism, a comprehensive evaluation of the research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health (Dockery and Pope, 2006). The CARB has estimated that achieving the ambient air quality standards for PM10 could reduce premature mortality rates by 6,500 cases per year (CARB, 2002).

Nitrogen Dioxide (NO_2). NO_2 is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, nitrogen dioxide can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Sulfur dioxide (SO_2). SO_2 is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. SO_2 is also a precursor to the formation of atmospheric sulfate, particulate matter and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain. The maximum SO_2 concentrations recorded in the proposed project area are well below federal and state standards. Accordingly, the region is in attainment status with both federal and state SO_2 standards.

Lead. Ambient lead concentrations meet both the federal and state standards in the proposed project area. Lead has a range of adverse neurotoxin health effects, and was formerly released into the atmosphere primarily via leaded gasoline products. The phase-out of leaded gasoline in California resulted in decreasing levels of atmospheric lead. The proposed project would not introduce any new sources of lead emissions; consequently, lead emissions are not required to be quantified and are not further evaluated in this analysis.

Non-Criteria Air Pollutants

Toxic Air Contaminants

Non-criteria air pollutants or toxic air contaminants (TACs) are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes approximately 200 compounds, including particulate emissions from diesel-fueled engines.

Odorous Emissions

Though offensive odors from stationary sources rarely cause any physical harm, they still remain unpleasant and can lead to public distress generating citizen complaints to local governments. The occurrence and severity of odor impacts depend on the nature, frequency and intensity of the source; wind speed and direction; and the sensitivity of receptors. Generally, increasing the distance between the receptor and the source will mitigate odor impacts.

Greenhouse Gases

Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere, similar to a greenhouse. The accumulation of GHGs has been implicated as a driving force for Global Climate Change. Definitions of climate change vary between and across regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and the impact of human activities that alter the composition of the global atmosphere. Global Climate Change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation and temperature. Although there is disagreement as to the speed of global warming and the extent of the impacts attributable to human activities, the vast majority of the scientific community now agrees that there is a direct link between increased emission of GHGs and long term global temperature. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. Both natural processes and human activities emit GHGs.

GHGs include but are not limited to carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (California Health and Safety Code section 38505(g)). CO_2 is the reference gas for climate change because it gets the most attention and is considered the most important greenhouse gas. To account for the warming potential of different GHGs, GHG emissions are quantified and reported as CO_2 equivalents (CO_2e). The effects of GHG emission sources (i.e., individual projects) are reported in metric tons/year of CO_2e.

Sensitive Receptors

Land uses such as schools, hospitals, and convalescent homes are considered to be sensitive to poor air quality conditions because infants, children, the elderly, and people with health afflictions (especially respiratory ailments) are more susceptible to respiratory infections and other air-quality-related health problems than the general public. Residential areas are also considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Sensitive land uses are located throughout the proposed project area including numerous residences, schools, and hospitals. As implementation of the proposed project is conducted, the nearest project-specific sensitive receptors would be identified.

3.2.2 Regulatory Framework

Regulation of air pollution is achieved through both national and state ambient air quality standards and through emissions limits on individual sources of air pollutants. Local air quality management districts (AQMDs) and air pollution control districts (APCDs) are responsible for demonstrating attainment with state air quality standards through the adoption and enforcement of Attainment Plans.

Federal

The FCAA requires the U.S. Environmental Protection Agency (EPA) to identify National Ambient Air Quality Standards (NAAQS, or national standards) to protect public health and welfare. National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, respirable particulate matter (PM10 and PM2.5), and lead. These pollutants are called "criteria" air pollutants because standards have been established for each of them to meet specific public health and welfare criteria set forth in the FCAA. California has adopted more stringent ambient air quality standards for the criteria air pollutants (referred to as State Ambient Air Quality Standards, or state standards) and has adopted air quality standards for some pollutants for which there is no corresponding national standard. **Table 3.2-2** presents current national and state ambient air quality standards and provides a brief discussion of the related health effects and principal sources for each pollutant.

Pursuant to the 1990 Federal Clean Air Act Amendments (FCAAA), the EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the NAAQS had been achieved. **Table 3.2-3** shows the current attainment status of the proposed project area.

The FCAA required each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The FCAA added requirements for states containing areas that violate the NAAQS to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The EPA has responsibility to review all state SIPs to determine if they conform to the mandates of the FCAA and will achieve air quality goals when implemented. If the EPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan (FIP) for the nonattainment area and may impose additional control measures. Failure to submit an approvable SIP or to implement the plan within mandated timeframes can result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

Regulation of TACs, termed Hazardous Air Pollutants (HAPs) under federal regulations, is achieved through federal, State and local controls on individual sources. The 1977 Clean Air Act Amendments required the U.S. EPA to identify National Emission Standards for Hazardous Air Pollutants (NESHAPs) to protect public health and welfare. These substances include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. There is uncertainty in the precise degree of hazard.

TABLE 3.2-2
STATE AND NATIONAL CRITERIA AIR POLLUTANT STANDARDS, EFFECTS, AND SOURCES

Pollutant	Averaging Time	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone	1 hour 8 hours	0.09 ppm 0.07 ppm	--- 0.075 ppm	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when reactive organic gases (ROG) and nitrogen oxides (NOx) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
Carbon Monoxide	1 hour 8 hours	20 ppm 9.0 ppm	35 ppm 9 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
Nitrogen Dioxide	1 hour Annual Avg.	0.18 ppm 0.030	0.100 ppm 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
Sulfur Dioxide	1 hour 3 hours 24 hours Annual Avg.	0.25 ppm --- 0.04 ppm ---	0.75 ppb 0.5 ppm --- 0.03 ppm	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
Respirable Particulate Matter (PM10)	24 hours Annual Avg.	50 μg/m3 20 μg/m3	150 μg/m3 ---	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
Fine Particulate Matter (PM2.5)	24 hours Annual Avg.	--- 12 μg/m3	35 μg/m3 15 μg/m3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.
Lead	Monthly Avg. Quarterly	1.5 μg/m3 ---	--- 1.5 μg/m3	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction.	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations)	Geothermal Power Plants, Petroleum Production and refining
Sulfates	24 hour	25 μg/m3	No National Standard	Breathing difficulties, aggravates asthma, reduced visibility	Produced by the reaction in the air of SO2.
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	No National Standard	Reduces visibility, reduced airport safety, lower real estate value, discourages tourism.	See PM2.5.

ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

SOURCE: California Air Resources Board (CARB), 2010b. *Ambient Air Quality Standards,* available at http://www.arb.ca.gov/research/aaqs/aaqs2.pdf Standards last updated September 8, 2010. California Air Resources Board, 2001. *ARB Fact Sheet: Air Pollution Sources, Effects and Control,* http://www.arb.ca.gov/research/health/fs/fs2/fs2.htm, page last updated December 2005.

TABLE 3.2-3
PALMDALE ATTAINMENT STATUS

	Designation/Classification	
Pollutant	**Federal Standards**	**State Standards**
Ozone – one hour	No Federal Standard	Nonattainment
Ozone – eight hour	Nonattainment	Extreme Nonattainment
PM10	Unclassified	Nonattainment
PM2.5	Unclassified/Attainment	Unclassified
CO	Unclassified/Attainment	Attainment
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Sulfur Dioxide	Unclassified	Attainment
Lead	No Designation	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility-Reducing Particles	No Federal Standard	Unclassified

SOURCES: California Air Resources Board, Area Designations Maps/ State and National. http://www.arb.ca.gov/desig/adm/adm.htm. 2010.

State

The CARB manages air quality, regulates mobile emissions sources, and oversees the activities of county APCDs and regional AQMDs. CARB establishes state ambient air quality standards and vehicle emissions standards.

California has adopted ambient standards that are more stringent than the federal standards for the criteria air pollutants. These are shown in Table 3.2-2. Under the California Clean Air Act (CCAA) patterned after the FCAA, areas have been designated as attainment or nonattainment with respect to the state standards. Table 3.2-3 summarizes the attainment status with California standards in the project vicinity.

Toxic Air Contaminants

The State Air Toxics Program was established in 1983 under Assembly Bill (AB) 1807 (Tanner). A total of 243 substances have been designated TACs under California law; they include the 189 (federal) HAPs adopted in accordance with AB 2728. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions. Toxic air contaminant emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment and, if specific thresholds are violated, are required to communicate the results to the public in the form of notices and public meetings.

In August of 1998, CARB identified particulate emissions from diesel-fueled engines (diesel particulate matter, or DPM) as TACs. CARB subsequently developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (CARB, 2000). The document represents proposals to reduce diesel particulate emissions, with the goal of reducing emissions and associated health risks by 75 percent in 2010 and by 85 percent in 2020. The program

aims to require the use of state-of-the-art catalyzed diesel particulate filters and ultra low sulfur diesel fuel on diesel-fueled engines.

CARB published the *Air Quality and Land Use Handbook: A Community Health Perspective* in 2005 (CARB, 2005). The primary goal in developing the handbook was to provide information that will help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution. The handbook highlights recent studies that have shown that public exposure to air pollution can be substantially elevated near freeways and certain other facilities (i.e., distribution centers, rail yards, chrome platers, etc.). However, the health risk is greatly reduced with distance. For that reason, CARB provided some general recommendations aimed at keeping appropriate distances between sources of air pollution and sensitive land uses, such as residences.

Climate Change and Greenhouse Gases

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of greenhouse gas would be progressively reduced, as follows:

- By 2010, reduce greenhouse gas emissions to 2000 levels;
- By 2020, reduce greenhouse gas emissions to 1990 levels; and
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

Assembly Bill 32 (AB 32). In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), which requires the CARB to design and implement emission limits, regulations, and other measures, such that statewide greenhouse gas emissions will be reduced to 1990 levels by 2020.

In December 2007, CARB approved the 2020 emission limit of 427 million metric tons of CO_2 equivalents of greenhouse gases. The 2020 target of 427 million metric tons of CO_2e requires the reduction of 169 million metric tons of CO_2e, or approximately 30 percent, from the state's projected 2020 emissions of 596 million metric tons of CO_2e (business-as-usual).

Also in December 2007, CARB adopted mandatory reporting and verification regulations pursuant to AB 32. The regulations became effective on January 1, 2009, with the first reports covering 2008 emissions. The mandatory reporting regulations require reporting for certain types of facilities that make up the bulk of the stationary source emissions in California. Currently, the draft regulation language identifies major facilities as those that generate more than 25,000 metric tons/year of CO_2e. Cement plants, oil refineries, electric-generating facilities/providers, cogeneration facilities, and hydrogen plants and other stationary combustion sources that emit more than 25,000 metric tons/year CO_2e, make up 94 percent of the point source CO_2e emissions in California (CARB, 2007).

In June, 2008, CARB published its *Climate Change Draft Scoping Plan* (CARB, 2008a). The *Climate Change Draft Scoping Plan* reported that CARB met the first milestones set by AB 32 in 2007: developing a list of early actions to begin sharply reducing greenhouse gas emissions; assembling an inventory of historic emissions; and establishing the 2020 emissions limit. On December

11, 2008 CARB adopted its *Climate Change Scoping Plan*, which functions as a roadmap of CARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations (CARB, 2008b). The *Scoping Plan* proposes a comprehensive set of actions designed to reduce overall carbon emissions in California. Key elements of the *Scoping Plan* include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation. (CARB, 2008b)

CARB has not yet determined what amount of GHG emissions reductions it recommends from local government land use decisions; however, the *Scoping Plan* does state that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions. CARB further acknowledges that decisions on how land is used will have large effects on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. The *Scoping Plan* states that the ultimate assignment to local government operations is to be determined (CARB, 2008b).

The *Scoping Plan* also includes recommended measures that were developed to reduce GHG emissions from key sources and activities while improving public health, promoting a cleaner environment, preserving our natural resources, and ensuring that the impacts of the reductions are equitable and do not disproportionately impact low-income and minority communities. These measures, shown below in **Table 3.2-4** by sector, also put the state on a path to meet the long-term 2050 goal of reducing California's GHG emissions to 80 percent below 1990 levels.

The total reduction for the recommended measures is 174 million metric tons/year of CO_2e, slightly exceeding the 169 million metric tons/year of CO_2e of reductions estimated to be needed in the *Draft Scoping Plan*. The measures in the *Scoping Plan* approved by the Board will be developed over the next year and will be in place by 2012.

TABLE 3.2-4
LIST OF RECOMMENDED ACTIONS BY SECTOR

Measure No.	Measure Description	GHG Reductions (Annual Million Metric Tons CO2E)
Transportation		
T-1	Pavley I and II – Light Duty Vehicle Greenhouse Gas Standards	31.7
T-2	Low Carbon Fuel Standard (Discrete Early Action)	15
T-3[1]	Regional Transportation-Related Greenhouse Gas Targets	5
T-4	Vehicle Efficiency Measures	4.5
T-5	Ship Electrification at Ports (Discrete Early Action)	0.2
T-6	Goods Movement Efficiency Measures. • Ship Electrification at Ports • System-Wide Efficiency Improvements	3.5
T-7	Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)	0.93
T-8	Medium- and Heavy-Duty Vehicle Hybridization	0.5
T-9	High Speed Rail	1
Electricity and Natural Gas		
E-1	Energy Efficiency (32,000 GWh of Reduced Demand) • Increased Utility Energy Efficiency Programs • More Stringent Building & Appliance Standards Additional Efficiency and Conservation Programs	15.2
E-2	Increase Combined Heat and Power Use by 30,000 GWh (Net reductions include avoided transmission line loss)	6.7
E-3	Renewables Portfolio Standard (33% by 2020)	21.3
E-4	Million Solar Roofs (including California Solar Initiative, New Solar Homes Partnership and solar programs of publicly owned utilities) • Target of 3000 MW Total Installation by 2020	2.1
CR-1	Energy Efficiency (800 Million Therms Reduced Consumptions) • Utility Energy Efficiency Programs • Building and Appliance Standards • Additional Efficiency and Conservation Programs	4.3
CR-2	Solar Water Heating (AB 1470 goal)	0.1
Green Buildings		
GB-1	Green Buildings	26
Water		
W-1	Water Use Efficiency	1.4†
W-2	Water Recycling	0.3†
W-3	Water System Energy Efficiency	2.0†
W-4	Reuse Urban Runoff	0.2†
W-5	Increase Renewable Energy Production	0.9†
W-6	Public Goods Charge (Water)	TBD†
Industry		
I-1	Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	TBD
I-2	Oil and Gas Extraction GHG Emission Reduction	0.2
I-3	GHG Leak Reduction from Oil and Gas Transmission	0.9
I-4	Refinery Flare Recovery Process Improvements	0.3
I-5	Removal of Methane Exemption from Existing Refinery Regulations	0.01

TABLE 3.2-4
LIST OF RECOMMENDED ACTIONS BY SECTOR

Measure No.	Measure Description	GHG Reductions (Annual Million Metric Tons CO2E)
Recycling and Water Management		
RW-1	Landfill Methane Control (Discrete Early Action)	1
RW-2	Additional Reductions in Landfill Methane • Increase the Efficiency of Landfill Methane Capture	TBD†
RW-3	High Recycling/Zero Waste • Commercial Recycling • Increase Production and Markets for Compost • Anaerobic Digestion • Extended Producer Responsibility • Environmentally Preferable Purchasing	9†
Forests		
F-1	Sustainable Forest Target	5
High Global Warming Potential (GWP) Gases		
H-1	Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Services (Discrete Early Action)	0.26
H-2	SF_6 Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)	0.3
H-3	Reduction of Perfuorocarbons in Semiconductor Manufacturing (Discrete Early Action)	0.15
H-4	Limit High GWP Use in Consumer Products Discrete Early Action (Adopted June 2008)	0.25
H-5	High GWP Reductions from Mobile Sources • Low GWP Refrigerants for New Motor Vehicle Air Conditioning Systems • Air Conditioner Refrigerant Leak Test During Vehicle Smog Check • Refrigerant Recovery from Decommissioned Refrigerated Shipping Containers • Enforcement of Federal Ban on Refrigerant Release during Servicing or Dismantling of Motor Vehicle Air Conditioning Systems	3.3

H-6	High GWP Reductions from Stationary Sources
	• High GWP Stationary Equipment Refrigerant Management Program:
	  o Refrigerant Tracking/Reporting/Repair Deposit Program
	  o Specifications for Commercial and Industrial Refrigeration Systems
	• Foam Recovery and Destruction Program
	• SF Leak Reduction and Recycling in Electrical Applications
	• Alternative Suppressants in Fire Protection Systems
	• Residential Refrigeration Early Retirement Program
		10.9

H-7	Mitigation Fee on High GWP Gases	5
Agriculture		
A-1	Methane Capture at Large Dairies	1.0†

1 This is not the SB 375 regional target. CARB will establish regional targets for each MPO region following the input of the regional targets advisory committee and a consultation process with MPO's and other stakeholders per SB 375
† GHG emission reduction estimates are not included in calculating the total reductions needed to meet the 2020 target

Senate Bill 97. SB 97, signed August 2007 (Chapter 185, Statutes of 2007; Public Resources Code Sections 21083.05 and 21097), acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. This bill directs the Governor's Office of Planning and

Research (OPR), which is part of the state Resources Agency, to prepare, develop, and transmit to CARB guidelines for the feasible mitigation of GHG emissions (or the effects of GHG emissions), as required by CEQA, by July 1, 2009. On December 31, 2009, the Natural Resources Agency delivered its rulemaking package to the Office of Administrative Law for their review pursuant to the Administrative Procedure Act. The adopted guidelines became effective on March 18, 2010.

OPR Technical Advisory, CEQA and Climate Change. On June 19, 2008, OPR published a technical advisory on CEQA and Climate Change. The advisory provides OPR's perspective on the emerging role of CEQA in addressing climate change and greenhouse gas emissions, while recognizing that approaches and methodologies for calculating greenhouse gas emissions and addressing environmental impacts through CEQA review are rapidly evolving. The advisory recognizes that OPR will develop, and the Resources Agency will adopt amendments to the CEQA Guidelines pursuant to SB 97. In the interim, the technical advisory "offers informal guidance regarding the steps lead agencies should take to address climate change in their CEQA documents" (OPR, 2008).

The technical advisory points out that neither CEQA nor the CEQA Guidelines prescribe thresholds of significance or particular methodologies for performing an impact analysis. "This is left to lead agency judgment and discretion, based upon factual data and guidance from regulatory agencies and other sources where available and applicable" (OPR, 2008). OPR recommends that "the global nature of climate change warrants investigation of a statewide threshold of significance for GHG emissions" (OPR, 2008). Until such a standard is established, OPR advises that each lead agency should develop its own approach to performing an analysis for projects that generate greenhouse gas emissions (OPR, 2008).

Agencies should then assess whether the emissions are "cumulatively considerable" even though a project's greenhouse gas emissions may be individually limited. OPR states: "Although climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment" (OPR, 2008). Individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice (OPR, 2008).

Finally, if the lead agency determines emissions are a cumulatively considerable contribution to a significant cumulative impact, the lead agency must investigate and implement ways to mitigate the emissions (OPR, 2008). OPR states: "Mitigation measures will vary with the type of project being contemplated, but may include alternative project designs or locations that conserve energy and water, measures that reduce vehicle miles traveled (VMT) by fossil-fueled vehicles, measures that contribute to established regional or programmatic mitigation strategies, and measures that sequester carbon to offset the emissions from the project" (OPR, 2008). OPR concludes that "A lead agency is not responsible for wholly eliminating all GHG emissions from a project; the CEQA standard is to mitigate to a level that is "less than significant" (OPR, 2008). The technical advisory includes a list of mitigation measures that can be applied on a project-by-project basis.

OPR Proposed Amendments to the CEQA Guidelines. On April 13, 2009, OPR submitted to the Secretary for Natural Resources its proposed amendments to the state CEQA Guidelines for GHG emissions, as required by Public Resources Code section 21083.05 (Senate Bill 97) (OPR, 2009). These proposed CEQA Guideline amendments would provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The Natural Resources Agency adopted the CEQA Guidelines Amendments with minor, non-substantial changes on December 31, 2009 and transmitted the Adopted Amendments and the entire rulemaking file to the Office of Administrative Law (OAL). The adopted guidelines became effective on March 18, 2010.

The amendments suggest relatively modest changes to various portions of the existing CEQA Guidelines. Modifications address those issues where analysis of GHG emissions may differ in some respects from more traditional CEQA analysis.

Amendments include a new section (15064.4) to assist lead agencies in determining the significance of the GHG impacts. This section urges lead agencies to quantify, where possible, the GHG emissions of proposed projects. In addition to quantification, this section recommends consideration of several other qualitative factors that may be used in determination of significance including: (1) the extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the GHG emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

The amendments include a new subdivision 15064.7(c) to clarify that in developing thresholds of significance, a lead agency may appropriately review thresholds developed by other public agencies, or recommended by other experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.

The amendments include a new section 15183.5 that provides for tiering and streamlining the analysis of GHG emissions. Project-specific environmental documents may rely on an EIR containing a programmatic analysis of GHG emissions in the region over a specified time period.

In addition, the amendments add a new set of environmental checklist questions (VII. Greenhouse Gas Emissions) to the CEQA Guidelines Appendix G. The new checklist questions are included as part of the impact analysis in this chapter.

California Air Pollution Control Officers Association. In January 2008, the California Air Pollution Control Officers Association (CAPCOA) issued a “white paper” on evaluating and addressing GHGs under CEQA (CAPCOA, 2008). This resource guide was prepared to support local governments as they develop their programs and policies around climate change issues. The paper is not a guidance document. It is not intended to dictate or direct how any agency chooses to address GHG emissions. Rather, it is intended to provide a common platform of information about key elements of CEQA as they pertain to GHGs, including an analysis of different approaches to setting significance thresholds.

The paper notes that for a variety of reasons local agencies may decide not to have a CEQA threshold. Local agencies may also decide to assess projects on a case-by-case basis when the projects come forward. The paper also discusses a range of GHG emission thresholds that could be used. The range of thresholds discussed includes a GHG threshold of zero and several non-zero thresholds. Non-zero thresholds include percentage reductions for new projects that would allow the state to meet its goals for GHG emissions reductions by 2020 and perhaps 2050. These would be determined by a comparison of new emissions versus business as usual emissions and the reductions required would be approximately 30 percent to achieve 2020 goals and 90 percent (effectively immediately) to achieve the more aggressive 2050 goals. These goals could be varied to apply differently to new projects, by economic sector, or by region in the state.

Other non-zero thresholds are discussed in the paper, including:

- 900 metric tons/year CO_2e (a market capture approach);
- 10,000 metric tons/year CO_2e (potential CARB mandatory reporting level with Cap and Trade);
- 25,000 metric tons/year CO_2e (the CARB mandatory reporting level for the statewide emissions inventory);
- 40,000 to 50,000 metric tons/year CO_2e (regulated emissions inventory capture – using percentages equivalent to those used in air districts for criteria air pollutants),
- Projects of statewide importance (9,000 metric tons/year CO_2e for residential, 13,000 metric tons/year CO_2e for office project, and 41,000 metric tons/year CO_2e for retail projects), and
- Unit-based thresholds and efficiency-based thresholds that were not quantified in the report.

Local

AVAQMD

The AVAQMD has jurisdiction over air quality for the project area. The AVAQMD has adopted an AQMP for determination of the significance of a project's contribution to local or regional pollutant concentrations. In addition, the Air Quality Attainment Plan (AQAP) establishes a program of rules and regulations directed at attainment of state and national air quality standards. Accordingly, conformance with the AQAP for development projects is determined by demonstrating compliance with local land use plans. All development projects within the AVAQMD will be required to comply with existing rules as they apply to each specific project.

3.2.3 Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the significance of air quality impacts are based on Appendix G of the *CEQA Guidelines*. The proposed project would have a significant effect on air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

- Result in a cumulatively considerable net increase of any nonattainment pollutant (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHG (including AB 32, the California Global Warming Solutions Act of 2006, and the AB 32 Scoping Plan).

Criteria Pollutants

Impacts are also considered significant if criteria pollutant emissions exceed the significance criteria provided in **Table 3.2-5**.

TABLE 3.2-5
AIR QUALITY SIGNIFICANCE THRESHOLDS

Pollutant	Annual Threshold (tons)	Daily Threshold (pounds)
CO	100	548
ROC	25	137
NOX	25	137
SO_2	25	137
PM10	15	82

SOURCE: Antelope Valley AQMD, CEQA and Federal Conformity Guidelines, May 2005.

Construction. The proposed project would result in a significant construction air quality impact if emissions exceed the significance thresholds set forth in Table 3.2-5.

Operations. The proposed project would result in a significant operational air quality impact if either of the following occur:

- Emissions exceed the significance thresholds set forth in Table 3.2-5; or
- The proposed project would not be compatible with AVAQMD rules and regulations.

Toxic Air Contaminants

The operation of any project with the potential to expose sensitive receptors to substantial levels of TACs would be deemed to have a potentially significant impact. More specifically, proposed development projects that have the potential to expose the public to TACs in excess of the following thresholds would be considered to have a significant air quality impact:

- Probability of contracting cancer for the Maximally Exposed Individual[1] (MEI) exceeds 10 in one million.

[1] MEI represents the worst-case risk estimate based on a theoretical person continuously exposed for 70 years at the point of highest compound concentration in air.

- Ground-level concentrations of non-carcinogenic TACs would result in a Hazard Index greater than 1 for the MEI.

These standards are typically applied to the results of a health risk assessment based on a detailed air dispersion modeling effort.

Methodology

Construction Impacts

Daily construction emissions were forecast by using default values from the air quality emissions model URBEMIS 2007 version 9.2.4. URBEMIS 2007 output sheets are provided in Appendix B.

Operational Impacts

EMFAC 2007 was used to estimate the operational emissions of the proposed project; data is provided in the Appendix B.

Greenhouse Gases

URBEMIS 2007 was utilized to determine GHG emissions from construction. EMFAC 2007 was utilized to determine GHG emissions from operations. Output sheets are provided in Appendix B. For this analysis, the proposed project would be considered to have a significant impact if the project would be in conflict with the AB 32 State goals for reducing GHG emissions. We assume that AB 32 will be successful in reducing GHG emissions and reducing the cumulative GHG emissions statewide by 2020. It is important that the state has taken these measures, because no project individually could have a major impact (either positively or negatively) on the global concentration of GHG. The proposed project will be reviewed to make sure it does not conflict with the goals of AB 32.

Impacts Discussion

Impact 3.2-1: Construction activities associated with development of the proposed project would generate short-term emissions of criteria pollutants. (Less than Significant with Mitigation)

Construction activities would produce criteria pollutant emissions (primarily ROG and NOx) as a result of using heavy-duty construction equipment. Mobile source emission would also be produced from construction worker vehicle trips to and from the proposed project site. In addition, fugitive dust emissions would be generated from site preparation and excavation activities and vehicle travel on paved and unpaved surfaces.

Construction equipment exhaust also would include some PM10 emissions. PM10 and PM2.5 emissions from construction would vary greatly from day to day depending on the level of activity, the equipment being operated, silt content of the soil, and the prevailing weather. Larger-diameter dust particles (i.e., greater than 30 microns) generally fall out of the atmosphere within several hundred feet of construction sites, and represent more of a soiling nuisance than a health hazard. Smaller-diameter particles (e.g., PM10 and PM2.5) are associated with adverse health effects and generally remain airborne until removed from the atmosphere by moisture. Therefore, unmitigated construction dust emissions could result in significant local effects.

Criteria pollutant emissions of ROG and NOx from construction equipment and construction worker vehicle trips would incrementally add to regional atmospheric loading of ozone precursors during the construction period.

Construction of the individual projects could occur at any point over the planning period. The phasing and duration of individual construction projects is unknown. Construction of multiple projects could occur simultaneously. Individual projects are subject to subsequent project-level environmental review at which time a more detailed analysis of construction-related emissions may be undertaken to evaluate the need for additional mitigation.

Estimates of construction-related exhaust emissions from construction equipment and worker trips are shown in **Table 3.2-6** below. Emissions are based on URBEMIS default construction data with provided construction equipment.

TABLE 3.2-6
UNMITIGATED EMISSIONS FROM CONSTRUCTION
(lbs per day)[a]

Project Component	ROG	NO_x	CO	PM10	PM2.5	CO_2
Pipelines[b]	4	36	19	2	2	5,308
Spreading Basins	4	40	23	12	4	4,458
Wells[c]	6	61	24	2	2	9,979
Pump Stations	5	37	19	2	2	5,034
Storage Tanks	6	45	25	3	2	5,336
Treatment Plant[d]	11	77	67	6	4	16,559
Total	36	**296**	177	27	16	42,717
AVAQMD Thresholds of Significance	137	**137**	548	82	NA	NA
Significant (Yes or No)?	No	**Yes**	No	No	No	No

a Project construction emissions estimates were made using URBEMIS2007, version 9.2. 4.
b. Emissions shown are for the worst-case day.
c. Wells include 24 hour drilling
d. Amount of soils to be hauled offsite is unknown and not included.

Values in **bold** are in excess of the applicable AVAQMD significance threshold. NA = Not Available.

SOURCE: ESA, 2011.

As depicted in Table 3.2-6, the estimated emissions from concurrent construction of all project components during the worst-case year would result in significant NOx emissions. Because construction of these additional facilities could result in significant effects, the following mitigation would apply to construction associated with all future project facilities.

Mitigation Measures

AQ-1a: General contractors shall implement a fugitive dust control program pursuant to the provisions of AVAQMD Rule 403.

AQ-1b: All construction equipment shall be properly tuned and maintained in accordance with manufacturer's specifications.

AQ-1c: General contractors shall maintain and operate construction equipment so as to minimize exhaust emissions. During construction, trucks and vehicles in loading and

unloading queues shall turn their engines off when not in use to reduce vehicle emissions. Construction activities shall be phased and scheduled to avoid emissions peaks and discontinued during second-stage smog alerts.

AQ-1d: Electricity from power poles rather than temporary diesel- or gasoline-powered generators shall be used to the extent feasible.

AQ-1e: All construction vehicles shall be prohibited from idling in excess of five minutes, both on- and off-site.

AQ-1f: PMD shall require the construction contractor to utilize coatings and solvents that are consistent with applicable AVAQMD rules and regulations**.**

AQ-1g: PMD shall implement construction of project components in non-overlapping phases to minimize daily emissions of NOx below the AVAQMD thresholds of significance (i.e. 137 lbs/day).

Significance after Mitigation: Less than significant

Impact 3.2-2: Operation of the proposed project could generate criteria air pollutant emissions that could contribute to existing nonattainment conditions and degrade air quality. **(Less than Significant)**

Following installation, the majority of the projects and management actions would not result in long-term operational emissions. Potential emission sources resulting from operation of the projects would include air emissions from powering of project facilities, the testing and potential use of emergency generators, the operation of stationary source equipment associated with project facilities, and employee trips. Emissions from generators and stationary source equipment operation would be local in nature, while emissions from motor vehicles would be regional. The proposed project is not anticipated to result in large numbers of new employees. Related vehicle emissions would be negligible. Additional trips associated with occasional deliveries would also be minimal. Recharge operations would be limited to water storage and percolation, and would not generate emissions. All pipelines would be located below grade and operational activities would be limited to periodic inspections. Injection and extraction wells operation would be limited to those associated with operation of electric powered pumps and emergency generators. Project operational electricity is provided by the existing electrical grid and would not generate local emissions. These emissions are, however, considered below under the evaluation of increases in emissions of GHGs. All stationary source equipment would be subject to AVAQMD permitting. Collectively project operation would not be expected to significantly affect air quality over the long-term.

Operational use of motor vehicles to travel to and from facilities would generate mobile sources of criteria pollutant emissions, and generation of electricity to serve the proposed project would result in emissions outside of the project area. Each of these operational sources is described below.

Mobile Sources. Operational emissions for the proposed project would be generated primarily from on-road vehicular traffic. Implementation of the proposed project (including the treatment

plant, pump stations, groundwater recharge basins, and pipelines) is not anticipated to result in large numbers of new employees due to facilities being highly automated.

Though the amount of vehicle trips during operations is not known, six round trips per week operational vehicle emissions for buildout year 2035 were modeled using EMFAC 2007 emissions factors and are depicted below in **Table 3.2-7**. CO_2 is quantified in Table 3.2-7 but is discussed further under Impact 4.7.5 below.

TABLE 3.2-7
PROJECT OPERATIONAL EMISSIONS
(lbs per day)

Pollutant	AVAQMD Thresholds (lbs/day)	Unmitigated Project On-road Traffic Emissions (lbs/day)[a] Year 2035
ROG	137	>1
NOx	137	>1
PM10	82	>1
PM2.5	NA	>1
CO_2	NA	29
CO	548	>1

a Emission factors were generated by the CARB's EMFAC 2007 model for the Mojave Desert air basin. Additional information is provided in Appendix B. **Bold** values are in excess of applicable standard. NA = Not Available

SOURCE: ESA, 2011

As shown in Table 3.2-7, the addition of traffic from project operations would result in a negligible increase in regional criteria air pollutant emissions.

Electricity. The project facilities and pumps would be powered by the existing electrical grid and would not generate local emissions. Emissions would be generated at distant power plants where the power is created. Power plant emissions are subject to the rules and regulations of the air district in which they are located and are subject to their own CEQA review. These emissions are, however, considered below under the evaluation of increases in emissions of GHGs.

In summary, the proposed project would not result in operational emissions that would exceed AVAPCD's thresholds of significance, due to the negligible increase in vehicle trips. Consequently, the project-generated emissions would not be anticipated to result in a substantial contribution to a potential violation of NAAQS, CAAQS, or the nonattainment conditions. As a result, this impact would be less-than-significant.

Mitigation Measures

None required.

Impact 3.2-3: Construction and/or operation of the proposed project could expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)

Carbon Monoxide Hotspots

CO is a localized pollutant of concern. Construction activities associated with the proposed project would generate CO emissions under AVAQMD thresholds as shown in Table 3.2-6. Due to the short-term nature of construction activities and the project's compliance with AVAQMD thresholds, impacts to sensitive receptors due to construction-related emissions of CO would be less-than-significant.

Total vehicle trips associated with these operational features would be minimal. Due to the small amount of daily trips, the effect of project-related traffic on local CO concentrations along roadways and at intersections would also be negligible and well below the AVAQMD thresholds shown in Table 3.2-7. Thus, mobile-source emissions of CO would not be anticipated to result in or contribute substantially to an air quality violation. The short-term construction and long-term operational mobile-source impact of the project on CO concentrations would be less-than-significant.

Toxic Air Contaminants

Construction of the proposed project would result in short-term diesel exhaust emissions (DPM), which are TACs, from on-site heavy-duty equipment. Project construction would generate DPM emissions from the use of off-road diesel equipment required for site grading and excavation, and other construction activities. The dose to which sensitive receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project. Thus, the duration of the proposed individual construction activities would only constitute a small percentage of the total 70-year exposure period. Although the treatment plant, pumps, and wells would be stationary, pipeline construction activities would move along the alignment on a daily basis at approximately 50 to 500 feet a day, and would therefore not result in extended exposure of residences to DPM. Because the use of mobilized equipment would be temporary, DPM from construction activities would not be anticipated to result in the exposure of sensitive receptors to levels that exceed applicable standards.

In addition, the long-term operation of the proposed project would not result in any non-permitted sources of toxic air emissions. As a result, exposure of sensitive receptors to substantial toxic air emissions from the proposed project would be less-than-significant.

Mitigation Measures

None required.

Impact 3.2-4: The proposed project could create objectionable odors affecting a substantial number of people. (Less than Significant)

Types of land uses that typically pose potential odor problems include agriculture, wastewater treatment plants, food processing and rendering facilities, chemical plants, composting facilities, landfills, waste transfer stations, and dairies. In addition, the occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors. Although offensive odors rarely cause any physical harm, they can still be very unpleasant, leading to considerable distress and often generating citizen complaints to local governments and regulatory agencies. The proposed project including the potable water treatment plant would not have odor emitting operations. Therefore the proposed project would not create objectionable odors that would affect a substantial number of people.

Mitigation Measures

None required.

Impact 3.2-5: The proposed project could result in a cumulatively considerable increase in greenhouse gas emissions and conflict with State goals for GHG reductions. (Less than Significant with Mitigation)

GHG impacts are considered to be exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective (CAPCOA, 2008). The proposed project includes importation of additional water and includes construction and operation of new pipelines, wells, recharge basins, pump stations, and a potable water treatment plant. The calculations presented below include annual CO_2e GHG emissions from off-road equipment, trucks, and workers during construction, operational energy consumption, and on-road vehicles associated with facility operations. Appendix B contains information regarding assumptions and emissions calculations used in this analysis.

Four types of analyses are used to determine whether the project could result in a cumulatively considerable increase in GHG emissions and conflict with State goals for reducing GHG emissions. The analyses consider the following:

a. Any potential conflicts with the CARB's thirty-nine (39) recommended actions in California's AB 32 Climate Change Scoping Plan (Table 3.2-4).
b. The relative size of the project. The project's GHG emissions are compared to the size of major facilities that are required to report GHG emissions (25,000 metric tons/year of CO_2e)[2] to the State; the project size also is compared to the California GHG emissions limit of 427 million metric tons per year of CO_2e emissions by 2020. The 25,000 metric ton annual limit identifies the large stationary point sources in California that make up approximately 94 percent of the stationary emissions. If the project's total emissions are below this limit, its total emissions are equivalent in size to the smaller projects in California that as a group only make up six

[2] The State of California has not provided guidance as to quantitative significance thresholds for assessing the impact of greenhouse gas emissions on climate change and global warming concerns. Nothing in the CEQA Guidelines directly addresses this issue.

percent of all stationary emissions. It is assumed that the activities of these smaller projects generally would not conflict with the State's ability to reach AB 32 overall goals. In reaching its goals the CARB will focus upon the largest emitters of GHG emissions.

c. The basic energy efficiency parameters of a project to determine whether its design is inherently energy efficient.

d. Potential conflicts with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

With regard to Item A, most of the project components would support the CARB recommended actions for the water sector as listed in Table 3.2-4. Implementation Actions 2, 3, and 9, which pertain to the Recycled Water Master Plan and groundwater recharge with recycled water, would support W-2 (Water Recycling). Implementation Actions 4 through 8 would support W-1 (Water Use Efficiency) through conservation programs, increasing local surface water storage, and utilizing available groundwater storage in the local AVGB. Importing, treating, and distributing water, as proposed under Implementation Action 1, is energy intensive. Implementation of **Mitigation Measure AQ-2** would require both energy efficient equipment and off-peak operation of the PWD system. Such energy efficiency measures would reduce the overall energy requirements associated with Implementation Action 1 and support W-3 (Water System Energy Eefficiency). As a result, there would be no conflict with the CARB Recommended Actions.

With regard to Item B, GHG emissions associated with construction of the proposed project were estimated to be approximately 4,639 metric tons/year of CO_2e (see Appendix B). Estimated operational vehicle emissions were calculated using EMFAC 2007 emissions factors and totaled 5 metric tons/year of CO_2e (see Appendix B). The use of electricity would result in indirect GHG emissions due to operation of the proposed project, including operating the proposed 30-mgd treatment plant and operating other new local facilities such as groundwater wells, pump stations, recharge facilities, and turnouts. It is estimated that the proposed 30-mgd treatment plant would require up to 25,000,000 kWH/year to operate. New local wellheads would require up to 28,500 kWH/year to operate. The annual GHG emissions associated with operating these facilities totals 7,393 metric tons/year of CO_2e (see Appendix B).

To import additional water, PWD would utilize the capacity of existing SWP facilities; the proposed project would not require expansion of aqueduct conveyance capacity or SWP pumping capacity. Additional water would be imported through the SWP when capacity is available. The use of exisitng SWP conveyance and pumping capacity would not constitute a change from existing operational conditions of the SWP system, and as such no additional indirect GHG emissions would result.

Total construction-phase GHG emissions would be 4,639 metric tons/year of CO_2e, and total operational-phase GHG emissions would be 7,398 metric tons/year of CO_2e (see Appendix B). The project would not be classified as a major source of GHG emissions; neither construction nor operational emissions would exceed the lower reporting limit, which is 25,000 metric tons/year of CO_2e. The 2020 GHG emissions limit for California, as adopted by CARB in December of 2007 is approximately 427 million metric tons of CO_2e. The project's annual contribution would be approximately 0.00002 percent of this total 2020 emissions limit. The project would not generate sufficient emissions of GHGs to contribute considerably to the cumulative effects of

GHG emissions relative to baseline conditions. As defined above, the project would be considered one of the small projects that make up only six percent of all stationary emissions in the State. It is assumed that the activities of these small projects generally would not conflict with the State's ability to reach AB 32 overall goals.

With regard to Item C, the question of energy efficiency, the project includes groundwater recharge, aquifer storage, and recycled water use. By increasing the number of local water sources available, less water would have to be imported. This would be considered an inherently energy efficient strategy. As mentioned above under Item A, implementation of Mitigation Measure AQ-2 would contribute to reductions in overall energy requirements associated with the proposed project. In addition, implementation of **Mitigation Measure AQ-3** would require PWD to promote and encourage the use of recycled water as a potable offset to importing water. Implementation of Mitigation Measure AQ-3 would reduce the overall energy requirements associated with the Recommended Strategy and with Implementation Action 1. With implementation of Mitigation Measures AQ-2 and AQ-3, the project would be considered inherently energy efficient.

Finally, with regard to Item D, neither the City of Palmdale, City of Lancaster, nor Los Angeles County have established GHG reduction plans or policies. Therefore, the project would not conflict with any local regulations pertaining to GHGs.

In conclusion, with implementation of Mitigation Measures AQ-2 and AQ-3, the proposed project would not have a cumulatively considerable impact on GHG emissions and would not conflict with State goals for GHG reductions.

Mitigation Measures

AQ-2: PWD shall require the use of energy efficient equipment, including pumps and lighting in new water facilities. The PWD system should be designed and operated to shift energy demands to off-peak periods whenever possible.

AQ-3: PWD shall promote and encourage the use of recycled water to offset imported water requirements.

Significance after Mitigation: Less than significant

References – Air Quality and Greenhouse Gas Emissions

Antelope Valley Air Quality Management District (AVAQMD), *California Environmental Quality Act (CEQA) and Federal Conformity Guidelines*, May 2005.

Antelope Valley Air Quality Management District (AVAQMD), *Rule 403 Fugitive Dust*, February 1997.

California Air Pollution Control Officers Association (CAPCOA), CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, 2008.

California Air Resources Board (CARB), *Climate Change Proposed Scoping Plan, 2008*

California Air Resources Board (CARB), *Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas*, July 2004.

California Air Resources Board (CARB), *Draft List of Early Action Measures To Reduce Greenhouse Gas Emissions In California Recommended For Board Consideration*. September 2007

Dockery and Pope, 2006. Health effects of fine particulate air pollution: Lines that connect. J Air and Waste Management Association, 2006; 54: 709-742.

Governor's Office of Planning and Research (OPR), *Technical Advisory, CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review, June 19, 2008.*

3.3 Biological Resources

This section describes the existing biological resources within, and in the vicinity of, the project area and evaluates the need for further assessments based on potential impacts associated with the proposed project.

3.3.1 Environmental Setting

Methods

The project area was evaluated for its potential to support special-status species that are known to occur or are expected to occur in the region. Vegetation types and wildlife habitats were characterized on the basis of accepted classification systems. The following sources were consulted for information on biological resources within the project area:

- California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDB) and the California Native Plant Society Electronic Inventory (CNPS, 2010) record search for USGS 7.5-minute topographic quadrangle maps: Lancaster West, Lancaster East, Ritter Ridge, Alpine Butte, Little Rock, Juniper Hills, Pacifico Mountain, Acton, Ritter Ridge, and Palmdale (CDFG, 2010);
- Los Angeles County Significant Ecological Area Study prepared by England and Nelson Environmental Consultants (1976) for Los Angeles County Department of Regional Planning and Environmental Systems Research Institute; and
- Various literature references specific to descriptions of the habitat, vegetation types, and special status species occurring in the project region including previous EIRs prepared or contracted by ESA (see References).

The CNDDB lists historical and recently recorded occurrences of both special-status plant and wildlife species and the CNPS database lists historical and recent occurrences of special-status plant species. ESA queried these sources for special-status species records in the Palmdale, US Geological Survey (USGS) 7.5-minute quadrangle and the ten surrounding quadrangles mentioned above. ESA then developed a list of target special-status species from these sources. Target special-status species were defined as having a geographic range and habitat similar to that of the project area. **Table 3.3-1** below presents the names, conservation status, and habitat requirements for special-status wildlife and plant species with habitat ranges that overlap parts of the proposed project area or are located in the vicinity, and lists the potential for these species to occur onsite or adjacent to the project area.

The potential for special-status species to occur within the project area is based on the proximity of the project to previously recorded occurrences in the CNDDB/CNPS, onsite vegetation and habitat quality, topography, elevation, soils, surrounding land uses, habitat preferences, and geographic ranges of special-status plant and wildlife species known to occur in the region.

For purposes of this report, taxonomy and nomenclature for wildlife generally follows Stebbins (2003) for amphibians and reptiles, Peterson (1990) for birds, and Peterson (2006) for mammals. Plant taxonomy follows Hickman (1993) or current scientific journals for scientific and common names. Habitats in the study area were classified into vegetation types based on the Holland Code (Holland 1986, revised by Oberbauer 1996) and Keeler-Wolf and Sawyer (1995).

Regional Setting

The proposed project would be implemented primarily within the PWD service area, located in southern California in the Antelope Valley, approximately 60 miles northeast of the City of Los Angeles. The District encompasses 47 square miles of mainly developed areas of the City of Palmdale and surrounding sphere of influence, with agricultural uses around its perimeter, and open space areas in the San Gabriel Mountains. Land uses in the project area vary, with residential, commercial, industrial, institutional, and open space being the most prominent, followed by agricultural industries.

Local Setting

Habitat Types

The project area is located in the vicinity of Palmdale at the base of the San Gabriel Mountains and immediately west of Littlerock Creek (Figure 2-1). Land uses in the project area include developed (e.g., residential, commercial, industrial, institutional), agricultural and open spaces containing native habitats. High-quality habitats are present where native habitat types are relatively undisturbed and have connectivity to other open space areas. Native habitat types within the proposed project area generally include Mojave desert scrub, creosote bush scrub, Joshua tree woodland, rabbitbrush scrub, saltbush scrub, and desert wash. Non-native and disturbed habitats generally provide low-quality wildlife habitat; however, agricultural areas can provide habitat for certain wildlife species such as burrowing owls and other raptor species. The majority of the project area occurs within developed and disturbed regions that do not offer high-quality native habitat.

Developed Areas

Residential, commercial, and industrial land uses and certain public facilities are considered developed habitat. Vegetation within developed areas primarily was restricted to ornamental trees and shrubs, lawns, gardens, and flowerbeds.

Agricultural Areas

Agricultural areas include maintained fields and other areas currently under intensive irrigation, barren and disturbed and weedy habitats, and areas previously cleared that exhibit initial shrub reestablishment. There is a small portion of agricultural habitat at the north and northeastern portions of the project area.

Creosote Bush Scrub

As described by Holland (1986), Mojave creosote bush scrub is an open community dominated by the shrub species creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) with much bare ground between. Soils are generally better draining and less saline than those

supporting saltbush scrub (described below), have a low water holding capacity, and occur on slopes, fans, and valleys. Mojave creosote bush scrub is considered a habitat of concern but not under threat within California by the CNDDB and CNPS (state ranking of S4).

Joshua Tree Woodland

Joshua tree woodland (Holland, 1986) or Joshua tree series (Keeler-Wolf and Sawyer, 1995), is an open woodland with Joshua trees (*Yucca brevifolia*) often as the only tree species with scrub vegetation usually occupying the remaining area, although the understory can range to grassland or other vegetation types. This community usually occurs on well-drained, gentle alluvial slopes with sandy, loamy, or gravelly soils. Many areas where the trees occur are generally in habitats otherwise classifiable as moderate to high-quality saltbush scrub or creosote bush scrub, although some Joshua trees are present in the above-described habitat types. Presence of Joshua trees, especially in moderate density, is generally associated with higher habitat quality in areas where they are common (less disturbed soils, greater retention of micro topographic features, etc.). Joshua tree woodland generally occurs within the open space areas at the southern and eastern portions of the project area. Joshua tree woodland is considered a threatened community by the CNDDB and CNPS (state ranking of S3.2).

Rabbitbush Scrub

Rabbitbush scrub is dominated by rubber rabbitbush (*Chrysothamnus nauseosus* ssp. *mohavensis*) that are spaced evenly and flower typically in late summer or early fall. This community frequently intergrades with other communities, such as Joshua tree woodland, saltbush scrub and other larger ranging communities. Rabbitbush scrub generally occurs within the open spaces areas located at the southern and eastern portions of the project area.

Saltbush Scrub

Saltbush scrub habitat is usually strongly dominated by one of several species of saltbush (Atriplex spp.), with other characteristic species including spiny hopsage (*Grayia spinosa*), cheesebush (*Hymenoclea salsola*), and boxthorn (*Lycium* spp.). Desert saltbush scrub is found in poorly drained alkaline and/or saline soils, widely distributed above and on the margins of dry desert lake beds in the Mojave, Great Basin, and Colorado deserts. This community can generally be found at lower elevations within undeveloped portions of the project area.

Desert Wash Scrub

Desert wash scrub community is composed of widely spaced shrubs, with scattered to locally dense tree canopy cover, on usually otherwise barren sandy soils at the bottoms of wide canyons along incised arroyos of upper bajadas and along braided washes of lower bajadas (Holland, 1986). The parallel Keeler-Wolf and Sawyer (1995) series is the cat-claw acacia series. Characteristic species include cat-claw acacia (*Acacia greggii*), allscale, desert willow (*Chilopsis linearis*), brittlebush (*Encelia faranosa*), cheesebush, creosote bush, and boxthorn. This habitat can primarily be found along Upper and Lower Littlerock Creek in the southern and eastern parts of the project area.

Angeles National Forest

The grade control structure would be built within the bed of Littlerock Reservoir on a sandy, muddy substrate. The Reservoir itself constitutes an open water habitat. The bed of Littlerock Creek is also onsite, and is mostly unvegetated but supports patches of herbaceous, shrubby vegetation, such as islands of Goodding's Black willow (*Salix gooddingii*). Littlerock Creek is dominated by non-native species, such as beard grass (*Polypogon monspeliensis*) and lamb's quarters (*Chenopodium album*), with native species such as rushes (*Juncus sp*.), willow herb (*Epilobium ciliatum*), salt heliotrope, and monkey flowers (*mumulus spp*.). Adjacent to the site is southern cottonwood-willow riparian forest, characterized by tall, open, broadleaved winter-deciduous riparian forest dominated by cottonwoods (*Populus spp.*) and several tree willow species (*Salix spp*.).

Common Wildlife

Amphibians

Undisturbed desert scrub and desert wash habitats found in the project area may provide suitable habitat for red-spotted toad (*Bufo punctatus*). Other amphibian species may occur within Littlerock Creek and Lake Palmdale such as: western toad (*Bufo boreas*), black-bellied salamander (*Batrachoseps nigriventris*), California tree frog (*Pseudacris cadaverina*), and Pacific tree frog (*Pseudacris regilla*).

Reptiles

Most of the native habitats of the project area provide habitat for a wide variety of reptiles. Lizard species that are likely to occur in the undisturbed habitats near the proposed project area include banded gecko (*Coleonyx variegatus*), desert iguana (*Dipsosaurus dorsalis*), Great Basin collared lizard (*Crotaphytus bicinctores*), long-nosed leopard lizard (*Gambelia wislizenii*), zebra-tailed lizard (*Callisaurus craconoides*), desert spiny lizard (*Sceloporus magister*), side-blotched lizard (*Uta stansburiana*), long-tailed brush lizard (*Urosaurus graciosus*), desert horned lizard (*Phrynosoma platyrhinos*), yucca night lizard (*Xantusia vigilis*), and western whiptail (*Cnemidophorus tigris*). Snake species that may occur include western blind snake (*Leptotyphlops humilis*), rosy boa (*Lichanura trivirgata*), spotted leaf-nosed snake (*Phyllorhynchus decurtatus*), coachwhip (*Masticophis flagellum*), western patch-nosed snake (*Salvadora hexalepis*), glossy snake (*Arizona elegans*), gopher snake (*Pituophis melanoleucus*), common kingsnake (*Lampropeltis getulus*), long-nosed snake (*Rhinocheilus lecontei*), western shovel-nosed snake (*Chionactis occipitalis*), night snake (*Hypsiglena torquata*), speckled rattlesnake (*Crotalus mitchelli*), Mojave rattlesnake (*Crotalus scutulatus*), and sidewinder (*Crotalus cerastes*).

Birds

Common birds species that are likely residents of the native habitats within the project area throughout the year include (but are not limited to): California quail (*Callipepla californica*), greater roadrunner (*Geococcyx californianus*), ladder-backed woodpecker (*Picoides scalaris*), ash-throated flycatcher (*Myiarchus cinerascens*), common raven (*Corvus corax*), verdin (*Auriparus flaviceps*), cactus wren (*Campylorhynchus brunneicapillus*), rock wren (*Salpinctes obsoletus*), and bewick's wren (*Thryomanes bewickii*). Migratory species expected to breed

during early spring in the desert scrub habitats of the project area include lesser nighthawk (*Chordeiles acutipennis*), Costa's hummingbird (*Calypte costae*), sage sparrow (*Amphispiza belli*), blackthroated sparrow (*Amphispiza bilineata*), white-crowned sparrow (*Zonotrichia leucophrys*), Scott's oriole (*Icterus parisorum*), hooded oriole (*Icterus cucullatus*), and Bullock's oriole (*Icterus bullockii*). Some birds that typically reside along desert washes and Mojave riparian habitats in the vicinity of Palmdale include California quail, Nuttall's woodpecker (*Picoides pubescens*), western scrub jay (*Aphelocoma californica*), common raven, bushtit (*Psaltriparus minimus)*, Bewick's wren, California thrasher (*Toxostoma redivivum*), California towhee (*Pipilo crissalis*), spotted towhee (*Pipilo maculates*), and lesser goldfinch (*Carduelis psaltria*). Migratory species expected to breed in the project area may include: black-chinned hummingbird (*Archilochus alexandri*), Costa's hummingbird, black-chinned sparrow (*Spizella atrogularis*), and blackheaded grosbeak (*Pheuticus melanocephalus*).

Additionally, non-native habitats of the proposed project area include agricultural areas that can provide foraging habitat for birds at all seasons. This can include red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), horned lark (*Eremophila alpestris*), mountain bluebird (*Sialia currucoides*), American pipit (*Anthus rubescens*), red-winged blackbird (*Agelaius phoeniceus*), and western meadowlarks (*Sturnella neglecta*). The Antelope Valley has long been known for supporting a high density and diverse assemblage of raptors during the winter season.

Mammals

The native habitats of the project area provide potential habitat for several small ground dwelling mammals such as Crawford's desert shrew (*Notiosorex crawfordi*), desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), Botta's pocket gopher (*Thomomys bottae*), little pocket mouse (*Perognathus longimembris*), long-tailed pocket mouse (*Chaetodipus formosus*), desert pocket mouse (*Chaetodipus penicillatus*), chiseltoothed kangaroo rat (*Dipodomys microps*), Panamint kangaroo rat (*Dipodomys panamintinus*), Merriam's kangaroo rat (*Dipodomys merriami*), western harvest mouse (*Reithrodontomys megalotis*), cactus mouse (*Peromyscus eremicus*), deer mouse (*Peromyscus maniculatus*), canyon mouse (*Peromyscus crinitus*), and desert woodrat (*Neotoma lepida*).

Bats occur throughout most of southern California and a variety of species may forage throughout the project area. Potential roosting sites appear limited, but can include Joshua trees, bridges, and abandoned buildings. Most bats that occur in the project area are either inactive during the winter (hibernate) or migrate south to warmer climates. Common bat species expected to forage in the proposed project area may include California myotis (*Myotis californicus*), western pipistrelle (*Pipistrellus hesperus*), big brown bat (*Eptesicus fuscus*), and the Brazilian free-tailed bat (*Tadarida brasiliensis*).

Larger mammals that may occur within the project area include coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), gray fox (*Urocyon cinereoargenieus*), raccoon (*Procyon lotor*), long-tailed weasel (*Mjustela frenata*), western spotted skunk (*Spilogale gracilis*), striped skunk (*Mephitis mephitis*), mountain lion (*Felis concolor*), bobcat (*Felis rufus*), and mule deer (*Odocoileus hemionus*).

Natural Communities of Special Management Concern

The CNDDB tracks the occurrence of what the CDFG terms “Terrestrial Natural Communities” that are “considered rare and worthy of consideration by CNDDB.” Joshua tree woodland, which occurs primarily in the southern and eastern parts of the project area, is considered “rare and worthy of consideration by the CNDDB” according to the CDFG (2010). Portions of the City of Palmdale with Joshua tree occurrences are under the jurisdiction of the Palmdale Native Desert Vegetation Ordinance. This ordinance applies to all public and private property which contains Joshua trees or other native desert vegetation including California juniper (See, Section 3.3.2 Regulatory Framework for further discussion on the Palmdale Native Desert Vegetation Ordinance). The CNDDB search also identified Mojave Riparian Forest as a habitat type of special concern. This habitat type is located approximately 0.5 miles south of the project area along Upper Littlerock Creek.

Special-Status Species

A CNDDB and CNPS search identified numerous special-status species that have been recorded in the region. However, based on habitat suitability in the project area, there are two special-status plants and nine special-status animals that have potential to occur within approximately two miles of the PWD service area boundary. Table 3.3-1 provides the names, conservation status, and habitat requirements for these special-status wildlife and plant species with habitat ranges that overlap the project area or are located in the vicinity within approximately two miles, and lists the potential for these species to occur on or adjacent to the project area.

Definitions of Special-Status Species

Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or other agencies. Some of these species receive specific protection that is defined by federal or state endangered species legislation. Others have been designated as “sensitive” on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. These species are referred to collectively as "special-status species" in this report, following a convention that has developed in practice but has no official sanction. Special-status species include:

- Plants or animals listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (ESA) (50 Code of Federal regulations [CFR] 17.12 [listed plants], 17.11 [listed animals] and various notices in the Federal Register [FR] [proposed species]).
- Plants or animals that are candidates for possible future listing as threatened or endangered under the federal ESA (61 FR 40, February 28, 1996);
- Plants or animals listed or proposed for listing by the State of California as threatened or endangered under the California ESA (14 California Code of Regulations [CCR] 670.5);
- Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);

- Plants that meet the definitions of rare and endangered under CEQA (*CEQA Guidelines*, Section 15380);
- Plants considered under the CNPS to be "rare, threatened or endangered in California" (Lists 1A, 1B, and 2 in CNPS 2008);
- Plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4 in CNPS 2008), which may be included as special-status species on the basis of local significance or recent biological information; and
- Animals fully protected in California (California Fish and Game Code, Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
- Plants or animals covered by a locally or state adopted species conservation plan, including sensitive plants and animals and narrow endemic plants that have reasonable potential to occur on-site.

Plants

According to the database search, two special-status plant species have been recorded in the project area. These species include (1) short-joint beavertail cactus (*Opuntia basilaris* var. *brachyclada*), which is listed on the CNPS list as 1B.2, (rare, threatened, or endangered in California and elsewhere), and (2) sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*), which is listed by CNPS as 2.2 (rare, threatened, or endangered in California; common elsewhere). Short-joint beavertail cactus tends to occur at the base of larger plants and in rocky crevasses in Mojave creosote bush scrub and Joshua tree woodland habitats and this species has been observed in the southern vicinity of the project area by ESA biologists (pers. obs. G. Ainsworth, 2010). Sagebrush loeflingia has been observed approximately 0.5 miles east of the project site. This species is typically found on dunes within Mojave creosote bush scrub and desert sagebrush scrub habitats; dune habitat is critical for the occurrence of this species.

Wildlife

Nine special-status animal species have been previously recorded in the project area (CNDDB, 2010), all of which have the potential to occur in the project area. A list of the special-status (plant and animal) species with the potential to occur is provided below in **Table 3.3-1**. Also included is the listing status and general habitat requirements of each species and the likelihood of each species to be present within the project area.

Littlerock Creek flows north from its head waters in the San Gabriel Mountains to the Antelope Valley floor where it drains into Rosamond dry lake bed. This creek contains a wide desert wash system that acts as a wildlife corridor between the San Gabriel Mountains to the south and open spaces within the Antelope Valley to the north. The foothills of the San Gabriel Mountains that border the City of Palmdale to the west and south are also expected to support regional wildlife movement.

TABLE 3.3-1
PLANT AND ANIMAL SPECIES WITH POTENTIAL TO OCCUR WITHIN THE VICINITY OF THE PROGRAM AREA

Species	Listing Status (USFWS/CDFG/CNPS/MSHCP)	Habitat Requirements	Potential to Occur On-site
Plants			
Opuntia basilaris var. *brachyclada* short-joint beavertail cactus	1B.2	Mojave creosote bush scrub, Joshua tree woodland, chaparral, southern oak woodland, pinyon-juniper woodland.	High. One known sighting in the southern portion of the project area and several locations to the west and south of the project boundary in undisturbed desert scrub habitats.
Loeflingia squarrosa var. *artemisiarum* sagebrush loeflingia	2.2	Dunes in Mojave creosote bush scrub and desert sagebrush scrubs.	Low. May occur in undisturbed habitats. One known sighting approximately half mile east of project boundary.
Amphibians			
Bufo californicus arroyo toad	FE, SC	Semi-arid regions near washes or intermittent streams, including valley - foothill and desert riparian, desert wash, etc. Rivers with sandy banks, willows, cottonwoods, and sycamores, loose gravelly areas of streams in drier parts of range.	High. This species has been sighted within two miles south of the project area in riparian forest associated with the Upper Littlerock Creek.
Reptiles			
Anniella pulchra pulchra silvery legless lizard	SC	Sandy or loose loamy soils under sparse vegetation in soils of high moisture content. Beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with open riparian vegetation.	High. Known sightings occur within the project boundary and throughout relatively undisturbed desert scrubs in or adjacent to the project area.
Phrynosoma coronatum coast (San Diego) horned lizard	SC		
Birds			
Agelaius tricolor tricolored blackbird	SC	Colonial species, most numerous in central valley and vicinity. Requires open water, protected nesting substrate, and foraging area (insects) within a few miles of colony.	High. Has been seen on-site near Palmdale Lake in riparian habitat.
Athene cunicularia burrowing owl	SC	Open dry annual or perennial grasslands, deserts and scrublands with low-growing vegetation. Subterranean nests, dependent on burrowing mammals, notably California ground squirrel.	High. Has been seen on-site in agricultural areas. Has potential to occur in undisturbed habitat in or adjacent to the project area.

TABLE 3.3-1
PLANT AND ANIMAL SPECIES WITH POTENTIAL TO OCCUR WITHIN THE VICINITY OF THE PROGRAM AREA

Species	Listing Status (USFWS/CDFG/CNPS/MSHCP)	Habitat Requirements	Potential to Occur On-site
Vireo bellii pusilus least Bell's vireo	FE, SE	Summer resident in So. California, willow riparian, mule fat, mesquite. Nests along margins of bushes.	Moderate. A single occurrence is known within the project area adjacent to Lake Palmdale.
Mammals			
Myotis yumanensis Yuma myotis	SC	Caves, although some make use of hollow trees, rocky crevices.	High. One sighting south of the project area in upper Littlerock Creek.
Spermophilus mohavensis Mohave ground squirrel	ST	Deserts, grasslands, shrublands, woodlands and forests. Open dry habitats with rocky areas for roosting. Roost sites must protect bats from high temperature.	High. Has been spotted in at least four different locations within the project area in open native scrub habitats.
Perognathus inornatus San Joaquin pocket mouse	SC	Alkali scrub and grasslands in the San Joaquin Valley.	High. One occurrence from the western portion of the project area. Has potential to occur in relatively undisturbed desert scrub in or adjacent to the project area.

Status Codes:

Federal (USFWS)	State (CDFG)	CNPS
FE = Federally endangered	SE = State endangered	1B.2 = rare, threatened, or endangered in California and elsewhere; fairly threatened in California
FT = Federally threatened	ST = State threatened	2.2 = rare, threatened, or endangered in California, not elsewhere; fairly threatened in California
	SC = State species of special concern	

Wildlife Movement

Habitat linkages are contiguous areas of open space that connect two larger habitat areas. Linkages provide for both diffusion and dispersal for a variety of species within the landscape. In addition, linkages can serve as primary habitat for some smaller species. Corridors are linear linkages between two or more habitat patches. Corridors provide for movement and dispersal, but do not necessarily include habitat capable of supporting all life history requirements of a species.

Wildlife movement corridors are critical for the survivorship of ecological systems for several reasons. Corridors can connect water, food, and cover sources, spatially linking these three resources with wildlife in different areas. In addition, wildlife movement between habitat areas provides for the potential of genetic exchange between wildlife species populations, thereby maintaining genetic variability and adaptability to maximize the success of wildlife responses to changing environmental conditions. This is especially critical for small populations subject to loss of variability from genetic drift and effects of inbreeding. The nature of corridor use and wildlife movement patterns varies greatly among species.

Jurisdictional Resources

Wetlands and permanent and intermittent drainages, creeks, and streams identified as waters of the US are generally subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) under Section 404 and Section 401, respectively, of the Federal Clean Water Act. The USACE has indicated that the isolated washes within the Antelope Valley watershed are not considered navigable water of the U.S.

Streambeds are subject to regulation by the CDFG under Section 1602 of the California Fish and Game Code. A stream is defined under these regulations as a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish or other aquatic life. This definition includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFG jurisdiction typically extends to the edge of the riparian vegetation canopy.

3.3.2 Regulatory Framework

Federal

Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) in the Department of the Interior, has responsibility for administration of the federal ESA. The ESA provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered in the U.S. or elsewhere. The federal ESA has four major components: 1) provisions are made for listing species, 2) requirements for federal agency consultation with USFWS or National Marine Fisheries Service (NMFS), 3) prohibitions against “taking” of listed species, and 4) the provisions for permits that allow incidental “take” of listed species for otherwise lawful activities. The ESA also requires the preparation of recovery plans and the designation of critical habitat for listed species. As presented in Table 3.3-1, two federally listed species have potential to occur within the project area; arroyo toad and least Bell’s vireo.

The Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711) makes it unlawful to possess, buy, sell, purchase, barter or “take” any migratory bird listed in Title 50 of the Code of Federal Regulations Part 10. “Take” is defined as possession or destruction of migratory birds, their nests or eggs. Disturbances that cause nest abandonment and/or loss of reproductive effort or the loss of habitats upon which these birds depend may be a violation of the MTBA.

Clean Water Act Section 404

Wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and floodwaters, and water recharge, filtration, and purification functions. Technical standards for delineating wetlands have been developed by the USACE which generally defines wetlands through consideration of three criteria: hydrology,

soils, and vegetation. Under Section 404 of the Clean Water Act (CWA), the USACE is responsible for regulating the discharge of dredged or fill material into waters of the United States. The term “waters” includes wetlands and non-wetland bodies of water that meet specific criteria as defined in the CFR. The USACE has indicated that the isolated washes within the Antelope Valley watershed are not considered navigable water of the U.S. as defined in the CWA and therefore are not within their jurisdiction to regulate under Section 404 of the CWA.

The USACE and U.S. Environmental Protection Agency (USEPA) issued a set of guidance documents detailing the process for determining CWA jurisdiction following the U.S. Supreme Court’s decision in *Rapanos v. United States* and *Carabell v. United States* (herein referred to simply as “Rapanos”). The USEPA and USACE issued a summary memorandum of the guidance for implementing the Supreme Court’s decision in Rapanos that addresses the jurisdiction over waters of the United States under the Clean Water Act. The complete set of guidance documents were used to collect relevant data for evaluation by the USEPA and the USACE to determine CWA jurisdiction over the project site and to complete the “significant nexus test” as detailed in the guidelines and the USACE-approved Jurisdictional Determination Form.

State

California Endangered Species Act

The California ESA (CESA) is similar to the main provisions of the federal ESA and is administered by the California Department of Fish and Game (CDFG). Unlike its federal counterpart, CESA applies the take prohibitions to not only listed threatened and endangered species, but also to state candidate species for listing. Section 86 of the Fish and Game Code defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” The CDFG maintains lists for Candidate-Endangered Species and Candidate-Threatened Species, which have the same protection as listed species. Under CESA the term "endangered species" is defined as a species of plant, fish, or wildlife, which is "in serious danger of becoming extinct throughout all, or a significant portion of its range" and is limited to species or subspecies native to California. As shown in Table 3.3-1, two state-listed species have potential to occur within the project area; least Bell’s vireo is state endangered and Mojave ground squirrel is state threatened.

Los Angeles County has identified five sensitive ecological areas (SEA) in its Planning Area, including Littlerock Wash, which runs from the San Gabriel Mountains to the Mojave Desert on the eastern side of the project area. This region contains habitats and provides a nesting environment for birds and a variety of mammals. Littlerock Wash supports diverse wildlife, serves as a migration corridor, and helps in seed dispersal of desert plants.

Clean Water Act Section 401/Porter-Cologne Act

The State of California regulates water quality related to discharge of dredge or fill material into waters of the State pursuant to Section 401 of the CWA. Section 401 compliance is a federal mandate regulated by the State. The local RWQCBs have jurisdiction over all those areas defined as jurisdictional under Section 404 of the CWA. In addition, the RWQCBs regulate water quality for all waters of the State, which may also include isolated wetlands, as defined by the California

Porter-Cologne Water Quality Control Act (Porter Cologne; Ca. Water Code, Div. 7, Section 13000 et seq.). The RWQCB regulates discharges that can affect water quality of both waters of the U.S. and waters of the State. If there is no significant nexus to a traditional navigable water body and thus no USACE jurisdiction over waters of the U.S., then the RWQCB regulates water quality of waters of the State through a Waste Discharge Permit, as required to comply with the Porter-Cologne Water Quality Control Act. A Section 401 water quality would not apply.

Section 1602 Lake and Streambed Alteration Agreement

Jurisdictional authority of the CDFG over the bed, bank, or channel of a river, stream, or lake is established under Section 1600 et. seq. of the California Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. The California Fish and Game Code stipulates that it is unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream, or lake resulting in a substantial effect on a fish or wildlife resource without notifying the CDFG and completing the Streambed Alteration Agreement process. Any project activities occurring in Littlerock Wash would fall under CDFG jurisdiction.

California Department of Fish and Game Codes

All birds, and raptors specifically, and their nests, eggs and parts thereof are protected under Sections 3503.5 of the California Fish and Game Code. Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) is considered a violation of this code. Additionally Section 3513 prohibits the take or possession of any migratory non-game bird listed by the MBTA. The CDFG has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (California Fish & Game Code Section 1802). The CDFG, as a trustee agency under *CEQA Guidelines* Section 15386, provides expertise in reviewing and commenting on environmental documents and makes and regulates protocols regarding potential negative impacts to biological resources held in California.

Non-Listed Species Management and Conservation Concerns

Species of Special Concern is an informal designation used by CDFG for some declining wildlife species that are not proposed for listing as threatened or endangered. This designation does not provide legal protection, but signifies that these species are recognized as declining by CDFG.

The CNPS has developed an inventory of California's sensitive plant species. This inventory summarizes information on the distribution, rarity, and endangerment of California's vascular plants. The inventory is divided into four lists based on the rarity of the species. In addition the CNPS provides an inventory of plant communities that are considered natural communities of special concern by the state and federal resource agencies, academic institutions, and various conservation groups. The determination of the level of significance of impacts on plant species and natural communities is based on the number and size of remaining occurrences as well as recognized threats.

Natural communities of special concern are those that support concentrations of special-status plant or wildlife species, are of relatively limited distribution, or are of particular value to

wildlife. Natural communities of special concern are not afforded legal protection unless they are designated critical habitat for federally listed threatened or endangered species, support formally listed species, or are jurisdictional wetland habitats.

Local

Los Angeles County Significant Ecological Areas (SEAs)

As part of the General Plan Conservation/Open Space and Land Use elements, the County has identified and adopted policies for SEAs. The purpose of establishing an SEA is to maintain biological diversity by establishing natural biological parameters, including species, habitat types, and linkages. The County General Plan includes recommended management practices for each SEA. The Antelope Valley SEA is located in the project vicinity to the east of the project area.

Palmdale Native Plant Ordinance

The Joshua Tree and Native Desert Vegetation Preservation Ordinance (Ord. No. 952, Chapter 14.04 of Title 14 of the Palmdale Municipal Code) applies to all public and private property which contains Joshua trees or other desert vegetation including California juniper. For development in these areas, a proposal application would be necessary, including a desert vegetation preservation plan which depicts the location of each Joshua tree and California juniper, details tree age and health, and describes which can be saved and maintained on the site or relocated. A permit must be obtained from the City of Palmdale's landscape architect prior to removal of protected vegetation.

Prior to project implementation, complete assessments of flora and fauna within and adjacent to the project site should be performed. Those assessments should include protocol level surveys for plant and wildlife species of special management concern that have high potential to occur onsite or that have been positively identified onsite or adjacent to the site. Acceptable species-specific survey protocols for endangered, rare, and threatened species should be developed in consultation with the CDFG and US FWS.

The City of Palmdale General Plan

The City of Palmdale Planning Area encompasses approximately 174 square miles within a transitional area between the foothills of the San Gabriel and Sierra Pelona Mountains and the Mojave Desert to the north and east. As a result, the Planning Area contains a variety of plant and animal communities, slope conditions, soil types and other physical characteristics. In general, the Planning Area slopes from south to north-northeast, with surface flows and subsurface flows trending away from the foothills to Rosamond Dry Lake. While foothill areas within and adjacent to the City contain significant slopes, a majority of the Planning Area is relatively flat. The major watercourses flowing through Palmdale and in close proximity to the project area include Amargosa Creek, Anaverde Creek, Littlerock Wash and Big Rock Wash.

The City's Program EIR for the General Plan documents existing environmental conditions and provides an assessment of citywide and regional impacts expected to occur as development takes place under the General Plan. The Program EIR serves as the mechanism for evaluating proposed discretionary projects that may impact the area's resources and for providing appropriate

mitigation measures. In compliance with the City's General Plan, a mitigation monitoring plan must be adopted prior to project implementation and shall ensure that mitigation of project specific impacts is undertaken in a timely manner.

West Mojave Plan

The West Mojave Plan comprises a 9.4 million-acre planning area that encompasses most of California's western Mojave Desert. It extends from Olancha in Inyo County on the north to the San Gabriel and San Bernardino Mountains on the south, and from the Antelope Valley on the west to the Mojave National Preserve on the east.

The Draft West Mojave Plan is a pending habitat conservation plan (HCP) pursuant to the federal ESA with a purpose of creating a comprehensive strategy to conserve and protect the desert tortoise, the Mohave ground squirrel, and almost 100 other sensitive species, as well as the natural communities in which they reside. In addition, this HCP will provide a streamlined program for complying with the requirements of the CESA and federal ESA. The HCP has not yet been approved by the USFWS, CDFG, and the Los Angeles County Board of Supervisors.

According to the Bureau of Land Management (BLM), their March 2006 Record of Decision for the Final EIR evaluating the amendment to the California Desert Conservation Area Plan, the HCP has not yet been adopted. Once it is completed, incidental take permits for any covered species would be issued to participating local jurisdictions and state agencies. This incidental take authorization cannot be implemented, however, until the local governments complete the application for incidental take permits and receive approval from state and federal wildlife agencies. The City of Palmdale is expected to participate in a multi-jurisdictional habitat preservation plan for the West Mojave Desert area (West Mojave Coordinated Management Plan), and will implement the provisions of this Plan after adoption by the City Council.

3.3.3 Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the level of significance of impacts to biological resources are based on Appendix G of the *CEQA Guidelines*. The proposed project would have a significant impact on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

Impacts Discussion

Potential impacts may occur to some natural communities within and immediately adjacent to the project area. The ultimate locations of individual projects and infrastructure are not known in detail at this time; Figure 2-1 shows conceptual locations for future facilities, including potential wells along the west side of the Lower and Upper Littlerock Creek. Future well sites along the Littlerock Creek are anticipated to be located within a combination of such natural communities as creosote bush scrub, Joshua tree woodland, rabbitbrush scrub, saltbush scrub, and desert wash scrub. Other future well sites are anticipated to occur in developed and agricultural areas. The proposed treatment plant would be located south of East Avenue and north of the aqueduct in an area consisting mainly of creosote bush scrub habitat. This area has a semi-disturbed quality due to the presence of multiple trails for recreational off-road vehicles use and possesses a patch of cleared bare ground adjacent to 47th Street East, just north of the aqueduct. This area is also bordered on three sides by development; residential housing to the east and west and the aqueduct to the south. It is contiguous with somewhat higher quality creosote bush scrub to the north, which intergrades into sparse Joshua tree woodland habitat. The affiliated existing storage tanks are located immediately south of the aqueduct off of 47th Street East and are surrounded by low hills containing creosote bush scrub.

Special-Status Species

Impact 3.3-1: Activities associated with the construction and operation of the proposed project could result in substantial adverse effects, either directly or through habitat modifications, on wildlife species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS. (Less than Significant with Mitigation)

The CNDDB search indicated the potential for nine special-status wildlife species to occur in the vicinity of the project area (Table 3.3-1). Construction and operation of various proposed SWRP water facilities would have the potential to impact these special-status species, although the ultimate locations of many project components and the resulting effects to species are not known at this time. Implementation of **Mitigation Measures BIO-1a** through **BIO-1g** would avoid potential impacts to special-status species or reduce the impact to a level of less than significant.

Mitigation Measures

> **BIO-1a:** Prior to ground disturbing activities for individual projects, a habitat assessment shall be conducted by a qualified biologist to determine the potential for special-status wildlife species to occur within affected areas. If the habitat assessment determines that a special-status species has the potential to be present within a minimum of 500 feet of the construction zone, a focused survey shall be conducted by a qualified biologist prior to the project implementation to determine presence or absence.

BIO-1b: If a special-status wildlife species is determined present within the limits of construction activities, a qualified biologist shall conduct pre-construction surveys of proposed work zones and the 500-foot buffer around each area within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species, such as burrows, shall be flagged for avoidance, as necessary; any additional habitat features, if any, shall also be identified and flagged as necessary. The results of these pre-construction surveys shall be submitted to CDFG and USFWS for their review.

BIO-1c: If the habitat assessment concludes that there is potential for listed wildlife species to occur and the area of potential presence cannot be avoided, appropriate protocol-level surveys shall be conducted by a qualified biologist under a Memorandum of Understanding by the appropriate regulating agency (USFWS or CDFG) to determine presence or absence. If a listed species is determined to have the potential to be present in or adjacent to the area of disturbance, an avoidance plan shall be prepared by a qualified biologist and approved by the USFWS and/or the CDFG prior to any ground disturbing activities.

BIO-1d: Every effort shall be made to avoid potential impacts to special-status wildlife species by eliminating construction activities to the greatest extent possible within areas where those species ARE detected through surveys. Tunneling or jack and bore construction methods under drainages that may support listed special-status wildlife species shall be recommended in areas where those species have the potential to occur or where presence has been confirmed.

BIO-1e: All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special-status wildlife species as determined by a qualified biologist.

BIO-1f: Silt fencing or similar impermeable barriers to exclude small wildlife species from entering the active work areas shall be installed around future work areas that occur within or adjacent to undisturbed habitats, or near areas of documented occurrences of special-status wildlife as determined during pre-construction surveys by a qualified biologist. Such impermeable barriers shall be verified by a qualified biologist prior to initiating construction activities.

BIO-1g: In areas where pre-construction surveys determine that burrowing owls have the potential to occur, the following measures shall be implemented to mitigate for potential impacts to burrowing owls. The following measures shall be implemented as part of the approval for a grading or building permit. Appropriate notes shall be included on any grading permit, building permit or final map.

To avoid impacts on western burrowing owl, the following guidelines, adapted from the C*DFG Staff Report on Burrowing Owl Mitigation* (CDFG, 1995), shall be implemented:

1. A qualified wildlife biologist (i.e., a wildlife biologist with previous burrowing owl survey experience) shall conduct a preconstruction survey to locate any breeding or wintering burrowing owls no more than 30 days prior to the start of construction.
2. If no burrowing owls are detected, no further mitigation is necessary. If burrowing owls are detected, no ground-disturbing activities, such as road construction or installation of

turbines or ancillary facilities, shall be permitted within 250 feet of an active burrow during the breeding season (February 1–August 31), unless otherwise authorized by the CDFG. Occupied burrows should not be disturbed during the nesting season unless a qualified biologist approved by CDFG, verifies through noninvasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival.

3. During the non-breeding (winter) season (September 1–January 31), ground-disturbing work can proceed near active burrows as long as the work occurs no closer than 160 feet from the burrow and the site is not directly affected by the project activity. If active winter burrows are found that would be directly affected by ground-disturbing activities, owls can be displaced from winter burrows. A qualified wildlife biologist shall install one-way doors at the entrance to the active burrow and other potentially active burrows within 150 feet of the active burrow. Forty-eight hours after the installation of the one-way doors, the doors can be removed, and ground-disturbing activities can proceed.
4. Should burrowing owls be found on-site, and if it is determined that the proposed project would reduce suitable habitat on-site below CDFG threshold levels, the habitat shall be replaced off-site if no suitable on-site habitat is available. Off-site habitat must consist of suitable burrowing owl habitat, as defined in the Burrowing Owl Survey Protocol, and the location shall be approved by the CDFG. The appropriate replacement ratio will be determined through consultation with the CDFG.

Significance after Mitigation: Less than significant

Impact 3.3-2: Activities associated with the construction and operation of the proposed project could interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, such as birds and bats, or impede the use of native wildlife nursery sites. (Less than Significant with Mitigation)

Common and special-status migratory birds are known to nest or forage in habitats found within the project area such as the scrub vegetation, Joshua tree woodland, and riparian areas. One listed avian special-status species has potential to occur in the project area, the federally endangered least Bell's vireo. This species has been sighted within the project area near Palmdale Lake. The willow riparian habitats that occur along Upper Littlerock Creek may also provide potentially suitable habitat for least Bell's vireo. Any impacts to this species would be considered significant. While the ultimate location of project facilities is unknown, there is least Bell's vireo habitat in proximity to potential facility locations. Therefore, focused surveys should be performed by a qualified biologist prior to any construction activities that could result in direct or indirect impacts to breeding or nesting least Bell's vireos. Implementation of Mitigation Measure BIO-2a through BIO-2c would reduce impacts on nesting birds and the least Bell's vireo to less than significant.

Implementation of the proposed project may result in temporary or permanent loss of foraging habitat for migratory birds, including raptor species. Similarly, proposed construction and operational activities could impact roosting bats. Potential bat roost sites in the vicinity of the project area may include abandoned structures and bridges. In addition to the special-status species listed in Table 3.3-1, other special-status raptor species that are known to occur in the vicinity of the project area include: Cooper's hawk, sharp-shinned hawk, golden eagle, ferruginous hawk, Swainson's hawk, northern harrier, white-tailed kite, merlin, prairie falcon, American peregrine falcon, short-eared owl, and long-eared owl. In addition, bats may forage within the undisturbed habitats where construction activities may occur; especially in areas where water is available. Future construction of project components could result in temporary loss of foraging habitat for raptors and bats. Implementation of **Mitigation Measures BIO-2a** through **BIO-2c** would reduce potential direct and indirect impacts to migratory birds, raptor species, and bats to a level of less than significant.

Mitigation Measures

BIO-2a: If construction and vegetation removal is proposed between February 1 and August 31, then a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds within 500-feet of the construction limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites located during the pre-construction surveys shall be avoided and a non-disturbance buffer zone shall be established, consisting of 300 feet for any passerine (or similar) species and 500 feet for any raptor or special-status species, or distances otherwise determined by a qualified biologist and approved by the CDFG. Nest sites shall be avoided with approved non-disturbance buffer zones until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.

BIO-2b: All active bird nest buffer areas shall be clearly demarcated with stakes, flag, or fence material. The installation of buffer areas shall be verified by a qualified biologist prior to the initiation of ground disturbance activities.

BIO-2c: A qualified biologist shall conduct a survey for bat roost sites prior to the initiation of any construction activities in areas where potential roost sites may occur, such as abandoned structures, bridges, or hollow trees. If a bat roost is identified, a minimum 300 foot buffer shall be established by a qualified biologist or as otherwise determined in consultation with the CDFG.

Significance after Mitigation: Less than significant

Impact 3.3-3: Activities associated with the construction and operation of the proposed project could result in adverse impacts to special-status plant species. (Less than Significant with Mitigation)

The CNDDB and CNPS search results indicated the potential presence of two special-status plant species within and nearby the project area; short-joint beavertail cactus (*Opuntia basilaris* ssp. *brachyclada*) and sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*).

The majority of facilities are expected to occur within developed and disturbed areas along existing roadways and in agricultural zones that do not support native vegetation; however, some potential construction may occur in or adjacent to natural communities near Littlerock Creek, which contains native desert habitats, such as Mojave Desert scrub, Joshua tree woodland, and Mojave riparian wash, which have potential to support those special-status plant species. Impacts to special-status plant species would be reduced to less than significant with the implementation of **Mitigation Measures BIO-3a** through **BIO-3f**.

> **BIO-3a:** To the extent feasible, PWD shall avoid and/or reduce the footprint of construction and staging areas in areas having potential occurrences of special-status plant species.
>
> **BIO-3b:** A qualified botanist shall conduct a pre-construction floristic inventory and focused rare plant survey of project areas to determine and map the location and extent of special-status plant species populations within the disturbance area. This survey shall occur during the typical blooming periods of special-status plants with the potential to occur. The plant survey shall follow the CDFG Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (November 24, 2009).
>
> **BIO-3c:** The limits of construction shall be staked, flagged, fenced, or otherwise clearly delineated to avoid and minimize impacts on adjacent habitats that may support special-status plant species.
>
> **BIO-3d:** Earth-moving equipment shall avoid maneuvering in areas outside the identified limits of construction in order to avoid disturbing areas that will remain undeveloped. These limits of natural open space areas that are adjacent to the limits of construction shall be identified on the site plans.
>
> **BIO-3e:** If permanent unavoidable impacts to special-status plant populations are identified within a disturbance area, PWD shall develop and implement a detailed plant restoration program. This program shall contain the following items: responsibilities and qualifications of the personnel to implement and supervise the program; site selection; site preparation and planting implementation; schedule; maintenance plan/guidelines; monitoring plan; long-term preservation; and performance standards.
>
> **BIO-3f:** If temporary construction-related impacts to special-status plant populations are identified within a disturbance area, PWD shall prepare and implement a special-status species salvage and replanting plan. The salvage and replanting plan shall include measures to salvage, replant, and monitor the disturbance area until native vegetation is re-established under the direction of CDFG and USFWS.

Significance after Mitigation: Less than significant

Impact 3.3-4: Activities associated with the construction and operation of the proposed project could result in adverse impacts to sensitive natural communities. (Less than Significant with Mitigation)

Sensitive habitats include those of special concern to resource agencies or afforded specific consideration through CEQA, Section 1602 of the California Fish and Game Code, Section 404 of the federal CWA, and the state's Porter Cologne Water Quality Control Act. Sensitive natural habitat may be of special concern to these agencies and conservation organizations for a variety of reasons, including their locally or regionally declining status, or because they provide important habitat to common and special-status species. Many of these communities are tracked in the CNDDB, a statewide inventory of the locations and conditions of the state's rarest plant and animal taxa and vegetation types.

Joshua tree woodland is considered a threatened community by the CNDDB with a state ranking of S3.2. Joshua tree woodland generally occurs within the open spaces areas located in the southern and eastern portions of the project area. Some Joshua trees may be encroached upon or removed as a result of project-related construction activities. Palmdale's Native Desert Vegetation Preservation Ordinance dictates that where possible, Joshua trees should remain undisturbed and be incorporated into the design of the development. Impacts to Joshua trees and other native plant species would be considered less than significant with the implementation of **Mitigation Measures BIO-4a** through **BIO-4d**.

> **BIO-4a:** To the extent feasible, project components shall be placed in areas exhibiting absence or a low density of Joshua trees and other native desert vegetation.
>
> **BIO-4b:** Should a project require the removal of any Joshua trees, the applicant will have to prepare a desert vegetation preservation plan that will include numbers and locations of all Joshua trees, detailed landscaping plan, preservation areas, transplant procedures, a two-year maintenance and monitoring program including contingency measures to ensure that the plan is successful, and funding to ensure that it will be maintained and preserved in perpetuity. The plan shall depict the location of each Joshua tree that may be subjected to impacts, including the approximate age of the tree and health, and identification of which trees can be saved and maintained on the site or relocated.
>
> **BIO-4c:** Where Joshua trees cannot be retained on site, the applicant must make them available to the City for landscaping uses related to City property. Joshua trees should also be made available by 30-day public notice to other commercial, industrial, or residential developments and to the general public for landscaping uses. Joshua trees remaining after the above options have been exhausted may be transplanted to an offsite location approved by the City.
>
> **BIO-4d:** If trees cannot be transplanted to an off-site location, the proponent may pay an in-lieu fee to the City, which shall be determined by resolution of the City Council.

Significance after Mitigation: Less than significant

Impact 3.3-5: Activities associated with the construction and operation of the proposed project could result in adverse impacts on riparian habitats. (Less than Significant with Mitigation)

Construction through areas with wetland features would require RWQCB and CDFG approval. Features within the project area that could support jurisdictional wetlands or drainages include those portions of Upper and Lower Littlerock Creek, Palmdale Lake, Lower Armargosa, and Anaverde Creek that could lie within the boundary of finalized proposed facilities. Once project facility locations and designs are determined, exact locations and acreages of jurisdictional areas located within or adjacent to impact areas shall be determined through a formal jurisdictional delineation.

In compliance with existing federal, state, and local regulations, PWD would be required to obtain California Fish and Game Code Section 1602 compliance in the form of a completed Streambed Alteration Agreement or written documentation from the CDFG that an agreement is not required. PWD would be required to implement all the terms and conditions of the CDFG Streambed Alteration Agreement. Implementation of **Mitigation Measures BIO-5a** through **BIO-5d** would ensure compliance with state and federal regulations relating to potentially jurisdictional features, including wash habitat vegetation that may fall under CDFG jurisdiction.

> **BIO-5a:** Prior to construction, a qualified wetland delineator shall be retained to conduct a formal wetland delineation in areas where potential jurisdictional resources (i.e., wetlands or drainages) may occur. If jurisdictional resources are identified in the project area and would be directly or indirectly impacted by construction of individual projects, the qualified wetland delineator shall prepare a jurisdictional delineation report outlining mitigation and compensation requirements to be implemented prior to construction.
>
> **BIO-5b:** Proposed projects shall avoid impacting previously undisturbed areas where possible. This would include employing tunneling or jack and bore methods under drainages. The construction zone(s) shall be modified if feasible to minimize disturbance of any wetland or drainage.
>
> **BIO-5c:** Where jurisdictional wetlands and other waters cannot be avoided, a restoration plan shall be prepared that provides for replanting and monitoring for a minimum three-year period following construction to ensure riparian habitat is re-established.
>
> **BIO-5d:** PWD shall obtain wetland determination from CDFG and/or RWQCB prior to project implementation for project features that may impact waters of the State.

Significance after Mitigation: Less than significant

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3.4 Cultural Resources

This section describes the environmental setting for cultural and paleontological resources, the applicable regulatory framework, potential impacts of the proposed project, and mitigation measures to reduce those impacts to a level of less than significant.

Cultural resources are defined as prehistoric and historic sites, structures, districts, and landscapes, or any other physical evidence associated with human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious or any other reason. Under CEQA, paleontological resources, although not associated with past human activity, are grouped within cultural resources. For analysis purposes, cultural resources may be categorized into four groups: archaeological resources, historic resources, including architectural/engineering resources, contemporary Native American resources, and paleontological resources.

Archaeological resources are places where human activity has measurably altered the earth or left deposits of physical remains. Archaeological resources may be either prehistoric-era (before European contact) or historic-era (after European contact). The majority of such places in California are associated with either Native American or Euro-American occupation of the area. The most frequently encountered prehistoric or historic Native American archaeological sites are village settlements with residential areas and sometimes cemeteries; temporary camps where food and raw materials were collected; smaller, briefly occupied sites where tools were manufactured or repaired; and special-use areas like caves, rock shelters, and rock art sites. Historic-era archeological sites may include foundations or features such as privies, corrals, and trash dumps.

Historic resources include standing structures, infrastructure, and landscapes of historic or aesthetic significance that are generally 50 years of age or older. In California, historic resources considered for protection tend to focus on architectural sites dating from the Spanish Period (1529-1822) through the early years of the Depression (1929-1930), although there has been recent attention paid to WWII and Post War era facilities. Earlier historic resources are often associated with archaeological deposits of the same age. Some resources, however, may have achieved significance within the past 50 years if they meet the criteria for exceptional significance.

Contemporary Native American resources, also called ethnographic resources, can include archaeological resources, rock art, and the prominent topographical areas, features, habitats, plants, animals, and minerals that contemporary Native Americans value and consider essential for the preservation of their traditional values. These locations are sometimes hard to define and traditional culture often prohibits Native Americans from sharing these locations with the public.

Paleontology is a branch of geology that studies the life forms of the past, especially prehistoric life forms, through the study of plant and animal fossils. Paleontological resources represent a limited, non-renewable, and impact-sensitive scientific and educational resource. As defined in this section, paleontological resources are the fossilized remains or traces of multi-cellular invertebrate and vertebrate animals and multi-cellular plants, including their imprints from a

previous geologic period. Fossil remains such as bones, teeth, shells, and leaves are found in the geologic deposits (rock formations) where they were originally buried. Paleontological resources include not only the actual fossil remains, but also the collecting localities, and the geologic formations containing those localities.

3.4.1 Environmental Setting

Regional Setting

The proposed project area, located mainly within the Palmdale Water District (PWD), lies within the Antelope Valley, which is situated along the boundary between two major geomorphic provinces: the Transverse Ranges and the Mojave Desert (CGS, 2000). The Transverse Ranges province is characterized by east-west oriented mountain ranges including the Tehachapi Mountains to the north, and the San Gabriel, Sierra Pelona and Liebre Mountains to the southwest. The Mojave Desert province is characterized primarily by a broad interior region of isolated mountain ranges separated by expanses of desert plains. The Mojave Desert province is wedged between the Garlock Fault and the San Andreas Fault, which have uplifted the surrounding mountains relatively rapidly, isolating the Mojave Desert from the Pacific Coast and creating the interior drainage basins of the western Mojave Desert, such as the Antelope Valley. The west end of the Antelope Valley is defined by the Tehachapi and San Gabriel Mountains, forming the v-shaped basin of the western Mojave Desert.

The Antelope Valley varies in elevation from 2,270 feet above mean sea level (amsl) on the desert floor to between 3,000 and 4,000 feet amsl at the surrounding foothills. Due to its location in the rain shadow of the nearby San Gabriel Mountains, the Antelope Valley experiences a wide range of diurnal and seasonal temperature variations. Precipitation within the Antelope Valley averages just above five inches per year and falls principally as either rain or snow during October through March. However, tropical storms originating in the Pacific Ocean can cause as much as 20 percent of the annual rainfall to occur during the months of August through October (Grayson, 1993). In general, the southern foothills receive more precipitation than the drier, lower plains.

The Antelope Valley floor is mantled in thick deposits of Quaternary alluvial and lacustral (lakebed) sediments that have filled the West Antelope, East Antelope and Kramer structural basins (CGS, 2000). The alluvial sediments are subdivided into two units: the older (Pleistocene) Quaternary sediments, and younger (Holocene) alluvial surface deposits. These alluvial sediments are derived from nearby granitic mountains and have been deposited on the valley floor over the course of thousands of years.

Paleoenvironment

As glaciers in the western United States began to retreat between 12,000 and 10,000 years ago, the climate became dramatically warmer and drier, and vegetation communities such as piñon-juniper woodlands, along with the animals that relied on them, began to inhabit higher elevations (Price et al., 2008). During the late Pleistocene age, fossil evidence suggests that the Antelope

Valley was inhabited by numerous large mammalian species including sloths, horses, bears, mammoth, bison, camels, as well as prong-horned antelope. Large carnivorous species included saber-toothed cats, wolves, mountain lions, desert coyotes and foxes, while smaller animals included rodent, rabbits, squirrels and a multitude of birds. Studies of pollen and pack rat middens suggest that desert vegetation began replacing the low-elevation woodlands between 12,000 and 8,000 year ago (Price et al, 2008). Evidence suggests that the plant and animal communities that exist within the Antelope Valley today did not become established until after 4,300 years ago.

The Antelope Valley is a closed basin; that is, a basin that has no outlet for its surface streams. All rainwater either sinks into the ground or collects in the lower part of the Valley. Data suggest that, during several periods of time, much of the Antelope Valley was covered by a large fresh-water lake, named Lake Thompson by modern researchers. By about 8,000 years ago, Lake Thompson appears to have receded and split into Rosamond, Buckhorn, and Rogers Lakes (Price et al., 2008).

Prehistoric Setting

The prehistory of the Mojave Desert is generally described in terms of cultural "complexes." A complex is a specific archaeological manifestation of a general mode of life, characterized archaeologically by technology, artifact types, economic systems, trade, burial practices, and other aspects of culture. Complexes are typically associated with particular chronological periods. The prehistory of the Mojave is generally divided into the following time-periods/complexes: Paleo-Indian, Lake Mojave Complex, Pinto Complex, Gypsum Complex, Rose Springs Complex, and Late Prehistoric.

Paleo-Indian (10,000-8,000 B.C.)

The Paleo-Indian period is sparsely represented in the Mojave, primarily by large, fluted Clovis projectile points. This limited evidence suggests that early human occupants of the Mojave probably lived in small, mobile groups in temporary camps in the vicinity of permanent water sources (Sutton et al., 2007). In the Antelope Valley, a fragment of a fluted Clovis point was recorded on the southern slopes of the Tehachapis, and recent excavations at Rosamond Lake have documented a terminal Pleistocene/Early Holocene occupation (Pacific Legacy, 2007). In addition, the earliest occupation identified at site CA-KER-2821/H, an extensive multicomponent site near Willow Springs, has been radiocarbon dated to 9020-9430 RCYBP (radiocarbon years before present) (Way, 2009).

Lake Mojave Complex (8,000-6,000 B.C.)

In terms of material culture, the Lake Mojave Complex is typified by stone tools such as Lake Mojave and Silver Lake projectile points, bifaces, steep-edged unifaces, crescents, and some ground stone implements (Sutton et al., 2007). Lake Mojave groups were organized in relatively small, mobile groups and practiced a forager-like subsistence strategy. Some trade with coastal groups was practiced, as evidenced by the presence of shell beads. Lake Mojave sites have been

found primarily around Fort Irwin, Lake Mojave, China Lake, Rosamond Lake, and Twentynine Palms.

The Pinto Complex (6,000 to 3,000 B.C.)

Archaeological deposits dating from the Pinto Period suggest that Pinto settlement patterns consisted of seasonal occupation by small, semi-sedentary groups that were dependent upon a combination of big and small-game hunting and collection strategies, which could include the exploitation of stream or water resources. Typically, sites of this period are found along lake shores and streams or springs, some of which are now dry. Material culture representative of this period in California prehistory includes roughly formed projectile points, "heavy-keeled" scrapers, choppers, and a greater prevalence of flat millingstones and manos (hand-held grinding stones), indicating a more intensive use and processing of plant resources (Warren, 1984; Sutton et al., 2007). At the end of the middle Holocene, around 3000 B.C., environmental conditions became much drier and hotter, and few sites in the Mojave date to the period between 3000 and 2000 B.C., suggesting that the area's population may have decreased during this period of unfavorable climate (Sutton et al., 2007).

A number of Pinto sites have been recorded in the Antelope Valley, including at least six at Edwards Air Force Base and several more in the Barrel Springs area, south of Palmdale (Price et al., 2008). Research suggests that the foothills adjacent to the San Andreas Fault have been occupied continuously since the mid-Holocene, likely due to constant availability of water from springs around the fault (Price et al., 2008).

Gypsum Complex (c. 2,000 B.C. to A.D. 200)

Many archaeological sites of this period are small and surficial, probably of a temporary nature. It is during this time, however, that more archaeological evidence suggestive of inter-tribal trade appears, particularly between the desert and the coast. At site CA-LAN-192 at Lovejoy Springs, which has a prominent Gypsum component, a group inhumation with at least nine individuals was uncovered, including a child buried with approximately 3,000 *Olivella* shell beads from the southern Californian coast (Price et al., 2008). The artifact assemblage associated with this period also includes an increased number of millingstones and manos, and it is believed that it was during this period that the pestle and mortar were introduced. These technological developments may point to the increased consumption of seeds and mesquite. Other artifacts associated with the Gypsum Period include Humboldt Concave Base, Gypsum Cave, Elko Eared, and Elko Corner-notched projectile points (Warren, 1984).

Rose Springs Complex (c. A.D. 200 to 1,200)

The general cultural pattern for this period is a continuation of that of the preceding Gypsum Period. Rose Springs archaeological sites are more numerous than previous periods and contain more well-developed middens, indicating an increase in population and a more permanent settlement pattern (Sutton et al., 2007). In addition, the archaeological record attests to established trade routes between desert and coastal populations by way of shell beads and steatite, as well as an introduction of Anasazi influence from the eastern Great Plains as evidenced by the

appearance of turquoise and pottery. Material culture related to this complex includes obsidian artifacts, Rose Spring and Eastgate projectile points, millingstones, manos, mortars and pestles, slate pendants, and incised stones (Warren, 1984). Rose Springs sites along Amargosa Creek, west of Palmdale, contain workshops for the production of beads made out of steatite and chlorite schist, materials native to that area (Price et al, 2008). These beads, and others like them, are found in other sites across the western Mojave.

The frequent use of obsidian is a defining feature of the Rose Springs period. Obsidian from the Coso volcanic field, 70 miles north of Mojave, was imported in near-finished form for use in making lithic tools (Price et al., 2008). The importing of obsidian seems to have dropped sharply at the end of the Rose Springs period, possibly associated with the Medieval Climatic Anomaly, a period of climate change around A.D. 1100 to 1300, and the concurrent migration of Numic-speaking populations out of southeastern California and into the Great Basin.

Several periods of drought affected the Mojave in the Rose Springs period, associated with the Medieval Climatic Anomaly, and subsequent Late Prehistoric Period. Drops in the lake levels at Mono Lake attest to dry periods in A.D. 900-1100 and A.D. 1200-1350 (Price et al, 2008).

The Late Prehistoric Period (A.D. 1,200 to European Contact)

Following periods of drought during the Rose Springs Period, wetter conditions returned between A.D. 1350 and 1600, associated with a climatic event known as the Little Ice Age (Price et al, 2008).

By the Late Prehistoric Period, an extensive network of established trade routes wound their way through the desert, routing goods to populations throughout the Mojave region. Trade routes have been postulated as running along the foothills on the southern border of the Antelope Valley and along the Mojave River (Farmer, 1935; Sutton, 1988). The Antelope Valley sat at a convenient geographical location for controlling trade, between the Great Basin and the southern coastal region (Sutton, 1988).

It is also believed that these trade routes encouraged or were the motivating factors for the development of more “increasingly complex socioeconomic and sociopolitical organizations” among Protohistoric peoples in southern California (Warren, 1984). Housepit village sites are prevalent during this period, as are the presence of Desert Side-notched and Cottonwood projectile points, brownware and buffware ceramics, steatite shaft straighteners, painted millingstones, and, to a lesser degree, coastal shell beads. Beginning around A.D. 1300, however, a decline in trade occurred and well-established village sites were abandoned (Warren, 1984). Few sites in the Antelope Valley were occupied after 1650 AD (Warren, 1984). This is in direct contrast to the southern Sierra Nevada and Tehachapi Mountains regions, where the density of settlements increased after A.D. 1300.

Ethnographic Setting

At the time of European contact, numerous groups occupied the area in and surrounding the Antelope Valley. The southeastern portion of the Valley, around the Mojave River, was inhabited by the Serrano and Vanyume. The territory of the Tataviam centered on the southwestern extent of the Antelope Valley, the Santa Clara River drainage, and possibly the Sierra Pelonas and the Palmdale area (Sutton, 1988). The Kitanemuk inhabited the southern Tehachapi Mountains and the northern and central portion of the Antelope Valley. Finally, during the historic period, there is some evidence for the occupation of the Western Mojave by the Chemehuevi. These five groups are described in more detail below.

A number of other groups neighbored the Antelope Valley and may have passed through the valley on occasion. To the north, the Kawaiisu occupied the southern Sierra Nevada and the northern Tehachapi Mountains, and may have also inhabited part of the western Mojave Desert (Sutton, 1988). The Chumash were present along the coast to the West, the Yokuts to the North, and the Mojave to the east.

Serrano and Vanyume

The Serrano occupied territories that ranged from low or moderately low desert to the mountain regions of the Transverse and Peninsular ranges. Serrano territory was bordered to the west roughly by the Cajon Pass in the San Bernardino Mountains, to the east by Twenty-Nine Palms and to the south by Yucaipa Valley. Their territory extended north of the San Bernardino Mountains into the desert near Victorville, along the Mojave River.

The Serrano were organized into clans, with the clan being the largest autonomous political entity. They lived in small villages where extended families lived in circular, dome-shaped structures made of willow frames covered with tule thatching. Each clan had one or more principal villages in addition to numerous smaller villages associated with the principal village (Price et al, 2008).

Villages located at higher elevations were placed near canyons that received substantial precipitation or were adjacent to streams and springs. Villages situated at lower elevations were also located close to springs or in proximity to the termini of alluvial fans where the high water table provided abundant mesquite and shallow wells could be dug.

The Serrano subsistence strategy relied upon hunting and gathering, and occasionally fishing. Villages divided into smaller, mobile gathering groups during certain seasons to gather seasonally available foods. The division of labor was split between women gathering and men hunting and fishing (Bean and Smith, 1978; Warren, 1984). Mountain sheep, deer, rabbits, acorns, grass seeds, piñon nuts, bulbs, yucca roots, cacti fruit, berries, and mesquite were some of the more common resources utilized (Bean and Smith, 1978; Warren, 1984).

Despite early European and Spanish contact in 1771, the Serrano remained relatively autonomous until the period between 1819 and 1834 when most of the western Serrano were removed and placed into missions (Bean and Smith, 1978; Warren, 1984).

The Vanyume are a little-known group, but are often thought to be affiliated with the Serrano, if not a subset of the Serrano. Kroeber (1925), for instance, calls the Vanyume the "Serrano of the Mohave River". Whether they spoke the Serrano language or another Takic language is unknown, but they do seem to have had some political autonomy from other Serrano groups (Bean and Smith, 1978). The Vanyume occupied the area along the Mojave River, to the north of Serrano territory. Vanyume lifestyles and customs were similar to the Serrano (AVIM, 2009).

Tataviam

Tataviam territory was concentrated along the upper reaches of the Santa Clara River drainage east Piru Creek and along the southern slopes of Sawmill and Liebre Moutains; however, their territory extended north into the southern end of the Antelope Valley (King and Blackburn, 1978). Tataviam villages varied in size from larger centers with as many as 200 people, to smaller villages with only a few families. At the time of Spanish contact, the Tataviam population is estimated to have been less than 1000. Primary vegetable food sources included acorns, juniper berries, seeds, and yucca buds. Small game such as antelope and deer supplemented these foods.

As with the Kitanemuk, there are few historical sources regarding the Tataviam. The word "Tataviam" most likely came from a Kitanemuk word that may be roughly translated as "people of the south-facing slope", due to their settlement on south-facing mountain slopes (King and Blackburn, 1978). What the Tataviam called themselves is not known.

Kitanemuk

The Kitanemuk occupied a territory that extended from the Tehachapi Mountains into the western end of the Antelope Valley. While most of their recorded villages were located in the Tehachapis, their settlement pattern is poorly understood. Some scholars posit that the Antelope Valley's desert floor was used only on a seasonal basis, while others point to archaeological evidence of permanent occupation of the desert floor during the Late Prehistoric Period (Sutton, 1980). While the Kitanemuk maintained friendly relations with their other neighbors such as the Chumash, historic evidence indicates that their relationship with the Tataviam was generally hostile (Blackburn and Bean, 1978).

Like other Takic-speaking groups, such as the Serrano, Kitanemuk society had a patrilineal organization. Families grouped together into villages, which were headed by a team of "administrative elite" composed of a chief, messengers, and shamans. Kitanemuk subsistence was similar to their Tataviam neighbors. Primary vegetable food sources included acorns, juniper berries, seeds, and yucca buds. Small game such as antelope and deer supplemented these foods.

Chemehuevi

The Chemehuevi, a branch of the Southern Paiute, occupied a territory that stretched from the Colorado River to the San Bernardino Mountains. The Chemehuevi moved into the eastern Mojave around 1500 A.D. and into the Antelope Valley in the early 19th century (Earle, 2005). By the 1840s, many of the native populations of the Antelope Valley had been depleted by missionization or driven out by an increasing number of non-native settlers. In particular, the

opening of the Old Spanish Trail along the Mojave River caused the displacement of Vanyme groups, and brought other native groups, such as the Chemehuevi, into their former territory (Earle, 2005). Early American settlers in the Antelope Valley note the presence of "Paiutes" around Elizabeth Lake, Rosamond Dry Lake, Barrel Springs, and Big Rock Creek in the Valyermo and Littlerock areas, where there were apparently small Chemehuevi settlements (Earle, 2005).

Chemehuevi material culture and subsistence was similar to the Serrano and Cahuilla. One major difference was the use of baskets instead of pottery (Bean and Vane, 2002). As the Chemehuevi population movement into the Antelope Valley, cattle raiding became the predominant mode of subsistence (Earle, 2005). The Chemehuevi were divided into two moieties represented by two songs, the Mountain Sheep Song and the Deer Song, which were each associated with different hunting areas. They generally lived in bands of two or three families, with each band having its own leader (Bean and Vane, 2002).

Historic Setting

The first Europeans known to have visited the Mojave were Pedro Fages in 1772 and Juan Bautista de Anza and Father Francisco Garces in 1774 (Greene, 1983). In 1775, Father Garces separated from de Anza and crossed the Mojave along the ancient Mojave Trail from Needles west to the San Gabriel Mission.

The Spanish missions that dotted the California coast never spread inland to the Mojave, and the desert remained relatively unexplored and unsettled by Europeans for much of the next century. The Romero-Estudillo Expedition of 1823-24 was an attempt by the Spanish to establish a secure route between the California coast and Tucson; however, despite two attempts, the expedition never managed to make it as far as the Colorado River (Greene, 1983).

The first recorded American visitors to the Mojave were the party of Jedediah Smith, who crossed the Mojave along the Mojave Trail in 1826. Ewing Young and Kit Carson followed his route in the 1820s and 1830s. Kit Carson, who had participated in Jedediah Smith's 1828 expedition, later was the guide for John C. Fremont in 1844. This expedition was one of the first to document in detail the Antelope Valley.

Prior to the advent of the railroad, stagecoach routes were the primary means of transportation across the Antelope Valley. Willow Springs was an established resting place along both prehistoric and historic-era Spanish and American trails and stage routes. Jedediah Smith had stopped there in 1827, and later John C. Fremont in 1944 (Pacific Legacy, 2007). In 1876, the railroad came to the Antelope Valley when the Southern Pacific Railroad's line that ran south from the San Joaquin Valley was connected to the line from Los Angeles. In 1884, this line joined the Atchison, Topeka, & Santa Fe line that ran east through Needles (Pacific Legacy, 2007).

Although settlement had been encouraged by the Homestead Act of 1862 and the Desert Land Act of 1877, the Antelope Valley did not see much growth until after the coming of the railroad.

In the 1880s, a number of groups established colonies in the Antelope Valley, including the Quakers, German Lutherans, and Utopian Socialists. However, fluctuating water levels and years of severe drought brought a quick end to many of these colonies (Jones & Stokes, 2005).

By 1930, over 80 settlements had been established in the region, most along railroad lines (Jones & Stokes, 2005). The town of Rosamond was established in 1877 along the Southern Pacific line and named for the daughter of a Southern Pacific executive (Gudde, 1960). The community of Fairmont was established in 1910, around the time of the construction of the Fairmont Reservoir and Los Angeles Aqueduct (Jones & Stokes, 2005). Also during the construction of the First Los Angeles Aqueduct in 1907-1913, the Willow Springs Station, which was near the construction zone for the aqueduct, was being run by Ezra M. Hamilton, an early Californian pioneer who was credited with the first discovery of gold in the Antelope Valley. Hamilton developed the Station into a resort by constructing a hotel, cottages, and other facilities (Nilsson et al, 2006).

Agriculture and ranching were the primary economic focus of homesteaders in the Antelope Valley. During the initial wave of settlement in the 1880 and 1890s, dry-farming methods proved fairly successful. However, this was in large part because these were unusually wet years. A severe drought between 1894 and 1904 brought and end to most agricultural enterprises. After the drought, irrigation was used with some success, particularly for the cultivation of alfalfa, which became the Valley's primary crop (COLA Public Library, 2010).

City of Palmdale

Palmdale has its roots in two small, early communities: Harold (Alpine Station) and Palmenthal. Harold was a natural location for a community because it was at the crossroads of the two major transportation routes on the valley floor: the Southern Pacific Railroad and Fort Tejon Road (now Barrel Springs Road). Palmenthal was established in 1886 when approximately 60 families of Swiss and German descent moved westward to California primarily from Nebraska and Illinois. They had been told that when they saw palm trees, they would be very close to the Pacific Ocean. The families settled here and called their new town Palmenthal (City of Palmdale, 2010).

By the 1890s, farming families began to migrate to Palmenthal and nearby Harold to grow grain and fruit. However, most of these settlers were unfamiliar with the desert climate, so when drought years came about, many abandoned their farms. Palmenthal's name changed to Palmdale in 1899. The rest of the settlers, including the post office, moved closer to the Southern Pacific railroad, which had been established through the valley in 1876. Southern Pacific built a railroad station along the tracks which eventually became the center of today's Palmdale.

As the population of Palmdale began to increase after relocation, water became increasingly scarce. The area eventually became well-watered beginning in November 1913 when the Los Angeles Aqueduct system was completed by William Mulholland, bringing water from the Owens Valley into Los Angeles County. Because of this new abundance of water, apple, pear and alfalfa crops became plentiful.

Palmdale Lake, or the Palmdale Reservoir, was originally a small sag pond. In 1895, the South Antelope Valley Irrigation Company constructed an earthen dam forming Harold Reservoir, known today as Palmdale Lake or Reservoir. To connect Littlerock Creek to Harold Reservoir, they constructed an earthen ditch, known as Palmdale Ditch. By the early 1900s, it was decided that one or more dams on Littlerock Creek were necessary. In 1918 the Palmdale Irrigation District was formed from two smaller water companies (Palmdale Water Company and Littlerock Creek Irrigation District) to obtain the financing for Littlerock Dam. In 1924, construction of Littlerock Dam and Reservoir was completed for the benefit of agriculture and to serve the growing communities.

After the construction of the Littlerock Dam, water flowed on demand through the Palmdale Ditch to Palmdale Reservoir resulting in a flourishing agricultural industry in the area. Following major flooding in the San Gabriel Mountains and resulting siltation of Littlerock Reservoir, however, agriculture in Palmdale suffered and went into decline. The Palmdale Ditch is still used today to replenish the water of the Palmdale Reservoir, which provides an important recreational resource to citizens of the Antelope Valley.

Agriculture continued to be the primary industry for Palmdale until the outbreak of World War II. In addition to the establishment of Muroc Air Force Base in Lancaster in 1933, the United States government later bought Palmdale Airport in 1952 where aerospace development and testing facilities called United States Air Force Plant 42, were located. One year later, in 1953, Lockheed established a facility at the airport. From that point on, the aerospace industry surpassed agriculture as the primary source of local employment. Today Palmdale is even referred to as the "Aerospace Capital of America" because of its heritage in being the home of many of the aircraft used in the United States military. In August 1962, the township of Palmdale officially became the city of Palmdale with the incorporation of 2 square miles (5 square kilometers) of land around the present day civic center.

Eventually, in 1973, the Palmdale Irrigation District name was changed to Palmdale Water District, to reflect the changing water use in the service area from predominantly agriculture to municipal and industrial.

3.4.2 Regulatory Framework

Numerous laws and regulations require federal, State, and local agencies to consider the effects a Project may have on cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the various agencies proposing the action, and prescribe the relationship among other involved agencies (e.g., State Historic Preservation Office and the Advisory Council on Historic Preservation). The National Historic Preservation Act (NHPA) of 1966, as amended; the California Environmental Quality Act (CEQA); and the California Register of Historical Resources, Public Resources Code (PRC) 5024, are the primary federal and State laws governing and affecting preservation of cultural resources of national, State, regional, and local significance.

Federal

Section 106 of the NHPA

Archaeological resources are protected through the NHPA of 1966, as amended (16 USC 470f), and its implementing regulation, Protection of Historic Properties (36 CFR Part 800), the Archaeological and Historic Preservation Act of 1974, and the Archaeological Resources Protection Act of 1979. Prior to implementing an "undertaking" (e.g., issuing a federal permit), Section 106 of the NHPA requires federal agencies to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation and the State Historic Preservation Officer a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing in the National Register of Historic Places. As indicated in Section 101(d)(6)(A) of the NHPA, properties of traditional religious and cultural importance to a tribe are eligible for inclusion in the National Register. Under the NHPA, a resource is considered significant if it meets the National Register listing criteria at 36 CFR 60.4.

National Register of Historic Places

The National Register of Historic Places (National Register) was established by the NHPA of 1966, as "an authoritative guide to be used by federal, State, and local governments, private groups and citizens to identify the Nation's historic resources and to indicate what properties should be considered for protection from destruction or impairment" (Code of Federal Regulations [CFR] 36 Section 60.2). The National Register recognizes both historical-period and prehistoric archaeological properties that are significant at the national, state, and local levels. In the context of the Project, which does not involve any historical-period structures, the following National Register criteria are given as the basis for evaluating archaeological resources.

To be eligible for listing in the National Register, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria (U.S. Department of the Interior, 1995):

- Are associated with events that have made a significant contribution to the broad patterns of our history;
- Are associated with the lives of persons significant in our past;
- Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional significance, it must be at least fifty years old to be eligible for National Register listing (U.S. Department of the Interior, 1995).

In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as "the ability of a property to convey its significance" (U.S. Department of the Interior

1995). The National Register recognizes seven qualities that, in various combinations, define integrity. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association.

State

The State implements the NHPA through its statewide comprehensive cultural resources surveys and preservation programs. The California Office of Historic Preservation (OHP), as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historic Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the State's jurisdictions.

California Register of Historical Resources

The California Register of Historical Resources (California Register) is "an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change." (California Public Resources Code § 5024.1[a]). The criteria for eligibility for the California Register are based upon National Register criteria (California Public Resources Code § 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

To be eligible for the California Register, a prehistoric or historical-period property must be significant at the local, State, and/or federal level under one or more of the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Has yielded, or may be likely to yield, information important in prehistory or history.

A resource eligible for the California Register must meet one of the criteria of significance described above, and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. It is possible that a historic resource may not retain sufficient integrity to meet the criteria for listing in the National Register, but it may still be eligible for listing in the California Register.

Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed on the National Register and those formally Determined Eligible for the National Register;
- California Registered Historical Landmarks from No. 770 onward; and,
- Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Commission for inclusion on the California Register.

Other resources that may be nominated to the California Register include:

- Historical resources with a significance rating of Category 3 through 5 (Those properties identified as eligible for listing in the National Register of Historic Places, the California Register, and/or a local jurisdiction register);
- Individual historical resources;
- Historical resources contributing to historic districts; and,
- Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

California Environmental Quality Act

The CEQA is the principal statute governing environmental review of Projects occurring in the State. CEQA requires lead agencies to determine if a proposed Project would have a significant effect on archaeological resources. CEQA is codified at Public Resources Code sec 21000 et seq. As defined in Section 21083.2 of CEQA a “unique” archaeological resource is an archaeological artifact, object, or site, about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or,
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

In addition, the *State CEQA Guidelines* recognize that certain historical resources may also have significance. The Guidelines recognize that a historical resource includes: (1) a resource in the California Register; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); and (3) any object, building, structure, site, area, place,

record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of Section 21084.1 of CEQA and Section 15064.5 of the *State CEQA Guidelines* apply. If an archaeological site does not meet the criteria for a historical resource contained in the *State CEQA Guidelines*, then the site is to be treated in accordance with the provisions of CEQA Section 21083, which is a unique archaeological resource. The *State CEQA Guidelines* note that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the Project on those resources shall not be considered a significant effect on the environment (*State CEQA Guidelines* Section 15064.5(c)(4)).

Paleontological resources are also afforded protection by CEQA. Appendix G (Part V) of the *CEQA Guidelines* provides guidance relative to significant impacts on paleontological resources, stating that a project will normally result in a significant impact on the environment if it will "…disrupt or adversely affect a paleontologic resource or site or unique geologic feature, except as part of a scientific study." Section 5097.5 of the Public Resources Code specifies that any unauthorized removal of paleontological remains is a misdemeanor. Further, the California Penal Code Section 622.5 sets the penalties for the damage or removal of paleontological resources.

Local

City of Palmdale General Plan

Goal ER7: Protect historical and culturally significant resources which contribute to the community's sense of history.

Objective ER7.1: Promote the identification and preservation of historic structures, historic sites, archaeological sites, and paleontological resources in the City.

> **Policy ER7.1.1:** Identify and recognize historic landmarks from Palmdale's past.
>
> **Policy ER7.1.2:** Promote maintenance, rehabilitation, and appropriate reuse of identified landmarks where feasible.
>
> **Policy ER7.1.3:** Require that new development protect significant historic, paleontological, or archaeological resources, or provide for other appropriate mitigation.
>
> **Policy ER7.1.4:** Develop and maintain a cultural sensitivity map. Require special studies/surveys to be prepared for any development proposals in areas reasonably suspected of containing cultural resources, or as indicated on the sensitivity map.
>
> **Policy ER7.1.5:** When human remains, suspected to be of Native American origin are discovered, cooperate with the Native American Heritage Commission and any local Native American groups to determine the most appropriate disposition of the human remains and any associated grave goods.
>
> **Policy ER7.1.6:** Cooperate with private and public entities whose goals are to protect and preserve historic landmarks and important cultural resources.

Policy ER7.1.7: Promote recognition, understanding and enjoyment of unique historical resources within the community by identifying resources through the use of landmark designation plaques, directional signage, self-guided tours, school curriculum, programs and events. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

Policy ER7.1.8: Discourage historic landmark properties from being altered in such a manner as to significantly reduce their cultural value to the community. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

3.4.3 Impacts and Mitigation Measures

Method of Analysis

This impact analysis is a preliminary, program-level assessment of potential impacts on important cultural resources that could occur as a result of implementation of the proposed project. Because this a program-level analysis, impacts on specific cultural resources that could result from individual projects or management actions are not addressed in this document, but may need to be assessed through additional analysis as project implementation actions are developed and further defined.

The impacts and mitigation measures identified in this section address types of activities that could significantly impact cultural resources including archaeological sites, historic buildings and structures, and locations of importance to Native Americans. Project implementation actions that include these types of activities would be required to implement the identified mitigation measures in an effort to reduce any impacts to a less-than-significant level.

The identification of specific impacts and mitigation measures that are appropriate for a specific project implementation action will depend on both the nature of the cultural resources that are present and on the nature of the action. In some instances, mitigation measures must be developed in consultation with multiple agencies and other interested parties.

Significance Criteria

According to *CEQA Guidelines* (CCR Title 14, 15064.4), a project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment (CCR Title 14, 15064.4(b)). The guidelines further state that a substantial adverse change in the significance of a resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historic resource would be materially impaired. Actions that would materially impair the significance of a historical resource are any actions that would demolish or adversely alter those physical characteristics of a historical resource that convey its historical significance and qualify it for inclusion in the CRHR or in a local register or survey that meet the requirements of PRC Sections 5020.1(k) and 5024.1(g).

Identified cultural resources that may be impacted by a proposed project implementation action would be evaluated for eligibility for listing on the CRHR. Cultural resources that are eligible for the CRHR are considered to be significant cultural resources. Cultural resources that are

identified within project areas subject to federal approval, permits, or funding would also be evaluated for eligibility for listing on the NRHP. Cultural resources determined to be eligible for listing on the NRHP are automatically eligible for listing on the CRHR and are considered to be significant cultural resources.

Paleontological resources are also afforded protection by CEQA. Appendix G (Part V) of the *CEQA Guidelines* provides guidance relative to significant impacts on paleontological resources. A project will have a significant impact on the environment if it adversely affects a paleontological resource or site, or a unique geological feature.

A discussion of the impacts and mitigation measures for the proposed project are presented below.

Cultural Resources

Impact 3.4-1: The proposed project could impact known and/or unknown cultural resources, including prehistoric and historic archaeological sites, historic architectural resources, and Native American sacred sites. (Less than Significant with Mitigation)

The City of Palmdale General Plan (1993) indicates that a number of archaeological resources have been recorded in the Palmdale area and, in an effort to provide guidance during project planning stages, the City of Palmdale developed a sensitivity map for the area (City of Palmdale General Plan, 1993: Exhibit ER-7). For purposes of archaeological classification, the map is divided into three primary physiographic environment types: the rift zone, the foothill areas, and the desert floor.

- Given the number of sites recorded in the rift zone, along with the availability of water and food resources, it can be suggested that this is an area of high archaeological sensitivity, and there is a high probability of more sites existing in this area.
- The foothill areas are located both north of and south of the rift zone. The recorded sites in the foothill area include bedrock milling sites, habitation sites, quarries, rock art, hunting blinds, and numerous lithic scatter sites. Other archaeological sites identified include additional hunting blinds and cupule sites. Many of the creeks and streams found in the rift zone begin in the foothill areas, and provided generally reliable sources of water for the prehistoric inhabitants of the area. Springs and marsh areas in the rift zone also provide additional food resources. The probability of more sites existing in the foothill areas is high.
- The recorded prehistoric sites found on the desert floor include a bedrock mortar, lithic scatters, food processing stations, and possible habitation sites. Sites on the desert floor are widely distributed and are generally located on the perimeter of the area. The two historic sites are located approximately in the center of this area. The probability of discovering additional prehistoric and historic sites appears to be moderately high.

Since the proposed project is at the programmatic level, specific project locations and design elements have yet to be finalized. As such, impacts to specific cultural resources are not addressed here. However, as project implementation actions move forward, individual projects

would undergo additional CEQA review prior to construction. As described above, the City of Palmdale General Plan (1993: Exhibit ER-7) indicates that the Palmdale area is moderately high to highly sensitive for archaeological sites, which should be taken into consideration during CEQA review. The following mitigation measures would minimize impacts to cultural resources and shall be executed prior to project implementation actions.

Mitigation Measures

CUL-1a: PWD shall retain a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Standards for professional archaeology to conduct a study of the project area(s) for all project components that involve ground disturbance. The archaeologist shall conduct a cultural resources inventory designed to identify potentially significant resources. The cultural resources inventory would consist of: a cultural resources records search to be conducted at the South Central Coastal Information Center located at California State University Fullerton; consultation with the Native American Heritage Commission (NAHC) and with interested Native Americans identified by the NAHC; a field survey where deemed appropriate by the archaeologist; and recordation of all identified archaeological resources on California Department of Parks and Recreation 523 Site Record forms. The archaeologist shall provide recommendations regarding resource significance and additional work for those resources that may be affected by a project.

CUL-1b: For project components that include or affect existing structures that are 50 years old or greater, PWD shall retain a qualified architectural historian, defined as an architectural historian meeting the Secretary of the Interior's Standards for historic architecture, to determine the need for a project-specific historic architectural study. If warranted, the architectural historian shall identify and evaluate potentially affected historic resources prior to project implementation.

CUL-1c: PWD shall avoid impacts, if feasible, on identified cultural resources including prehistoric and historic archaeological sites, locations of importance to Native Americans, human remains, and historical buildings, structures and landscapes. Methods of avoidance may include, but should not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing.

CUL-1d: PWD shall retain archaeological monitors (and Native American monitors, where deemed appropriate) during project-related ground-disturbing activities that have the potential to impact significant archaeological resources as determined by a qualified archaeologist.

Significance after Mitigation: Less than significant

Human Remains

Impact 3.4-2: The proposed project could impact human remains. (Less than Significant with Mitigation)

CUL-2a: If human remains are encountered unexpectedly during construction excavation and grading activities, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 48 hours to notify the Native American Heritage Commission (NAHC). The NAHC will then identify the designated Most Likely Descendent of the deceased Native American, who will engage in consultation to determine the disposition of the remains.

Significance after Mitigation: Less than significant

Paleontological Resources

Impact 3.4-3: The proposed project could impact known and/or unknown paleontological resources. (Less than Significant with Mitigation)

A Paleontologic Sensitivity Study for the Palmdale area was prepared in April 1990 by Robert E. Reynolds, curator of Earth Sciences at the San Bernardino County Museum (City of Palmdale General Plan, 1993). Twelve rock units were identified and categorized into three classifications: high sensitivity/potential, unknown sensitivity/potential, and low sensitivity/potential.

1. High Potential: The Palmdale Planning Area encompasses five sedimentary rock units ranging in age from 12 million to 10,000 years. These rock units have produced significant non-renewable plant and vertebrate paleontologic resources and have a high potential to produce future resources. These units include, chronologically, the Punchbowl, Ana Verde, Harold Formations, the Nadeau Gravels/Pleistocene Old Alluvium, and pleistocene Lacustrine and Fluvial Sediments.
2. Unknown Potential: There are two rock units in Palmdale which have an unknown potential for producing paleontological resources, the Vasquez Formation and the Pleistocene Alluvium. The Vasquez Formation is approximately 38 million to 22.5 million years old dating it back to the Oligocene Age. The Pleistocene alluvium which is of high potential is covered by a thin layer of recent alluvium. This layer has an unknown potential for producing paleontologic resources.
3. Low Potential: There are five igneous and metamorphic rock units in Palmdale which have a low potential to produce significant paleontologic resources. These units include: Precambrian Pelona Schist, mesozoic metavolcanics, Mesozoic granite, quartz monzonite, and diorits.

Since the proposed project is at the programmatic level, specific project locations and design elements have yet to be finalized. As such, impacts to specific paleontological resources are not addressed here. The City of Palmdale General Plan (1993: Exhibit ER-8) indicates that the some portions of the Palmdale area are highly sensitive for paleontological resources, which should be taken into consideration during CEQA review. The following mitigation measures would minimize impacts to paleontological resources and shall be executed prior to project implementation actions.

Mitigation Measures

CUL-3a: For all project components that involve ground disturbance, PWD shall retain a qualified paleontologist to determine the necessity of conducting a study of the project area(s) based on the potential sensitivity of the project site for paleontological resources. If deemed necessary, the paleontologist shall conduct a paleontological resources inventory designed to identify potentially significant resources. The paleontological resources inventory would consist of: a paleontological resources records search to be conducted at the San Bernardino County Museum; a field survey where deemed appropriate by the paleontologist; and recordation of all identified paleontological resources. The paleontologist shall provide recommendations regarding additional work for the project.

CUL-3b: PWD shall avoid impacts, if feasible, on identified paleontological resources. Methods of avoidance may include, but not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing.

CUL-3c: PWD shall retain paleontological monitors during construction for ground-disturbing activities that have the potential to impact significant paleontological resources as determined by a qualified paleontologist.

Significance after Mitigation: Less than significant

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3.5 Geology, Soils, Seismicity and Mineral Resources

This section describes the geologic and mineral resources, soils and seismicity within the project area and evaluates potential impacts on those local resources. This section also evaluates whether those conditions would result in geologic hazards to the proposed project.

3.5.1 Environmental Setting

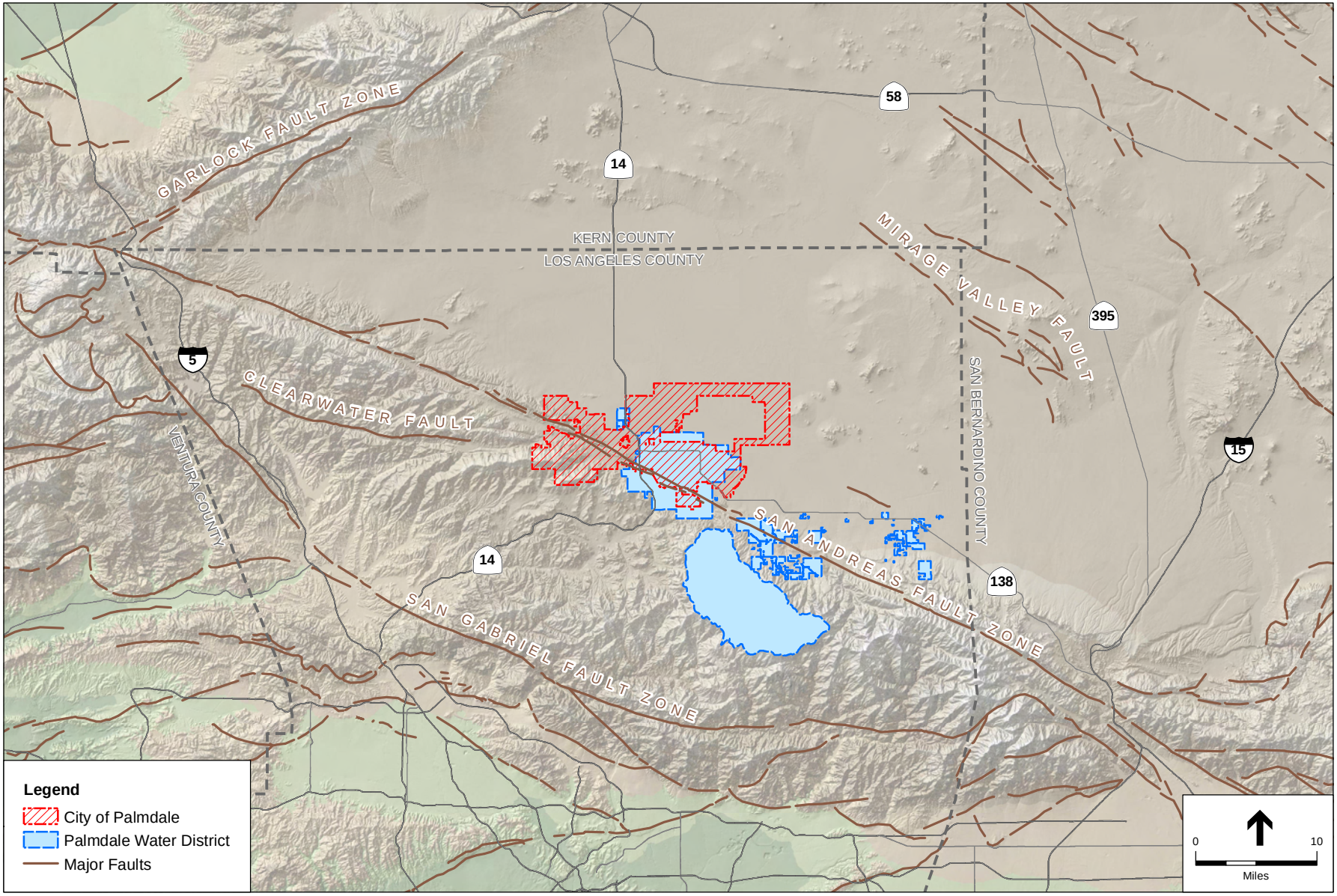
The proposed project is located within the Antelope Valley of southern California in the western portion of the Mojave Desert geomorphic province. The Mojave Desert region is dominated by erosional features such as broad alluvial basins that receive non-marine sediments from the adjacent uplands. Topography in this province is controlled by the San Andreas and Garlock Fault systems and consists largely of isolated mountain ranges among desert plains (**Figure 3.5-1**). Numerous playas and dry lakebeds within closed drainage basins are characteristic of the Mojave Desert.

The Antelope Valley is a closed, undrained basin, bordered by the San Andreas Fault and San Gabriel Mountains on the southwest, the Garlock fault and Tehachapi Mountains on the northwest, and a series of hills and buttes within San Bernardino County to the east. The Antelope Valley is underlain by consolidated rocks that crop out in the highlands that surround the basin. The basin consists of igneous and metamorphic rocks of pre-Tertiary age that are overlain by indurated continental rocks of Tertiary age interbedded with lava flows. Thick deposits of alluvial and lacustrine (lakebed) materials have formed the important aquifers within the closed basin. The alluvium is unconsolidated to moderately consolidated, poorly sorted gravel, sand, silt, and clay. Older geologic units of the alluvium are coarser grained, more compact and consolidated, weathered, and poorly sorted than the younger units (USGS, 1995).

The San Andreas Fault is a strike-slip type fault that exhibits displacement in a horizontal direction, but may also have a vertical component as well. This fault traverses Los Angeles County and has experienced movement within the last 150 years, defining major structural features in the region including the boundary between the North American and Pacific tectonic plates (ESA, 2005). The San Andreas Fault crosses the project area from the northwest and traverses down through the southeastern portion of the project area.

The Garlock Fault is an east-northeast strike-slip fault that separates the Tehachapi-Sierra Nevada Basin and Ranges provinces. The Garlock Fault traverses Kern County, just north of the border between Kern County and Los Angeles County and is one of few lateral faults in California that shifts to the left compared to the majority of regional faults that exhibit shifting to the right (CGS, 2010). This fault is located approximately 40 miles northwest from the project area and has experienced movement within the last 15,000 years (Bryant, 2000).

Other earthquake faults zones in the vicinity of the project area include the Clearwater Fault located approximately 13 miles east of the project site; the San Gabriel Fault located approximately 17 miles south of the project area; and the Mirage Valley Fault located approximately 22 miles northeast from the project area. Each of the three faults has experienced movement within the last 130,000 years (USGS, 2011).



SOURCE: USGS; ESA, 2011.

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Figure 3.5-1
Regional Faults

Topography

The Antelope Valley region is a closed topographic basin with gently-sloping lands directed inwards toward three prominent playas (dry lake beds) located in the lowest portions of the valley floor: Rosamond Lake, Buckhorn Lake, and Rogers Lake. Rosamond Lake ranges in elevation from 2,273 feet above mean sea level (amsl) to 2,385 amsl (ESA, 2005). The three playas are located approximately 15 miles north of the project area.

PWD is located at the base of the topographic boundary between the San Gabriel Mountains to the southwest and adjacent valley before the Tehachapi Mountains to the northwest. The proposed project falls within the City of Palmdale Planning Area (Planning Area) as defined in the City of Palmdale General Plan (1993). The Planning Area is approximately 174 square miles with a transitional area between the foothills of the San Gabriel and Sierra Pelona Mountains and the Mojave Desert to the north and east. The Planning Area encompasses various plants and animal communities, slope conditions, soils, and other physical characteristics unique to the area.

The project area follows the slope conditions of the Planning Area, which is characterized as having slopes from south to the north/northeast, with surface flows and subsurface flows trending away from the foothills to Rosamond Dry Lake. While foothill areas within and adjacent to the City have significant slopes, a majority of the project area is of relatively flat elevation.

Soils

Soils within the region are derived from downslope migration of loess and alluvial materials deposited from granitic rock sources originating along the eastern slopes of the Tehachapi and San Gabriel Mountains. There are approximately 57 soil associations present within the project area that vary slightly in physical properties but share similar characteristics. A majority of the project area contains the Hanford, Hesperia, Greenfield, Ramona, and Rosamond soil association series, which are generally characterized as having moderate permeability and consists of sandy rocky to fine sandy loams soils (NRCS, 2011). The City of Palmdale General Plan (1993) Safety element identifies the Palmdale area as being composed of consolidated rocks in the mountains and rocky buttes with alluvial soils with underlying hard rock within the local stream beds and valley floor.

Settlement

Settlement of the ground surface can occur under static conditions (i.e., due to consolidation settlement from overlying load or long-term groundwater extraction) but can also be accelerated and accentuated by earthquakes. Settlement of loose, unconsolidated soils generally occurs slowly, but can cause significant structural damage. Loose gravel and related loose soil types are not present in the project area.

Erosion

Soil erosion is the detachment and movement of soil materials through natural processes (wind or water) or human activities. The Antelope Valley region and local communities contain soils that are characterized by low particle mass and low cohesion qualities. These soils are susceptible to

wind erosion and erosion during flash flood rain events. The Soil Erosion Potential of the project area is NS-None to Slight to M-Moderate, as shown in the City of Palmdale Safety element of the General Plan (1993).

Expansive soils

Expansive soils possess shrink-swell characteristics that can result in gradual structural damage over an extended period of time. Expansive soils are largely comprised of silicate clays, which expand in volume when water is absorbed and shrink when dried. The City of Palmdale General Plan (1993) identifies the southern portion of the project area as having moderate soil expansion potential.

Mineral Resources

The California Geological Survey (CGS) classifies the regional significance of mineral resources in accordance with the California Surface Mining and Reclamation Act of 1975. Mineral Resource Zones (MRZ) have been designated to indicate the significance of mineral deposits. The MRZ categories are as follows:

> **MRZ-1:** Areas where adequate information indicates that no significant mineral deposits are present or where it is judge that little likelihood exists for their presence.
>
> **MRZ-2:** Areas where adequate information indicates significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence
>
> **MRZ-3:** Areas where available information is inadequate for assignment to any other MRZ.

The City of Palmdale General Plan (1993) Land Use element identifies two MRZ-2 classified areas: Littlerock Wash and Big Rock Wash. The Littlerock Wash and Big Rock Wash sectors and their associated stream beds, flood plains and alluvial fans are mined for sand and gravel for aggregate use in construction activities. These two MRZ-2 zones are located within the project area. The Littlerock Wash MRZ-2 zone is located on the southern portion of the Littlerock Creek wash, adjacent to residential land uses on the south but primarily within open space. The City of Palmdale General Plan (1993) identifies approximately 1000 million tons of aggregate resources within the Littlerock Wash alluvial fan area. Concrete and asphalt batching operations and one concrete pipe manufacturer also occurs within the Littlerock Wash MRZ-2 zone. The Big Rock Wash MRZ-2 zone is located within open space land uses and lies almost entirely outside of Palmdale's Planning Area, east of the other MRZ-2 zone.

Seismic Hazards

Surface Fault Rupture

Seismically-induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude and nature of fault rupture can vary for different faults, or even along different strands of the same fault. Ground rupture is considered more likely along active faults. Conceptual site locations for the proposed recharge basins,

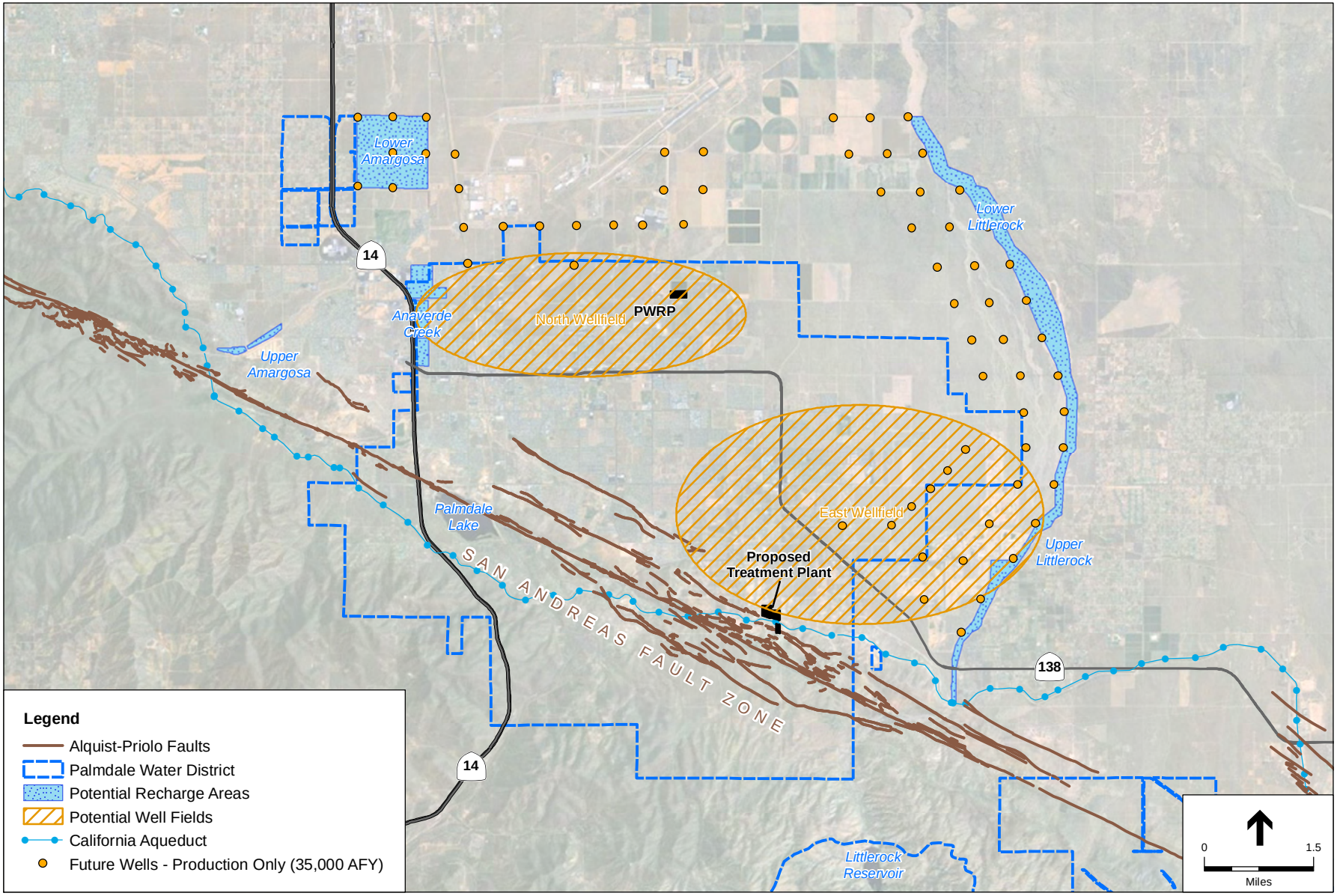
production wells, and treatment plant are within an Alquist-Priolo Earthquake Fault Zone, as designated by the Alquist-Priolo Earthquake Fault Zoning Act (see **Figure 3.5-2**). Other project facilities, such as pipelines and storage tanks, that have not been sited yet, also may fall within the Alquist-Priolo Earthquake Fault Zone.

Ground Shaking

The project area is subject to seismic ground shaking. Ground shaking intensity varies depending on the overall earthquake magnitude, distance to the fault, focus of earthquake energy, and type of geologic materials underlying an area. The Modified Mercalli Intensity (MMI) scale (**Table 3.5-1**) is commonly used to express earthquake effects due to ground shaking because it expresses ground shaking relative to actual physical effects observed by people during a seismic event. MMI values range from I (earthquake not felt) through a scale of increasing intensities to XII (nearly total damage). Earthquakes on the various active and potentially active fault systems near the proposed project sites can produce a wide range of ground shaking intensities. Geologists and engineers attempt to predict earthquake ground acceleration at sites to improve the structural design of buildings so that the building can withstand the earthquake motion and not collapse. A probabilistic seismic hazard assessment describes seismic hazard from earthquakes that geologists and seismologists agree could occur. The analysis takes into consideration the uncertainties in the size and location of earthquakes and the resulting ground motions that can affect a particular site. The California Geological Survey Probabilistic Seismic Hazard Assessment for California determined that peak ground accelerations in unconsolidated alluvium can reach (g) 0.729 with a 10 percent probability of being exceeded in 50 years (CGS, 2010). Ground acceleration is measured in "g," where 1 g corresponds to the vertical acceleration force due to gravity. Peak ground acceleration is noticeably high in the project area due to the close proximity to the San Andreas Fault to the southwest.

Liquefaction

Soil liquefaction is a phenomenon whereby unconsolidated and/or near saturated soils lose cohesion and are converted to a fluid state as a result of severe vibratory motion. The relatively rapid loss of soil shear strength during strong earthquake shaking results in the temporary fluid-like behavior of the soil.. During liquefaction, soils lose strength and ground failure may occur. Secondary ground failures associated with liquefaction include lateral spreading or flowing of stream banks or fills, sand boils, and subsidence. Areas characterized by water-saturated, cohesionless and granular soils are most susceptible to liquefaction and usually at depths of less than 50 feet, especially in areas with a shallow water table. The groundwater table can fluctuate greatly in association with groundwater recharge activities, both natural and artificial. During years of high groundwater recharge, the groundwater table could potentially be shallow enough to present a liquefaction hazard in the area of the proposed recharge basins. Portions of the project area are within liquefaction seismic hazard zones and the southern end of the project site is adjacent to landslide hazard zones, as defined in the CGS Seismic Hazard Zones map of the Palmdale area (2003). **Figure 3.5-3** shows Seismic Hazard Zones located within and around the District’s service area.



SOURCE: USGS; ESA, 2011.

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Figure 3.5-2

Alquist-Priolo Fault Zones

TABLE 3.5-1
MODIFIED MERCALLI INTENSITY SCALE (ABRIDGED)

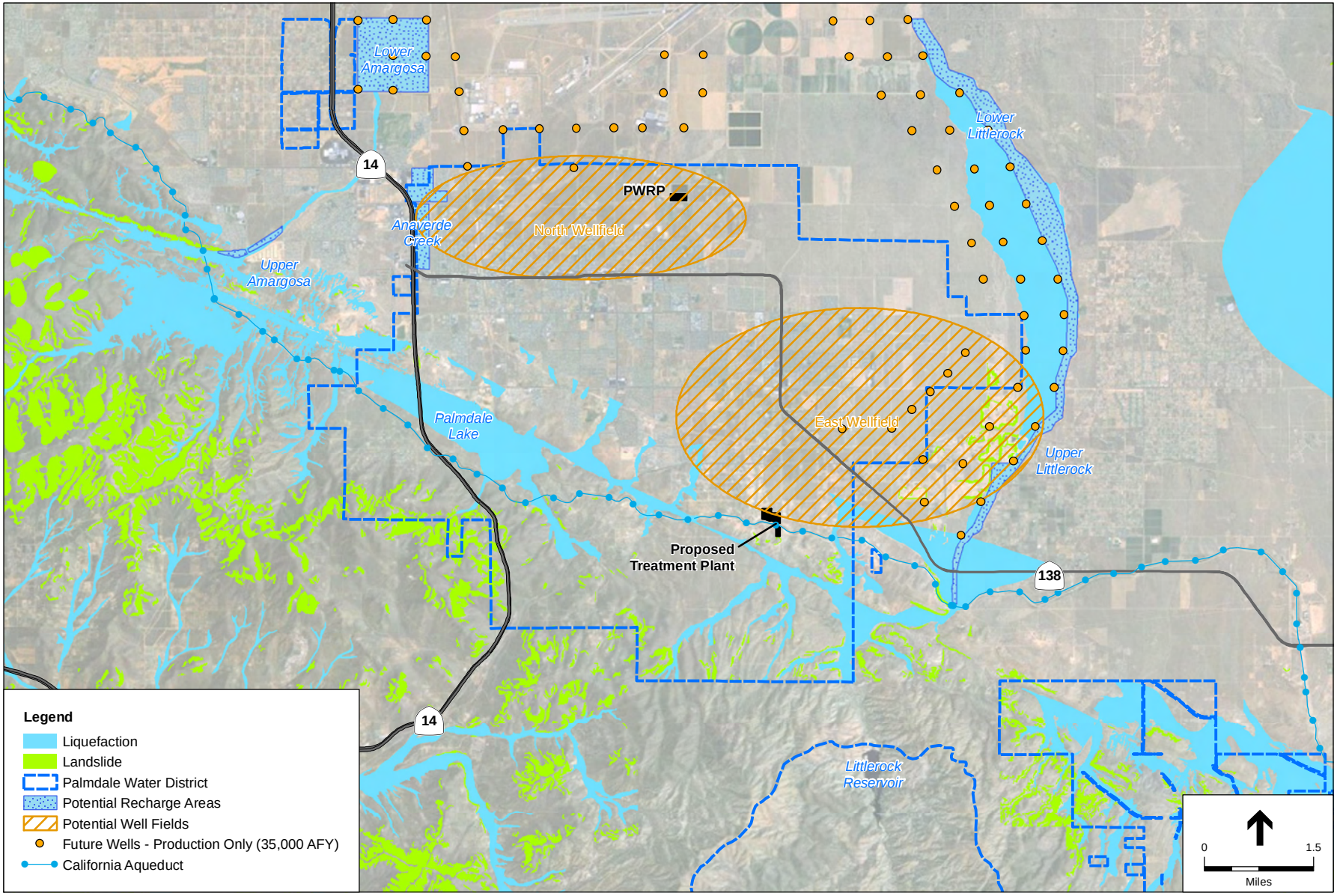
Intensity Value	Intensity Description	Average Peak Acceleration(g)[a]
I	Not felt except by very few persons under especially favorable circumstances.	< 0.0017 g
II	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	< 0.014 g
III	Felt quite noticeably indoors; especially on upper floors of buildings, but many people do not recognize it as an earthquake.	< 0.014 g
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound.	0.014–0.039 g
V	Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned.	0.039–0.092 g
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; minor fallen plaster or damaged chimneys. Damage slight.	0.092–0.18 g
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken.	0.18–0.34 g
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, and walls.	0.34–0.65 g
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse.	0.65–1.24 g
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 1.24 g
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 1.24 g
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 1.24 g

[a] g is gravity = 980 centimeters per second squared. Acceleration is scaled against acceleration due to gravity or the acceleration with which a ball falls if released at rest in a vacuum (1.0 g). Acceleration of 1.0 g is equivalent to a car traveling 100 meters (328 feet) from rest in 4.5 seconds.

SOURCE: Bolt, 1988.

Landslide Hazards

Landslides are the down-slope displacement of rock, soils and debris. The susceptibility of land (slope) failure is dependent on slope and geological formations and influenced by levels of rainfall, excavation, or seismic activities. Steep slopes and downslope creep of surface materials characterize landslide-susceptible areas. Portions of the project area are within landslide hazard zones, as defined in the CGS Seismic Hazard Zones map of the Palmdale area (2003) (Figure 3.5-3).



SOURCE: USGS; ESA, 2011.

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Figure 3.5-3

Seismic Hazard Zones

3.5.2 Regulatory Framework

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act) signed into law in December of 1972, requires the delineation of zones along active faults in California. The purpose of the Alquist-Priolo Act is to regulate development on or near active fault traces to reduce the hazard of potential fault rupture and to prohibit the location of most structures for human occupancy across these traces. Cities and counties must regulate certain development projects within the zones, which includes withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement (Hart, 1997). Surface fault rupture is not necessarily restricted within an Alquist-Priolo Earthquake Fault Zone. The project area falls within an Alquist-Priolo Earthquake Fault Zone.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was developed to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires that State Geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Before a development permit is granted for a site within a seismic hazard zone, a geotechnical investigation of the site must be conducted and appropriate mitigation measures incorporated into the project design. The project area is identified to be within a seismic hazard zone due to areas susceptible to liquefaction and landslides.

California Building Code

The California Building Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The CBC is based on the International Building Code. The 2010 CBC is based on the 2009 International Building Code (IBC) published by the International Code Conference. In addition, the CBC contains necessary California amendments which are based on reference standards obtained from various technical committees and organizations such as the American Society of Civil Engineers (ASCE) ,the American Institute of Steel Construction (AISC), and the American Concrete Institute (ACI). ASCE Minimum Design Standards 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration,

movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC.

CCR Title 24 also includes the California Residential Code (based on the 2009 International Residential Code) and the California Green Building Code, which have been adopted as separate documents (CCR Title 24, Part 2.5 and 11, respectively). The California Residential Code includes structural design standards for residential one and two family dwellings and covers all structural requirements for conventional construction. All other structures including multi-family residential projects are found in the CBC.

Surface Mining and Reclamation Act (SMARA)

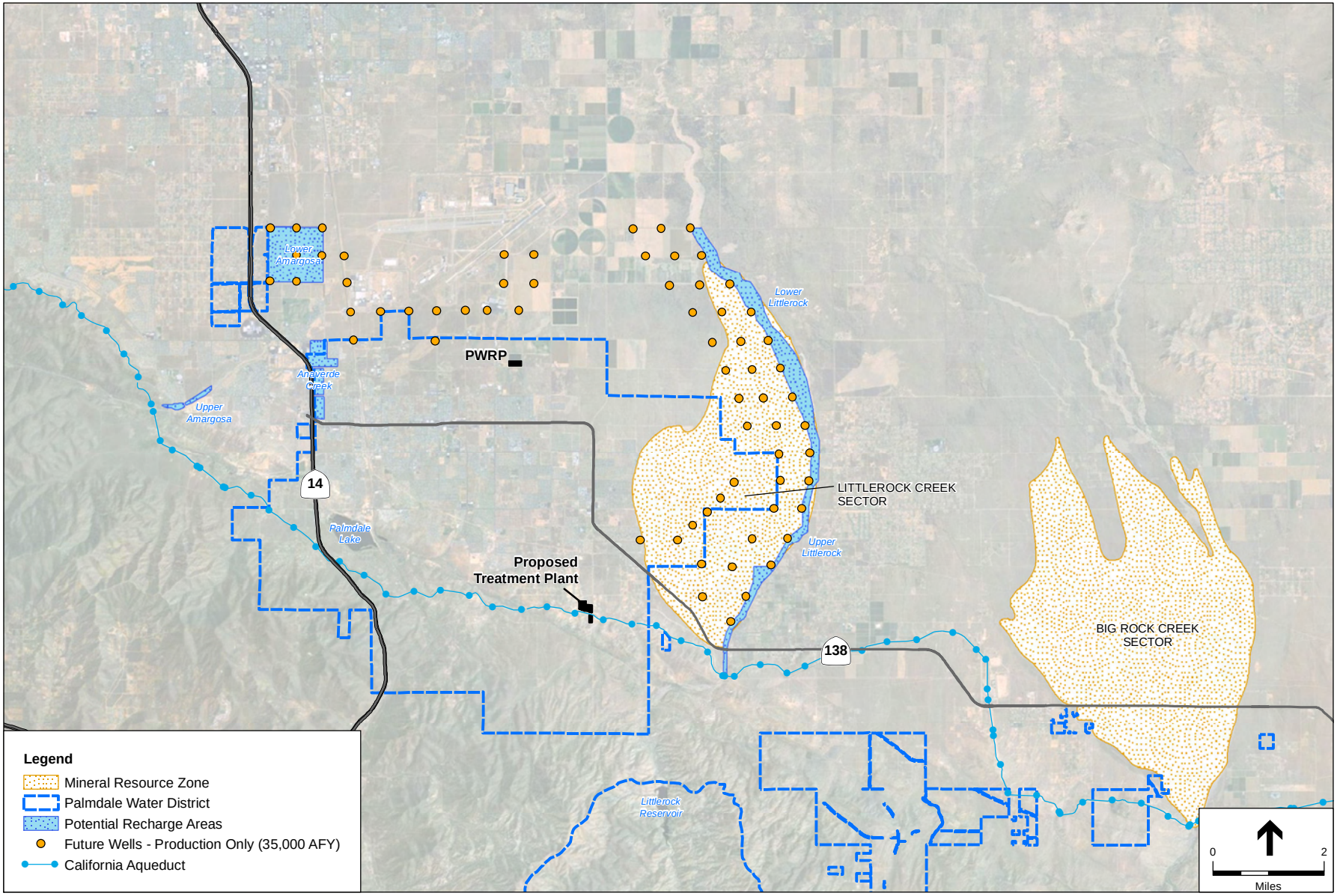
The Surface Mining and Reclamation Act of 1975 (SMARA) requires the CGS to map areas throughout the State of California that contain regionally significant mineral resources. The primary objective of the SMARA is for each jurisdiction to develop policies that will conserve important mineral resources, where feasible, that might otherwise be unavailable when needed. The SMARA requires that once policies are adopted, local agency land use decisions must be in accordance with its mineral resource management policies. These decisions must also balance the mineral value of the resource to the market region as a whole, not just their importance to the local jurisdiction.

In accordance with SMARA, the state has established a mineral land classification system that provides guidance for identifying MRZs, which designate the significance of mineral deposits. Refer to the Mineral Resources discussion above for a breakdown of the MRZ categories. There are two MRZs identified within the project area (**Figure 3.5-4**).

Local

County of Los Angeles General Plan

The County of Los Angeles General Plan, which is undergoing a comprehensive update of the 1980 countywide General Plan, contains a safety element that identifies and assesses various threats to public health and safety, including geologic and seismic hazards. The section identifies goals, and outlines corresponding policies and management actions to support the various goals.



SOURCE: RMC, 2010; City of Palmdale General Plan, 1993

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Figure 3.5-4

State Designated Mineral Resource Zones

Safety – Seismic Hazards

Goal: Minimize injury and loss of life, property damage, and the social cultural, and economic impacts caused by earthquake hazards

> **Policy 1:** Encourage the use of nonurbanized segments of active fault zones for rural and open space purposes.
>
> **Policy 2:** Review projects proposing expansion of existing development and construction of new development, especially critical facilities, and encourage them to avoid localities exposed to high earthquake hazards through such techniques as cluster development and transfer of development rights.
>
> **Policy 3:** Continue enforcement of stringent site investigations (such as seismic, geologic, hydrologic, and soils investigations) and implementation of adequate hazard mitigation measures for development projects in areas of high earthquake hazard, especially those involving critical facilities. Do not approve proposals and projects which cannot mitigate safety hazards to the satisfaction of responsible agencies.

Safety – Geologic Hazards

Goal: Protect public safety and minimize the social and economic impacts from geologic hazards

> **Policy 8:** Review proposal and projects proposing new development and expansion of existing development in areas susceptible to land sliding, debris flow, and rockfalls, and in areas where collapsible or expansive soils are a significant problem; and disapprove projects which cannot mitigate these hazards to the satisfaction of responsible agencies.
>
> **Policy 9:** Continue to improve and enforce stringent slope investigation and design standards, and to apply innovative hazard mitigation and maintenance plans for development in hillside areas.

City of Palmdale General Plan

The City of Palmdale General Plan contains a Safety Element that addresses seismic hazards. The General Plan also contains an Environmental Resources element that addresses the conservation and protection of local resources, including mineral resources. The following goals and policies are relevant to the proposed project:

Safety

GOAL S1: Minimize danger and damage to public health, safety, and welfare from natural hazards.

> **Objective S1.1:** Review development within or adjacent to geologic hazards, to ensure adequate provisions for public safety.
>
> **Policy S1.1.1:** Provide copies of geotechnical reports for projects located within the seismic hazard zone, as shown on latest California Department of Conservation Seismic Hazard Zones Map, to the State Division of Mines and Geology. (General Plan Amendment 04-01, adopted by City Council April 14, 2004)
>
> **Policy S1.1.2:** Assist developers in obtaining necessary technical and policy information regarding seismic hazards.

Policy S1.1.3: Require geotechnical studies, to be reviewed and approved by the City's geologist, for development proposals in areas where geotechnical hazards may be present, and implement the recommendations of those reports as deemed necessary by the City.

Policy S1.1.4: Require appropriate structural setbacks from active fault rupture traces in accordance with Alquist-Priolo standards and as required by the City, based on geotechnical analysis.

Policy S1.1.5: Require structural setbacks or special foundations for structures within potentially active fault zones as determined by the City, based on geotechnical analysis.

Policy S1.1.6: Require special foundations within inactive fault zones if determined necessary by the City.

Policy S1.1.7: Restrict location of utility lines, whether above or below ground, within an appropriate distance from active fault traces, as determined by geotechnical investigation and approved by the City. Utility lines crossing active fault traces should be specifically designed to withstand the expected movement of the earth in these locations. Utility lines as defined here would include, but not be limited to, electricity, water, natural gas and sewer.

Policy S1.1.8: Require that all structures should meet or exceed state required earthquake resistant design standards.

Policy S1.1.9: Review development proposals located in or immediately adjacent to areas of soil instability, liquefaction areas, and steep slopes to determine if a significant constraint exists and to determine appropriate land use or hazard mitigation methods, and require compliance with any such measures identified.

Environmental Resources

GOAL ER6: Ensure an adequate supply of mineral resources to meet long-term regional construction needs.

Objective ER6.1: Recognize the regional importance of the classified and designated mineral deposits within Palmdale's Planning Area (as described in *Special Report 143, Part V, Classification of Sand and Gravel Resource Areas, Saugus-Newhall Production-Consumption Region and Palmdale Production-Consumption Region, and Designation Report No. 6, Designation of Regionally Significant Construction Aggregate Resource Areas in the Saugus-Newhall and Palmdale Production-Consumption Regions* and as shown on Exhibits ER-1B and ER-1C, and discourage encroachment of incompatible land uses which could threaten the long-term viability of sand and gravel mining and processing operations in the Littlerock Wash area.

Policy ER6.1.1: Establish a Mineral Resource Extraction (MRE) designation. Permitted uses within the MRE designation shall consist of mineral resource extraction (quarrying) and quarry related uses. Non-quarry related uses shall be permitted within the MRE area only when the Planning Commission has made the following findings:

1. The proposed use is compatible with and will not be detrimental to existing and future quarrying operations;
2. Long-term regional aggregate needs have been evaluated and valuable resources will remain adequate to meet the future needs of the market region.

Policy ER6.1.2: Prohibit incompatible land uses within the MRE designation. Example of incompatible land uses include, but are not limited to, residential, some public facilities, intensive industrial and commercial.

3.5.3 Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the significance of impacts related to geology and minerals are based on Appendix G of the *CEQA Guidelines*. The proposed project would result in a significant impact to geology, soils and minerals if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault
  - Strong seismic ground shaking
  - Seismic-related ground failure, including liquefaction
  - Landslides
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on-site or offsite landslide, lateral spreading, subsidence (i.e., settlement), liquefaction, or collapse;
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property;
- Have soils incapable of adequately supporting the use of septic tanks or alternative reclaimed water disposal systems where sewers are not available for the disposal of reclaimed water; or
- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or loss of availability of a locally important mineral resource recovery site delineated on a local General Plan, Specific Plan, or other land use plan.

Impacts Discussion

The following is a discussion of the potential effects of the proposed project to geology and mineral resources according to the key issue areas identified in Appendix G of the *State CEQA Guidelines*.

Landslides

The City of Palmdale General Plan (1993) identifies hillside development standards to prevent landslide and erosion hazards, which reduces the potential for landslides throughout the city, including the District's service area that falls within the City's boundaries. Although the project area is adjacent to the San Gabriel Mountains, surface elevations surrounding and including the project area have comparatively low relief with the exception of the grade control structure location within Littlerock Reservoir in Angeles National Forest. The project area primarily is generally flat and surrounded by relatively flat topography. The immediate vicinity of the grade control structure also is relatively flat and as shown in Figure 3.5-3 is not in an area susceptible to landslides. Project facilities would be located in these flat areas, and do not include structures that

would expose people to substantial adverse effects related to landslides. No impacts from landslides are anticipated with the implementation of the proposed project.

Soil Suitability for Septic System

Implementation of the SWRP would not include facilities that would require the use of septic systems. The majority of facilities are wells, pipelines, and other water conveyance facilities that do not require septic systems. The proposed project includes the potential construction of a treatment plant. Specific project elements and conditions regarding this facility, including conveyance and disposal systems are not known in detail at this time; however, no use of septic would occur. The Los Angeles County Sanitation Districts Nos. 14 and 20 provide wastewater management services for the Antelope Valley, and would serve the treatment plant. Therefore, no impact would occur.

Exposure to Seismic-Related Hazards

Impact 3.5-1: The proposed project could expose people or structures to potential substantial adverse effects of fault rupture, strong seismic ground shaking or seismic related ground failure, including liquefaction. (Less than Significant with Mitigation)

Fault Rupture

The nearest fault delineated on the Alquist-Priolo Earthquake Fault Zoning Map is the San Andreas Fault, which crosses the project area and is located approximately ½ mile south of the nearest proposed water facilities. The faults most susceptible to earthquake rupture are active faults like the San Andreas Fault, which has experienced surface displacement within the last 150 years. Implementation of the SWRP would require the construction of several water facilities and infrastructure. As shown in **Table 3-1**, there are specific implementation actions that would require construction activities for new above and/or below ground facilities that could potentially result in exposure to seismic hazards. The ultimate location and design of these facilities are not known at this time, but conceptual locations are shown in **Figure 2-1**. Based on this conceptual layout, the proposed treatment plant, aqueduct turnout facilities, recharge facilities east of the State Route 14 and partially within Anaverde Creek, and associated ancillary infrastructure such as conveyance pipelines and storage tanks, would be within or in the vicinity of the San Andreas Fault. Nonetheless, the risk of ground rupture within the project area is low, and the majority of the project area is outside this Alquist-Priolo Earthquake Fault Zone. Implementation of **Mitigation Measure GEO-1** would require the preparation of a geotechnical report that would include design features to incorporate into the project design to minimize adverse effects of fault ruptures to people or structures. Mitigation Measure GEO-1 would ensure that substantial adverse effects from potential ruptures of the San Andreas Fault are reduced to a less than significant level. Site-specific CEQA analysis for each project component will be conducted at a later date to determine if additional mitigation is necessary.

Seismic Ground Shaking

The project area lies in a region that is seismically active. In the event of an earthquake, some seismic ground shaking will be experienced on the proposed project site, as is typical throughout southern California. The majority of facilities of the proposed project are infrastructure that would not house people. However, some water treatment facilities, such as the proposed treatment plant, would require full time employees on-site. All facilities would be designed in accordance with the recommendations of a site-specific geotechnical investigation as required by Mitigation Measure GEO-1 and in compliance with the CBC seismic building code requirements that have criteria to prevent any such seismic damage. These building codes provide requirements for construction, grading, excavation, use of fill, and foundation work, including type of materials, design, procedures, etc., which are intended to limit the probability of occurrence and the severity of consequences from geologic hazards. Impacts would be considered less than significant.

Liquefaction

Liquefaction occurs in saturated soils and the susceptibility decreases with groundwater depth. According to the CGS Seismic Hazard Zones map of the Palmdale area (Figure 3.5-3), the proposed area includes areas susceptible to liquefaction due to its proximity to a number of faults, including the San Andreas Fault. Based on the conceptual layout of facilities, the potential need for a treatment plant; recharge facilities proposed along Anaverde Creek and the Lower and Upper Littlerock; and production wells within the Lower Amargosa and the north and east portions of the District's service area would be within or adjacent to liquefaction areas. To ensure impacts related to liquefaction are less than significant, proposed facilities, including recharge facilities, would be designed to conform with the building code requirements. Additionally, the CBC imposes standards that require engineers to identify potential liquefiable soils to account for soil susceptibility during seismic events for consideration during facility designs. Implementation of Mitigation Measure GEO-1 would ensure that geotechnical investigations are conducted for proposed water facilities (i.e., conveyance pipelines, recharge facilities, wells, storage tanks, treatment plant) within these seismic hazard zones to identify liquefaction zones and incorporate site-specific project designs. With implementation of Mitigation Measure GEO-1, impacts would be reduced to a less than significant level.

Mitigation Measures

> **GEO-1:** Prior to the approval of construction plans for any individual project, a design-level geotechnical investigation, including collection of site specific subsurface data shall be completed. The geotechnical evalution shall identify all potential seismic hazards including fault rupture and characterize the soil profiles, including liquefaction potential and expansive soil potential. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual proposed projects.

Significance after Mitigation: Less than significant

Soil Erosion or Topsoil Loss

Impact 3.5-2: Construction of the proposed project could result in substantial soil erosion or the loss of topsoils. (Less than Significant with Mitigation)

The proposed project involves implementation actions that require the construction of various new water facilities. Soil erosion could result during rain or high wind events that occur during the excavation, grading and construction phases of these facilities. Construction on undeveloped, open space would have greater potential for erosion than existing developed sites. Earthwork that disturbs undeveloped soils has a greater potential to be exposed to wind or water erosion due to the unconsolidated soils. The City of Palmdale identifies areas in the Safety element of the General Plan (1993) that project components may likely be constructed within as having the Soil Erosion Potential of NS-None to Slight to M-Moderate. Furthermore, the implementation of the proposed project would need to comply with SCAQMD Rule 403 for dust control that would ensure the prevention and/or management of the loss of topsoils and wind erosion. (See Chapter 3.2, Air Quality and Greenhouse Gas Emissions, for information about SCAQMD Rule 403.) Compliance with SCAQMD Rule 403 would ensure that construction activities generating wind-induced soil erosion are below SCAQMD significance thresholds as stated and discussed in more detail in Section 3.2, Air Quality and Greenhouse Gas Emissions.

To further prevent erosion,**Mitigation Measure HYD-1** in Chapter 3.7, Hydrology and Water Quality requires the development and implementation of best management practices (BMPs) during project construction. The BMPs would include erosion control measures to protect the topsoil during construction, including particular measures to protect surface waters in the vicinity that may potentially be impacted. In addition, implementation of **Mitigation Measure GEO-2** would ensure that that topsoil materials excavated during construction are reused and not hauled offsite to assist in dust control and to manage loss of topsoil. Also, any stockpiled soils would be watered and/or covered to prevent loss due to wind erosion. As a result of these efforts, potential loss of topsoil and substantial soil erosion during construction of project components would be reduced to a less than significant level.

Mitigation Measures

Implementation of **Mitigation Measure HYD-1**.

GEO-2: All topsoil stripped from the ground surface during construction shall be used, to the extent feasible, for construction of other project elements and not hauled offsite. Any temporary stockpiles shall be managed through the use of best management practices, which shall include but not be limited to wetting and/or covering stockpiles to prevent wind erosion.

Significance after Mitigation: Less than significant

Soil Stability

Impact 3.5-3: The proposed project could be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite lateral spreading, subsidence or collapse. (Less than Significant)

The project area and conceptual locations of associated water facilities would be located in areas of low soil expansion and erosion potential, which are two components that influence the stability of underlying soils and ultimately determine the ability for an area to support man-made structures. Construction of proposed water facilities would be within areas of relatively low relief, or approximately less than 15 percent slope. Impacts associated with soil stability would be less than significant.

Mitigation Measures

None required

Expansive Soils

Impact 3.5-4: The proposed project could be located on expansive soil that creates substantial risks to life or property. (Less than Significant with Mitigation)

Construction of future production wells in addition to other proposed ancillary water facilities may potentially be located in two areas that are identified as having moderate soil expansion potential. These two areas are located in the northern portion of the City, just above and below the Palmdale Regional Airport (City of Palmdale, 1993). Potential project components located within areas of moderate soil expansion potential could create risks to the existing environmental conditions of the area and compromise existing property or those residing in the vicinity. Otherwise, a majority of the project area would be within low soil expansion potential. All facilities would be designed in accordance with the recommendations of a site-specific geotechnical investigation required by Mitigation Measure GEO-1. The geotechnical reports would include preliminary evaluations for each site-specific project and the identification of expansive soils present in the area. The geotechnical reports will provide recommendations to mitigate impacts associated with expansive soils, if necessary. Therefore, impacts related to risks associated with expansive soils would be reduced to a less than significant level.

Mitigation Measures

Implement **Mitigation Measure GEO-1**.

Significance after Mitigation: Less than significant

Mineral Resources

Impact 3.5-5: The proposed project could substantially impact the availability of known mineral resources within the region or the availability of locally important mineral resource recovery sites. (Less than Significant with Mitigation)

Implementation of the proposed project would not require attainment of regionally-significant mineral resources and would not reduce the availability of resources that would be of value to the region. The Environmental Resource element of the City of Palmdale General Plan (1993) identifies local sand and gravel mining activities along Avenue S, east of 70th Street East. Proposed construction of recharges facilities and production wells associated with the future actions of the SWRP does not require the need for regionally-significant aggregate resources. However, facilities may potentially be located adjacent to this mining area. Recharge facilities and production wells associated with certain implementation actions under the Recommended Strategy (Table 3-1) may potentially be located in the Littlerock Wash MRZ-2 zone (Figure 3.5-4). While the proposed locations are not determined at this time, the conceptual layout of these facilities may infringe upon the access to these zones. However, implementation of **Mitigation Measure GEO-3** would require the construction and future location of production wells, recharge facilities, and other ancillary facilities/structures to comply with the City of Palmdale policies associated with the continued access to known mineral resources. Mitigation Measure GEO-3 would require development occurring in the vicinity of mining operations to be adequately buffered to ensure that potential impacts to existing or future mining operations, including the Mineral Resource Extraction designated areas that encompasses the State-designated MRZ-2 zones, are reduced to a less than significant level.

Mitigation Measures

> **GEO-3:** Construction and operation of facilities that are located within or adjacent to known Mineral Resource Zones shall comply with City policies requiring the continued access to these areas. Buffers shall be installed around development occurring in the vicinity of mining operations to prevent interruptions or impacts to the existing mining operations.

Significance after Mitigation: Less than significant

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3.6 Hazards and Hazardous Materials

Potential hazards addressed in this section include uses of hazardous materials during operation, hazardous materials in soil and groundwater, releases of hazardous materials during construction, and hazards related to aviation, emergency preparedness, and wildfires. Mitigation measures to reduce impacts to a less-than-significant level are identified.

3.6.1 Environmental Setting

Project Area

The following sections describe the environmental setting for hazards and hazardous materials within the project area, which is located almost entirely within the City of Palmdale, but also includes portions of land within unincorporated Los Angeles County. The project area includes the PWD service area plus areas adjacent to the service area where proposed facilities are located.

Hazardous Materials in Soil and Groundwater

The potential for hazardous materials in soil and groundwater within the project area is based on an environmental database review conducted to identify environmental cases,[1] permitted hazardous materials uses,[2] and spill sites[3] within the City of Palmdale and small portions of land within unincorporated Los Angeles County.

Environmental Database Review

Analysis for this project included a regulatory agency records search for the project area, and did not include a Phase I Environmental Site Assessment. The records search included the following database searches:

- State Water Resources Control Board (SWRCB) GeoTracker database, and
- California Department of Toxic Substances Control (DTSC) EnviroStor database.

These lists are a compilation of information from various sources listing potential and confirmed hazardous waste and hazardous substances sites in California. The SWRCB GeoTracker and DTSC EnviroStor outputs for the project area are included in **Appendix D**. The records search revealed multiple listed and active sites within the project area, including the United States Air Force Plant 42, which is on the Cortese List – a list of hazardous waste facilities subject to corrective action.

Sensitive Receptors

Preschools, schools, daycare centers, nursing homes, and hospitals are considered sensitive receptors for hazardous material issues because children and the elderly are more susceptible than

1 Environmental cases are those sites that are suspected of releasing hazardous substances or have had cause for hazardous substances investigations and are identified on regulatory agency lists.

2 Permitted hazardous materials uses are facilities that use hazardous materials or handle hazardous wastes that operate under appropriate permits and comply with current hazardous materials and hazardous waste regulations.

3 Spill sites are locations where a spill has been reported to the State or federal regulatory agencies. Such spills do not always involve a release of hazardous materials.

adults to the effects of many hazardous materials. There are numerous sensitive receptors in the project area. Due to the uncertainty of some project component locations, there is the potential for many sensitive receptors to be within 0.25 miles of project facilities.

Hazardous Materials Sites

The project site is primarily located within the City of Palmdale, which contains a mix of residential, commercial, industrial, and public facilities as described further in Chapter 3.8, Land Use. The United States Air Force Plant 42 and Los Angeles-Palmdale Regional Airport properties, which include industrial and aerospace uses, are located north of PWD's northern most boundary (**Figure 3.6-1**).

Active Sites

The SWRCB GeoTracker database notes that there are five open sites within the project area. However, none are listed on the Cortese List; so they are not currently subject to corrective action. The DTSC EnviroStor database lists one site, United States Air Force Plant 42 (AFP 42), as an active site. This site is listed on the Cortese List and is currently subject to corrective action. Detailed information regarding this hazardous waste site is provided below.

United States Air Force Plant 42

AFP 42 is the only property within or in the immediate vicinity of the project area included on the Cortese List as a DTSC active clean-up site. AFP 42 has been the subject of numerous site assessments and cleanups under the regulatory oversight of the DTSC since 1994, but is not listed on the National Priorities List.

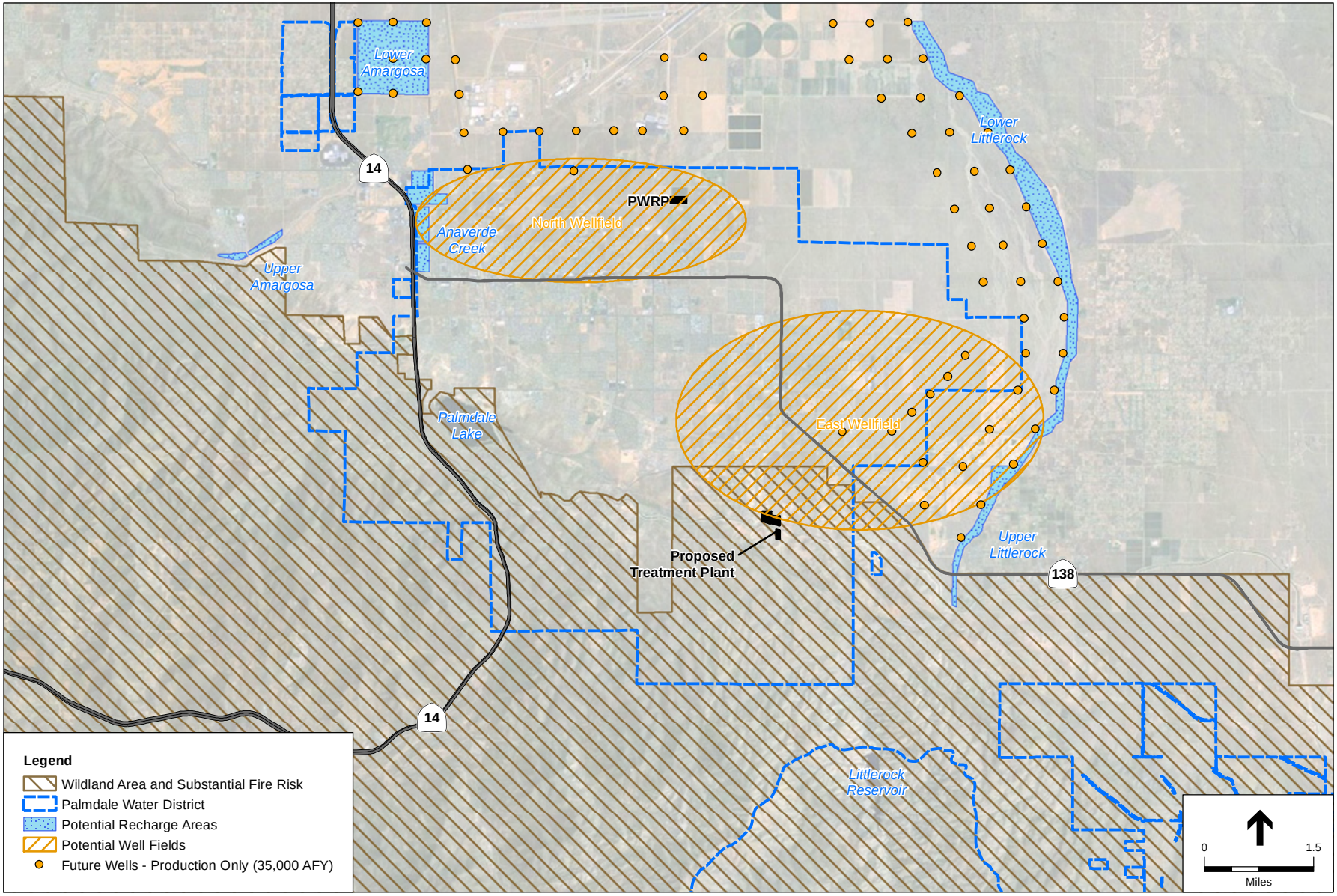
Site History and Description

AFP 42 is a government-owned, contractor-operated research and development facility that is 5,832 acres in size and is located within the City of Palmdale, north of the PWD service area. This site has multiple contaminated areas, including twenty-nine potentially contaminated areas and three areas of concern in the initial assessment phase. Contaminants that may be present on this site include fuels, oils, solvents, paint, soil sludges, acids, heavy metals, and polychlorinated biphenyls (PCBs). Potential contaminants of concern on the project site include dioxin, metals, organochlorine pesticides, petroleum, PCBs, polynuclear aromatic hydrocarbons (PAHs), semi-volatile organic compounds, and volatile organic compounds (VOCs).

The site contains a day care center, but no other sensitive receptors including schools, hospitals, nursing homes, or other day care facilties are located within a half-mile radius of AFP 42 (U.S. Air Force, 2004). In addition, the United States Air Force has included substantial outreach efforts as part of their cleanup activities, including the creation of a Community Involvement Plan, which was approved by the DTSC in February 2008 (DTSC, 2008).

Site Cleanup Levels

Cleanup activities for AFP 42 began in 1995, with the creation of a Public Participation Plan/Community Relations Plan for the entire site. Since that time, remedial activities have been



SOURCE: RMC, 2011.

Palmdale Water District SWRP. 210170

Figure 3.6-1

Wildland Fire Hazards

performed at each of the twenty-nine identified Installation Restoration Program (IRP) sites from 1997 through 2008. Due to specific concerns in four of the IRP sites (5, 27, 28, and 29) these sites have been addressed in separate and ongoing remediation investigations and actions. All 29 IRP sites were recently addressed in a Final Feasibility Study in 2010 (CH2MHill, 2010a). This study summarized previous actions taken across the project site, and notes that a 2004 human health risk assessment found all 29 IRP sites to present low potential threats to groundwater.

In sum, the U.S. Air Force has determined that the objective of remedial actions at AFP 42 is to, "prevent exposure through ingestion, inhalation, and direct contact with soil and groundwater that presents an unacceptable health risk while minimizing interference with operations at AFP 42." The U.S. Air Force, in conjunction with the DTSC, is working to establish remedial actions that will meet the aforementioned objective across the entire AFP 42 site.

Groundwater Cleanup Activities

Groundwater investigations have been conducted across the AFP 42 site, and have focused on VOCs, including trichloroethylene (TCE), which has been detected within groundwater at AFP 42 (CH2MHill, 2010a). A thorough site investigation indicated that there is a plume of TCE affecting Site 29, which may also have an impact on Site 12. No other AFP 42 sites are located within a 500-foot buffer of the plume (CH2MHill, 2010a). Site 29 is undergoing specific remediation action related to the TCE groundwater plume, and Site 12 has been evaluated for a potential cumulative groundwater risk. Both of these sites are located within the northwestern portion of AFP 42, which is approximately one mile east of proposed PWD recycled water pipelines, and approximately one mile northwest of potential PWD production wells.

In 2005, the U.S. Air Force created a work plan to asses and begin treatment of VOCs, particularly TCE, within and adjacent to Site 29 (CH2MHill, 2005). This report indicates that testing results for Site 29 show that TCE remains within the vadose zone and could potentially impact local groundwater. However, this research also indicated that the plume is confined to an approximate 200 foot radius located entirely within AFP 42 property (CH2MHill, 2005). In 2006, the U.S. Air Force began soil vapor extraction (SVE) system installation and pilot testing at Site 29 to evaluate the effectiveness of removing and treating VOCs from local soils (CH2MHill, 2010b). In 2010, the U.S. Air Force constructed and installed a groundwater treatment system to extract, treat, and inject impacted groundwater within and adjacent to Site 29. These actions are anticipated to reduce the TCE plume located at AFP 42, which is expected to reduce in size and concentration over time (CH2MHill, 2010b).

Household Hazardous Materials

Household hazardous waste is a hazardous waste generated incidental to owning or maintaining a place of residence, as defined in Section 25218.1 (e) of the California Health and Safety Code. Examples of common household hazardous wastes include antifreeze, household batteries, compressed gas cylinders, television/computer monitors, consumer electronic devices, home-generated sharps, oil-based paints, latex paints, motor oil, used oil filters, rodent poison, asbestos, gasoline, fluorescent lamps, partially used aerosol containers, and weed killers (CIWMB 2002). A household hazardous waste collection facility is operated by a public agency or its contractor for

the purposes of collecting, handling, treating, storing, recycling, or disposing of household hazardous wastes (Health and Safety Code Section 2518.1 (f)). A household hazardous waste collection facility may also accept wastes from small businesses that are conditionally exempt generators, defined as a small business that generates no more than 100 kilograms of hazardous waste per month.

The Antelope Valley Environmental Collection Center is a permanent household hazardous waste collection center located at the Antelope Valley Public Landfill, which is approximately 1.5 miles northwest of Lake Palmdale. This facility accepts items such as lawn and garden care products, paint and paint-related products, automotive fluids and batteries, beauty products and medicines, household cleaners, electronic waste, and other common household hazardous wastes (Los Angeles County Department of Public Works, n.d.)

Wildland Fire Hazards

The County of Los Angeles Fire Department maps the Fire Hazard Severity Zones (FHSZ) within the City of Palmdale and throughout Los Angeles County. The FHSZ are based on an evaluation of fuels, topography, dwelling density, weather, infrastructure, building materials, brush clearance, and fire history (California Department of Forestry and Fire Protection, 2000). These maps demonstrate that the majority of the project area is located within areas of “Moderate Fire Hazard” and “Other Non-Wildland.” However, small portions of the southern project area within or adjacent to the Angeles National Forest are designated as “Wildland Area with Substantial Fire Risk” (Figure 3.6-1).

3.6.2 Regulatory Framework

Hazards and hazardous materials are subject to numerous federal, state, and local laws and regulations intended to protect health, safety, and the environment. The U.S. Environmental Protection Agency (USEPA), DTSC, RWQCB, and County of Los Angeles are the primary agencies enforcing these regulations. Local regulatory agencies enforce many federal and State regulations through the Certified Unified Program Agency (CUPA) program. The Los Angeles County Fire Department is the lead agency for the investigation and cleanup of leaking underground storage tank sites. The RWQCB is the lead agency for other groundwater cases. The DTSC can be the lead agency for cases with no groundwater issues and is the lead agency for investigation and remediation of the AFP 42 site.

Federal

Resource Conservation and Recovery Act (RCRA)

RCRA (42 U.S.C §6901-6987), which was enacted in 1976, is the principal law governing the disposal of hazardous materials. The purpose of RCRA is to protect human health and the environment from the hazards posed by waste disposal; conserve energy and natural resources through waste recycling and recovery; reduce or eliminate the amount of waste generated, including hazardous waste; and ensure that wastes are managed in a manner that is protective to human health and the environment. In 1984 the scope of RCRA was substantially expanded with

enactment of the Hazardous and Solid Waste Amendments (HSWA). HSWA expanded RCRA by adding compliance and enforcement program development along with further restrictions on leaking underground storage tanks. RCRA is considered a "cradle to grave" statute for hazardous wastes in that it addresses all aspects of hazardous materials from creation to disposal.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

CERCLA, which is commonly referred to as Superfund, is a federal program that was established to address abandoned hazardous waste sites. CERCLA provides the USEPA with the authority to clean up contaminated sites, as well as require responsible parties to perform or reimburse the government for cleanup activities. The US EPA establishes the National Priorities List, a list established from the Hazard Ranking System, is primarily for informational purposes. This list assists the US EPA in identifying sites or other releases of hazardous materials that may warrant remedial actions.

Emergency Planning and Community Right-To-Know Act (EPCRA)

EPCRA was created by the Superfund Amendments and Reauthorization Act (SARA) of 1986, which was intended to improve community access to information regarding chemical hazards and to facilitate the development of chemical emergency response plans by state, tribal, and/or local governments. Implementation of EPCRA required each state to appoint a State Emergency Response Commission or Tribal Emergency Response Commission that is responsible for dividing their state or tribal lands into Emergency Planning Districts and to appoint a Local Emergency Planning Committee for each district. EPCRA also established reporting obligations for facilities that store or manage specified chemicals.

Process Safety Management

Facilities that handle more than 10,000 pounds of a flammable liquid, or specific chemicals above threshold quantities, are subject to the federal Process Safety Management regulations specified in Title 29 of the federal Code of Regulations, Section 1910.119. In accordance with these regulations, the facility operator must conduct a hazard analysis for each process, develop written operating procedures, provide employee training, establish and implement an emergency action plan, and conduct periodic audits of the process. The operator must also inform contractor employees of all hazards related to work involving the regulated process, require implementation of safe work practices by the contractor in accordance with written operating procedures, and explain the emergency action plan. For maintenance, the operator must also provide written procedures to maintain the ongoing integrity of equipment required for the regulated process.

Regional Screening Levels

The USEPA has published Regional Screening Levels (RSL), previously referred to as Preliminary Remediation Goals, for the evaluation of chemicals commonly found in soil or groundwater where a release of hazardous materials has occurred (USEPA, 2010). For an industrial worker, these screening levels are conservative estimates of safe levels of a chemical that a worker could be exposed to in soil and groundwater. If the concentration of a chemical in

the soil or groundwater is below the RSL, then it can be assumed that the chemical would not pose a health risk to the worker. However, these screening levels are based on conservative exposure assumptions, and it is possible to conduct a more detailed risk assessment using project-specific exposure assumptions to develop a higher concentration that would be considered safe.

In addition, screening levels would generally be lower for industrial workers than construction workers because the industrial worker would be exposed to the soil and groundwater over a lifetime while the construction worker would only be exposed for the duration of construction. Therefore, safe levels of chemicals in soil and groundwater would generally be higher for construction workers than industrial workers.

Hazardous Materials Worker Safety Requirements

The federal Occupational Safety and Health Administration (OSHA) is the federal agency responsible for ensuring worker safety. The federal regulations for worker safety are contained in Title 29 of the Code of Federal Regulations, as authorized in the Occupational Safety and Health Act of 1970. These regulations provide standards for safe workplaces and work practices, including those relating to hazardous materials handling.

State

Hazardous Waste Regulations

Hazardous waste programs in California are primarily administered by DTSC and the California Environmental Protection Agency (Cal EPA). Title 22, Division 4.5, Environmental Health Standards for the Management of Hazardous Wastes provides the basis for California hazardous waste regulations, and Chapter 6.5 of the California Health and Safety allows for implementation of a “cradle to grave” waste management system analogous to RCRA.

Cal EPA oversees the Unified Program, which is a consolidation of six environmental and emergency response programs. The Enforcement and Emergency Response Program of DTSC oversees the hazardous waste generator and onsite waste treatment surveillance and enforcement program that is carried out by local Certified Unified Program Agencies (CUPAs). The local CUPAs are tasked with establishing a unified hazardous waste and hazardous materials management program for hazardous waste generators, treatment of hazardous waste, facilities with underground and aboveground storage tanks, risk management and prevention plans, and hazardous materials management plans and inventory statements required by the Uniform Fire Code.

The Los Angeles County Fire Department is the CUPA for the majority of the County of Los Angeles, including PWD’s service area.

Hazardous Material Release Response Plans and Inventory Law

The California Hazardous Materials Release Response Plan and Inventory Law of 1985 (Business Plan Act) requires that businesses that store hazardous materials on site prepare a Hazardous Materials Business Plan (HMBP) and submit it to local health and fire departments. The business

plan must include details of the facility and business conducted at the site, an inventory of hazardous materials that are handled and stored onsite, an Emergency Response Plan, and a Site Safety Plan that includes an emergency response training program for new employees with an annual refresher course. HMBPs must be submitted to the local CUPA and also must follow federal EPCRA reporting requirements.

California Accidental Release Prevention Program

The California Accidental Release Prevention (CalARP) Program regulates facilities that use or store regulated substances, such as toxic or flammable chemicals, in quantities that exceed established thresholds (California Code of Regulations (CCR) Title 19, Division 2, Chapter 4.5). The purpose of the CalARP program is to prevent accidental releases of regulated substances and reduce the severity of releases that do occur. The CalARP Program meets all requirements of the USEPA's Risk Management Program, established pursuant to the Clean Air Act Amendments (42 USCA Section 7412(4)). The CalARP Program requires facilities that use regulated substances to develop a Risk Management Plan (RMP).

California Fire Code

The California Fire Code, Article 80, includes specific requirements for the safe storage and handling of hazardous materials. These requirements reduce the potential for a release of hazardous materials and for mixing of incompatible chemicals, and specify the following design features to reduce the potential for a release of hazardous materials that could affect public health or the environment:

- Separation of incompatible materials with a noncombustible partition;
- Spill control in all storage, handling, and dispensing areas; and
- Separate secondary containment for each chemical storage system. The secondary containment must hold the entire contents of the tank, plus the volume of water needed to supply the fire suppression system for a period of 20 minutes in the event of a catastrophic spill.

The California Fire Code, Article 79, includes specific requirements for the safe storage and handling of flammable and combustible liquids. Specific requirements address fire protection; prevention and assessment of unauthorized discharges; labeling and signage; protection from sources of ignition; specifications for piping, valving, and fittings; maintenance of above ground tanks; requirements for storage vessels, vaults, and overfill protection; and requirements for dispensing, using, mixing, and handling of flammable and combustible liquids.

Transportation of Hazardous Wastes

Regulatory requirements for the transport of hazardous wastes in California are specified in 22 CCR, Division 4.5, Chapters 13 and 29. In accordance with these regulations, all hazardous waste transporters must have identification numbers, which are used to identify the hazardous waste handler and to track the waste from its point of origin to its final disposal disposition (DTSC 2007). This number, issued by either USEPA or DTSC, depends on whether the waste is classified as hazardous by federal regulations or only under California regulations. Hazardous waste transporters must comply with the California Vehicle Code, California Highway Patrol

regulations (13 CCR); the California State Fire Marshal regulations (19 CCR); and U.S. Department of Transportation regulations (Title 49 of the Code of Federal Regulations (CFR)); and USEPA regulations (Title 40 of the CFR). A hazardous waste manifest is required for transport of hazardous wastes. The hazardous waste manifest documents the legal transport and disposal of the waste, and is signed by the generator and transporter(s) of the waste as well as the disposal facility. California regulations specify specific cleanup actions that must be taken by a hazardous waste transporter in the event of a discharge or spill, and for the safe packaging and transport of hazardous wastes.

Waste Classification Criteria

In accordance with 22 CCR Section 66261.20, et seq., excavated soil would be classified as a hazardous waste if it exhibits the characteristics of ignitability, corrosivity, reactivity, or toxicity. A waste is considered toxic in accordance with 22 CCR Section 66261.24 if it contains:

- Total concentrations of certain substances at concentrations greater than the Total Threshold Limit Concentration (TTLC);
- Soluble concentrations greater than the Soluble Threshold Limit Concentration(STLC);
- Soluble concentrations of certain substances greater than federal toxicity regulatory levels using the Toxicity Characteristic Leaching Procedure (TCLP); or
- Specified carcinogenic substances at a single or combined concentration of 0.001 percent.

A waste is considered hazardous by state and federal regulations if the soluble concentration exceeds the federal regulatory level as determined by the TCLP. Because the TCLP involves a 20-to-1 dilution of the sample, the total concentration of a substance in the soil would need to exceed 20 times the regulatory level for the soluble concentration to exceed the regulatory level in the extract. A waste is also considered hazardous under state regulations if the soluble contaminant concentration exceeds the STLC as determined by the Waste Extraction Test (WET) method. Because the WET is performed using a 10-to-1 dilution of the sample, the total concentration of a substance would need to exceed 10 times the STLC for the soluble concentration to possibly exceed the STLC in the extract. A waste may also be classified as toxic if testing indicates toxicity greater than the specified criteria.

Hazardous Materials Worker Safety Requirements

The state regulations concerning the use of hazardous materials in the workplace are included in 8 CCR, and include requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. The California Division of Occupational Safety and Health (CalOSHA) also enforces hazard communication program regulations, which contain worker safety training and hazard information requirements, such as procedures for identifying and labeling hazardous substances, communicating hazard information relating to hazardous substances and their handling, and preparation of health and safety plans to protect workers. CalOSHA standards are generally more stringent than federal OSHA regulations.

Local

Los Angeles County Fire Department Wildfire Action Plan

The City of Palmdale receives fire and emergency response services from the Los Angeles County Fire Department (LACFD). In 2009, the LACFD adopted a Wildfire Action Plan, which contains guidelines that recommend fire prevention measures such as creating defensible space and completing fire-resistive retrofits in homes (LACFD 2009). In addition, this plan provides residents with information regarding emergency preparedness and planning in the event of a wildfire.

Los Angeles County Operational Area Emergency Response Plan

In 1998, the County of Los Angeles adopted the Los Angeles County Operational Area Emergency Response Plan, which provides emergency planning for the Los Angeles County Operational Area, an area that includes the project area. The purpose of this plan is to increase cooperation and coordination between relevant government agencies and jurisdictions, in order to increase efficiency and minimize losses in the event of an emergency or disaster within the Operational Area (County of Los Angeles 1998).

Hazardous Materials Fire Code Requirements

As the CUPA, the LACFD enforces the hazardous materials-related standards of the California Fire Code, including requirements for signage of hazardous materials storage areas, storage of flammable materials, secondary containment for storage containers, and separation of incompatible chemicals.

City of Palmdale General Plan

The City of Palmdale General Plan Safety Element (City of Palmdale 1993) includes goals and objectives relevant to hazards and hazardous materials. Specifically, the General Plan addresses Fire Hazards (S-34), Aircraft Accident Potential (S-37), and Hazardous Materials/Wastes (S-48). The General Plan contains the following policies addressing the aforementioned hazards:

- **Policy S1.3.1:** Ensure that structural setbacks from fire-prone vegetation for buildings near the National Forest are maintained in accordance with the standards and regulations established by the National Forest Service. Require that all necessary fire clearances be provided on private (not public) land.
- **Policy S1.3.2:** Encourage dual access, particularly in mountainous and high fire risk areas, on approved all-weather surface roadways.
- **Policy S1.3.8:** Coordinate fire prevention and protection service needs and facility planning with Los Angeles County Fire District.
- **Policy S2.2.1:** Require all development to be consistent with Department of Defense regulations as outlined in the Air Force Plant 42 Air Installation Compatibility Use Zone (AICUZ) Report and to comply with applicable FAA regulations which affect development in the Accident Potential Zones.

- **Policy S2.2.2:** Through the design review process, ensure that new buildings are located in a manner which will promote clear linear corridors through the developed area within any Accident Potential Zones, to create potential pilot options in the event of an aircraft emergency.
- **Policy S2.3.3:** Require that soils containing toxic or hazardous substances be cleaned up to the satisfaction of the agency having jurisdiction, prior to the granting of any permits for new development.
- **Policy S2.3.4:** Restrict or prohibit land uses and activities that generate excessive amounts of hazardous materials or wastes that cannot be properly maintained or disposed.
- **Policy S2.3.5:** Promote the routing of vehicles carrying potentially hazardous materials along transportation corridors that reduce the risk to the public and sensitive environmental areas. Cooperate with regional agencies in developing such routing systems.
- **Policy S2.3.6:** Require that all proposed hazardous waste facilities comply with the City's hazardous waste management plan and Chapter 9 Article 96 (Hazardous Waste Facilities) of the Palmdale Zoning Ordinance.
- **Policy S2.3.7:** Review proposed development in proximity to any existing or proposed hazardous waste facility, to ensure that future development and land use decisions consider and incorporate site design, setbacks and buffering techniques appropriate for the site and provide adequate mitigation of any potential adverse impacts to such development from hazardous waste facilities.
- **Policy S3.1.1:** Ensure that there is not a reduction in effectiveness of emergency services as a result of growth permitted through implementation of the General Plan.
- **Policy S3.1.7:** Maintain and implement the City's adopted Disaster Preparedness Plan.

3.6.3 Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the significance of impacts related to hazards and hazardous materials are based on Appendix G of the *CEQA Guidelines*. The proposed project would result in a significant impact with respect to hazards or hazardous materials quality if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area.
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

A discussion of the impacts and mitigation measures for the proposed project are presented below.

Impacts Discussion

Hazards Near Private Airstrips

The proposed project is not located within the vicinity of a private airstrip. As a result, no impacts would occur and no mitigation is required.

Hazards Near Public Airports

The LA-Palmdale Regional Airport, which is located on the AFP 42 site, is located north of the PWD service area boundary. Implementation of the proposed project would involve construction of recycled water pipelines and production wells within two miles of this airport. However, operation of the proposed facilities would not interfere with airport facilities. The distribution pipelines would be underground, while production wells would be relatively low profile masonry buildings. The proposed facilities would also not be located within the Air Installation Compatible Use Zone of AFP 42 (City of Palmdale, 1993). In this context, the proposed project would not adversely affect airport operations in terms of flight patterns, safety, light, navigation, or communications between aircraft and the control tower. There would be no impact associated with safety hazards for people working or residing in the project area.

Hazardous Materials Transport, Use, and Disposal

Impact 3.6-1: The proposed project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. (Less than Significant)

Construction activities required for implementation of the proposed project would potentially involve drilling, trenching, excavation, grading, and other ground-disturbing activities. Construction activities would be required for the installation of new water facilities throughout

the project area, including installation of new recharge facilities, pipelines, storage tanks, wells, and potentially construction of a treatment plant, aqueduct turnouts, and a grade control structure. The anticipated construction activities described above would temporarily require the transport, use, and disposal of hazardous materials including gasoline, diesel fuel, hydraulic fluids, paint, and other similarly related materials. Construction activities would require the use of heavy equipment that would contain oil, gasoline, or other fluids, and would likely be stored on and transported to the project site during the construction period.

Accidental release of these materials could occur during routine transport, disposal, or use, and could potentially injure construction workers, contaminate soil, and/or affect nearby groundwater or surface water bodies. Impacts associated with accidental release, although likely localized, could potentially create a significant hazard to the public or the environment. PWD shall be required to comply with all relevant and applicable federal, State and local laws and regulations that pertain to the transport, storage, use, and disposal of hazardous materials and waste during construction of proposed facilities. Impacts would be less than significant.

Operation of the proposed wellhead treatment facilities and new treatment plant would require routine transport and use of new chemicals for purposes of treatment of potable water. PWD shall be required to comply with all relevant and applicable federal, State and local laws and regulations that pertain to the transport, storage, and use of hazardous materials during operation of proposed facilities. Compliance with these laws would minimize the potential hazard to the public or environment due to transport, storage, and use of hazardous materials. Impacts would be less than significant.

Mitigation Measures

None required.

Accidental Upset of Hazardous Materials

Impact 3.6-2: The proposed project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (Less than Significant with Mitigation)

Construction and operation activities associated with implementation of the proposed project could create an additional significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials. The potential exists for accidents to occur during construction activities and routine operations and maintenance, which could result in the release of hazardous materials into the environment.

Construction of the proposed project could result in the exposure of construction workers and residents to potentially contaminated soils or groundwater due to improper removal of existing hazardous materials on site and/or leakage from existing septic disposal systems in the area. Adherence to requirements set forth in **Mitigation Measure HAZ-1** and **HAZ-2** would reduce these impacts to a less than significant level.

The CalARP Program requires facilities that use regulated substances to develop a Risk Management Plan (RMP). PWD would be required to prepare a RMP for the proposed treatment plant and to keep the RMP on file with the Los Angeles County Fire Department. The RMP is a public document that reflects a facility's overall effort to manage and prevent risks associated with the storage, use, and/or processing of regulated substances.

The California Hazardous Materials Release Response Plans and Inventory Program (CCR Title 19, Division 2, Chapter 4) requires facilities that store hazardous materials onsite to prepare a Hazardous Materials Business Plan (HMBP) that includes an inventory of hazardous substances and an Emergency Response Plan (ERP). The HMBP is submitted to local health and fire departments. In the event of an accident, the release of hazardous materials must be immediately reported to local fire and emergency personnel and appropriate county and state agencies.

Operation of the proposed treatment plant and wellhead treatment facilities would require delivery of chemicals. The transport of hazardous materials is regulated by Caltrans. Transporters of hazardous waste are required to be certified by Caltrans. All hazardous materials would be tracked by Caltrans and delivery vehicles would be required to utilize roadways approved for transportation of hazardous materials. The proposed project would not create a significant hazard to the public due to the transport of hazardous materials.

Implementation of the RMP, HMBP, and ERP would reduce potential risks to the public and environment due to accidental release of hazardous materials during project operation to less than significant levels.

Mitigation Measures

HAZ-1: Contingency Plan for Contaminated Soil or Groundwater. Prior to commencement of construction, PWD shall require its construction contractor to consult with appropriate regulatory agencies to prepare a Contingency Plan that outlines how to dispose of any contaminated soil or groundwater that may be encountered during construction. If contaminated soil and/or groundwater are encountered or if suspected contamination is encountered during project construction, work shall be halted in the area, and the Contingency Plan shall be implemented.

HAZ-2: Hazardous Materials Management Spill Prevention and Control Plan. Before commencement of construction, PWD shall require its construction contractor to prepare a Hazardous Materials Management Spill Prevention and Control Plan that includes a project-specific contingency plan for hazardous materials and waste operations. The Plan shall be applicable to all construction activities, and shall establish policies and procedures according to federal and California OSHA regulations for hazardous materials. Elements of the Plan shall include, but not be limited to the following:

- A discussion of hazardous materials management, including delineation of hazardous material storage areas, access and egress routes, waterways, emergency assembly areas, and temporary hazardous waste storage areas;
- Notification and documentation of procedures; and
- Spill control and countermeasures, including employee spill prevention/response training.

Significance after Mitigation: Less than significant

Hazardous Materials Near Schools

Impact 3.6-3: The proposed project could emit hazardous emissions or handle hazardous or acutely hazardous material, substances, or waste within one-quarter mile of an existing or proposed school. (Less than Significant with Mitigation)

Due to the potentially extensive nature of facilities associated with implementing the proposed project, including proposed recharge sites, future well sites, and pipeline construction, it is possible that construction of proposed facilities would occur within one-quarter mile (1,320 feet) of the following schools:

- Yucca Elementary
- Palm Tree Hill Elementary
- Tubleweed Elementary
- Cactus Elementary
- Tamarisk Elementary
- Manzanita Elementary
- Wildflower Elementary
- Desert Rose Elementary
- Mesquite Elementary
- Chaparral Elementary
- Buena Vista Elementary
- Cimarron Elementary
- Quail Valley Elementary
- Golden Poppy Elementary
- Barrel Springs Elementary
- Joshua Hills Elementary
- The Guidance Charter School
- Mesa Intermediate
- Desert Willow Intermediate
- Shadow Hills Intermediate
- Knight High School
- Palmdale High School
- R. Rex Parris High School
- Antelope Valley ROP
- Desert Sands Charter High School
- St. Mary's School

In addition to the schools listed above, it is possible that facilities that have not yet been sited would involve construction within one-quarter mile of other schools within the project area. Because construction activities could potentially involve hazardous materials or substances, the proposed project would have the potential to emit hazardous emissions or handle hazardous materials, substances, or waste within a quarter mile of an existing or proposed school. Adherence to requirements set forth in **Mitigation Measures HAZ-1** and **HAZ-2** would reduce the impact to a less than significant level. In addition, implementation of a Traffic Control Plan (refer to **Mitigation Measure TR-1** in Chapter 3.11, Traffic and Transportation) would require coordination efforts to ensure that construction activities do not impact local schools.

Mitigation Measures

Implementation of **Mitigation Measures HAZ-1** and **HAZ-2.**

Implementation of **Mitigation Measure TR-1**.

Significance after Mitigation: Less than significant

Hazardous Materials Sites

Impact 3.6-4: The proposed project could be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, could create a significant hazard to the public or the environment. (Less than Significant with Mitigation)

The hazardous sites analysis undertaken for this project, including records search on the SWRCB GeoTracker and the DTSC EnviroStor databases, revealed multiple listed and active sites within the project area. The AFP 42 is listed as an active State response site on a list of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code (the "Cortese List"). The proposed project would include construction of production wells and pipelines on and around AFP 42 (Figure 3.6-1). During project construction, it is possible that contaminated soil and/or groundwater could be encountered during excavation, thereby posing a health threat to construction workers, the public, and the environment. Adherence to requirements set forth in **Mitigation Measures HAZ-1, HAZ-2,** and **HAZ-3** would reduce the impact to a less than significant level.

Mitigation Measures

Implementation of **Mitigation Measures HAZ-1** and **HAZ-2.**

HAZ-3: Conduct Environmental Site Assessments in AFP 42 Vicinity. Before beginning construction, PWD shall complete a Phase I Environmental Site Assessment (ESA) for soil and groundwater contamination in areas where production wells and pipelines are located within the vicinity of U.S. Air Force Plant 42. The recommendations set forth in the Phase I ESA shall be implemented to the satisfaction of applicable agencies before construction begins. If the Phase I ESA indicates the potential for contamination within the construction zone of the pipelines, Phase II studies shall be completed and recommendations implemented before construction begins. Phase II studies shall include soil and groundwater sampling and analysis for anticipated contaminants. The Phase II sampling is intended to identify how to dispose of any potentially harmful material from excavations, and to determine if construction workers need specialized personal protective equipment while constructing the pipeline through that area. All recommendations of the Phase II analysis shall be implemented prior to or during construction to ensure that health hazards are reduced to levels that are deemed acceptable by the applicable regulators.

Significance after Mitigation: Less than significant

Emergency Response Plan

Impact 3.6-5: Construction of the proposed project could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less than Significant with Mitigation)

Construction activities associated with implementation of the Recommended Strategy, including pipeline installation, would likely be constructed within roadway right of ways (ROWs). This construction activity, and other anticipated construction activity associated with the

Recommended Strategy, could potentially block access to roadways and driveways for emergency vehicles. Following construction, operation of the project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

The construction-related impacts, although temporary, could potentially impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Implementation of **Mitigation Measure HAZ-4** would reduce this impact to a less than significant level.

Mitigation Measures

> **HAZ-4:** In conjunction with **Mitigation Measure TR-1,** prior to initiating construction of proposed facilities, PWD shall prepare and implement a Traffic Control Plan that contains comprehensive strategies for maintaining emergency access. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches and identification of alternate routing around construction zones. In addition, police, fire, and other emergency service providers shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. The PWD shall ensure that the Traffic Control Plan and other construction activities are consistent with the Los Angeles County Operational Area Emergency Response Plan.

Significance after Mitigation: Less than significant

Wildland Fires

Impact 3.6-6: Construction of the proposed project in wildland areas could expose people or structures to a significant risk of loss, injury or death involving wildland fires. (Less than Significant with Mitigation)

Proposed facilities would be located primarily within paved and unpaved roadway ROWs or immediately adjacent vacant lands. Lands adjacent to the proposed facilities are largely urbanized and undeveloped desert lands. The LACFD designates the majority of the project area as residing within “Other Non-Wildland” or “Moderate Fire Hazard” areas; however, small portions of the southern project area are designated as “Wildland Area with Substantial Fire Risk.” As indicated by Figure 3.6-1, the proposed treatment plant and aqueduct turnout, ASR wells in the southern portion of the East Wellfield, recharge facilities in Upper Littlerock Creeck, the grade control structure at Littlerock Reservoir, and potentially other facilities such as pipeline, pump stations, and storage tanks, could be located in such areas with high risks of wildland fires. Use of spark-producing construction machinery within these fire risk areas could create hazardous fire conditions and expose people to wildfire risks. Implementation of **Mitigation Measure HAZ-5** would reduce this impact to a less than significant level.

Mitigation Measures

HAZ-5: Implement Fire Hazard Reduction Measures. During construction of facilities located in areas designated as "Wildland Area with Substantial Fire Risk" by Los Angeles County Fire Department, PWD shall require that all staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that includes a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the SWRP facilities, contractors shall require all vehicles and crews working at the project site to have access to functional fire extinguishers at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks.

Significance after Mitigation: Less than significant

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3.7 Hydrology and Water Quality

This section describes local surface water and groundwater resources and discusses regional water quality issues. This section also evaluates the proposed project's potential impacts on water resources in the project area, and describes mitigation measures that would reduce impacts to a less-than-significant level.

3.7.1 Environmental Setting

Project Area

The following sections describe the environmental setting for hydrology and water quality within the project area, which is located almost entirely within the City of Palmdale, but also includes portions of land within unincorporated Los Angeles County. The project area includes the PWD service area, plus areas adjacent to the service area where proposed facilities are located.

Surface Water

The project area is located in the southwestern corner of the Lahontan Regional Water Quality Control Board (RWQCB) region, which is located within the Antelope Valley. The Antelope Valley is characterized as an arid desert region, receiving just 7.8 inches of rainfall annually (Los Angeles County, 2008).

The project area is located within the South Lahontan Hydrologic Region, which contains three major surface water systems: the Mono Lake, Owens River, and Mojave River watersheds. The project area is located within the Antelope Hydrologic Unit (HU) (626.00) and within the Lancaster (626.50), Buttes (626.70), and Rock Creek (626.80) Hydrologic Areas. The *Water Quality Control Plan for the Lahontan Region: North and South Basins* (Basin Plan) (Lahontan RWQCB 2005a) names six surface water features within the Antelope HU that are potentially relevant to the project area: Littlerock Creek, Big Rock Creek, Littlerock Reservoir, Lake Palmdale, minor surface waters, and minor wetlands.

The project area includes several key surface water features, including Littlerock Wash, which is divided into Littlerock Creek and Big Rock Creek, and lies along the eastern border of the PWD service area; Amargosa Creek, just outside of the western border; Anaverde Creek along the northwestern border; Lake Palmdale in the southwestern corner; and the California Aqueduct traversing the southern portion of the project area (refer to Figure 1-1).

Due to low rainfall in the region, PWD's potable water supply is primarily supplied by imported State Water Project (SWP) supplies, and secondarily supplied by surface runoff that is captured behind Littlerock Reservoir and gravity-fed into Lake Palmdale through the Palmdale Ditch. Water supply for the region is held in Lake Palmdale, which is a raw water reservoir with a surface area of 234 acres and a volume of approximately 4,200 acre-feet. Water from Lake Palmdale is treated at the Palmdale Water Reclamation Plant (PWRP) before being distributed to PWD customers. In addition to its use as a water supply source, under a lease agreement with a

recreation club, Lake Palmdale also provides recreational uses in the form of boating, fishing, and hunting, although it is designated as a "no body contact" water body.

The Basin Plan designates Littlerock Creek and Big Rock Creek as intermittent and perennial streams, respectively, with Antelope Valley Groundwater Basin (AVGB) as the receiving water. Lake Palmdale is designated as a reservoir with the Los Angeles Aqueduct as the receiving water (Lahontan RWQCB, 2005a).

Surface Water Quality

The project area is located within the Antelope Valley/Other Southern Watersheds Management Area (WMA) delineated by the Lahontan RWQCB. In the WMA, land development issues (urban runoff and septic systems) and agricultural production (pesticide management and irrigation return flows) contribute to nonpoint source pollution. The Basin Plan specifies water quality objectives for all surface waters within the Lahontan region. This plan also notes specific water quality objectives for two water bodies within the Antelope HU: Lake Palmdale and Littlerock Reservoir. Water quality objectives specified for Lake Palmdale and Littlerock Reservoir include total dissolved solids (TDS), chloride, sulfate, fluoride, boron, and nitrogen (as nitrate).

According to PWD's *Watershed Sanitary Survey and Source Water Assessment Update* (PWD, 2008b), Lake Palmdale is supplied by high-nutrient water from the California Aqueduct and has a history of intense algae blooms. The District has addressed this issue through installation of seven forced circulation devices (SolarBees) and chemical treatment with copper sulfate. The report also notes that multiple watershed activities – including illegal dumping, recreational activities, highway and railroad runoff, and sewer collection systems – may contribute to surface water quality degradation. Raw water quality data collected as part of PWRP operation (PWD 2008b) shows that water at the Lake Palmdale intake has low turbidity levels with spikes occurring in the winter months and on peak weekends. Overall, the raw water quality data shows low levels of total and fecal coliform counts and little to no evidence of Giardia or Cryptosporidium problems. Historically, the pH in Lake Palmdale has been slightly alkali with levels between 7.5 and 8.5.

In 2006 and 2008, the U.S. Environmental Protection agency (USEPA) approved a revised list of impaired water bodies prepared by the State pursuant to provisions of Clean Water Act Section 303(d). No waterways within the immediate vicinity of the project area are identified on the 303(d) list (Lahontan RWQCB 2006 and 2008).

Beneficial uses in the project area are listed below in **Table 3.7-1**.

Groundwater

Bulletin 118: California's Groundwater from the California Department of Water Resources (DWR) (DWR, 2004) demonstrates that the AVGB underlies the extensive alluvial valley in the western Mojave, including Palmdale and the project area. The AVGB is bounded by the Garlock fault zone at the base of the Tehachapi Mountains and by the San Andreas Fault zone at the base of the San Gabriel Mountains. The two main aquifers of the basin – the upper unconfined aquifer

TABLE 3.7-1
BENEFICIAL USES IN THE PROJECT AREA

	Inland Surface Waters (HU No. 626.0))						Ground Waters (Basin No. 6-44)
Beneficial Uses	**Littlerock Creek**	**Big Rock Creek**	**Lake Palmdale**	**Littlerock Reservoir**	**Minor Surface Waters**	**Minor Wetlands**	**Antelope Valley**
Municipal and Domestic Supply (MUN)	X	X	X	X	X	X	X
Agricultural Supply (AGR)	--	X	X	X	X	X	X
Groundwater Recharge (GWR)	X	X	X	X	X	X	--
Industrial Service Supply (IND)	--	X	--	X	--	--	X
Freshwater Replenishment (FRSH)	--	--	--	--	--	X	X
Contact Water Recreation (REC-1)	X	X		X	X	X	--
Non-contact Water Recreation (REC-2)	X	X	X	X	X	X	--
Commercial and Sportfishing (COMM)	X	X	X	X	X	--	--
Warm Freshwater Habitat (WARM)	--	--	--	--	X	X	--
Cold Freshwater Habitat (COLD)	X	X	X	X	X	--	--
Wildlife Habitat (WILD)	X	X	X	X	X	X	--
Spawning, Reproduction, and Development (SPWN)	--	X	--	--	--	--	--

SOURCE: Lahontan RWQCB 2005a.

and lower confined aquifer – are separated by a clay layer of ancient lakebed deposits up to 400 feet thick (DWR, 2004). The primary water-bearing materials are Pleistocene and Holocene age unconsolidated alluvial and lacustrine deposits that consist of compact gravels, sand, silt, and clay. These deposits are coarse and rich in gravel near mountains and hills, but become finer grained and better sorted toward the central parts of the valley (DWR, 2004).

The AVGB is composed of three large sediment-filled structural basins separated by extensively faulted, elevated bedrock. In addition to the Garlock and San Andreas Fault zones, numerous other faults within the basin impede groundwater flow. Three unnamed faults displace the local water table in the southeastern part of the basin (DWR, 2004), where PWD is located. Of the 12 sub-units comprising the AVGB, PWD pumps groundwater from two sub-units and the San Andreas Rift Zone (LACWWD No. 40, 2008; PWD, 1999):

- *Lancaster Sub-unit* is located at the center of the Antelope Valley. The portion within PWD's service area consists of alluvial deposits 1,100 feet thick. Depths to water vary, depending on location and season, but were in the range of 500-600 feet.
- *Pearland Sub-unit* is located in the southeastern portion of PWD's service area. Alluvial deposits have an average saturated thickness of 250 feet. Generally, groundwater levels are about 100-250 feet below the surface. Groundwater levels respond rapidly to runoff in Big Rock and Littlerock Creeks.

- *San Andreas Rift Zone* contains two groundwater-bearing areas near the intersection of Pearblossom Highway and Barrel Springs Road. The groundwater bearing sediments have been formed in the rift zone by alluvial deposition and/or shearing of harder rocks. The depth of water is generally about 20 feet below the ground surface.

Recharge to the AVGB is primarily accomplished by perennial runoff from the surrounding mountains and hills. Most recharge occurs at the foot of the mountains and hills by percolation through the head of alluvial fan systems. Big Rock and Littlerock Creeks, in the southern part of the basin, contribute about 80 percent of runoff into the basin (DWR, 2004). These natural flow patterns have been altered somewhat by the presence of a groundwater level depression between the City of Palmdale and the City of Lancaster, caused by high amounts of groundwater pumping (Wildermuth ,2007).

Groundwater Overdraft

Severe groundwater overdraft has occurred in portions of the region, including Antelope and Victor Valleys in the South Lahontan Basin (Lahontan RWQCB 2005a). Declining groundwater levels have been measured along the north-south Highway 14 corridor from Palmdale through Lancaster to Rosamond and near Edwards Air Force Base. Groundwater pumping has caused subsidence of the ground surface, as well as earth fissures to appear in Lancaster and on Edwards Air Force Base. By 1992, approximately 290 square miles of Antelope Valley had subsided more than one foot. This subsidence has permanently reduced aquifer-system storage capacity (DWR, 2004).

Groundwater Quality

Groundwater quality in the AVGB is excellent within the principal aquifer, but degrades toward the northern portion of the dry lake areas. TDS content in the basin ranges from 200-1,400 mg/L and high levels of boron and nitrates have been observed (LACWWD No. 40, 2008; DWR, 2004). Arsenic is an emerging contaminant of concern, but the average arsenic concentration for all groundwater sampling conducted by PWD in 2007 was less than the maximum containment limit (MCL) (PWD, 2010). Groundwater sampling for barium, fluoride, nitrate, gross alpha particle activity, uranium, chloride, manganese, sulfate, zinc, TDS, and specific conductance, as reported in the *2008 Consumer Confidence Report* (PWD, 2010), were also well under the MCLs for those constituents. Iron exceeded the Secondary MCL (SMCL) standard during recent groundwater sampling. No other constituents exceeded MCLs or SMCLs.

In the Basin Plan (Lahontan RWQCB, 2005a), groundwater quality objectives for all groundwater basins address total coliform, chemical constituents (primary and secondary MCLs for drinking water supplies), radioactivity, and taste and odor. No basin-specific groundwater quality objectives were established for AVGB.

Flooding

The Federal Emergency Management Agency (FEMA) identifies areas throughout the United States that are at risk for flooding. The FEMA Flood Insurance Rate Map identifies areas that have a 1-percent or greater (100-year flood area) or 0.2-percent (500-year flood area) of being inundated by a flood event in a given year (FEMA, 2010). FEMA has identified the northern portion of the

PWD service area as being located within the 500-year flood zone (see **Figure 3.7-1**). However, there are no lands within the project area that are designated as 100-year flood zones (FEMA, 1996).

3.7.2 Regulatory Framework

Federal

Clean Water Act

Originally titled the Federal Water Pollution Control Act of 1972, the Clean Water Act (CWA) is administered in California by the USEPA, the State Water Resources Control Board (SWRCB), and the RWQCBs. The CWA serves as the primary federal law protecting the quality of waters of the United States (U.S.), including lakes, rivers, and coastal wetlands.

Waters of the U.S. are defined as “All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.” Amargosa Creek, Littlerock Creek, Big Rock Creek, and other dry washes in the Antelope Valley are not considered waters of the U.S. because they flow to a closed internal dry lake basin that is wholly within the State of California. Because implementation of the Recommended Strategy would not affect waters of the U.S., CWA Sections 401 (requiring water quality certification) and 404 (addressing dredge and fill activities) are not triggered and are therefore not addressed further below.

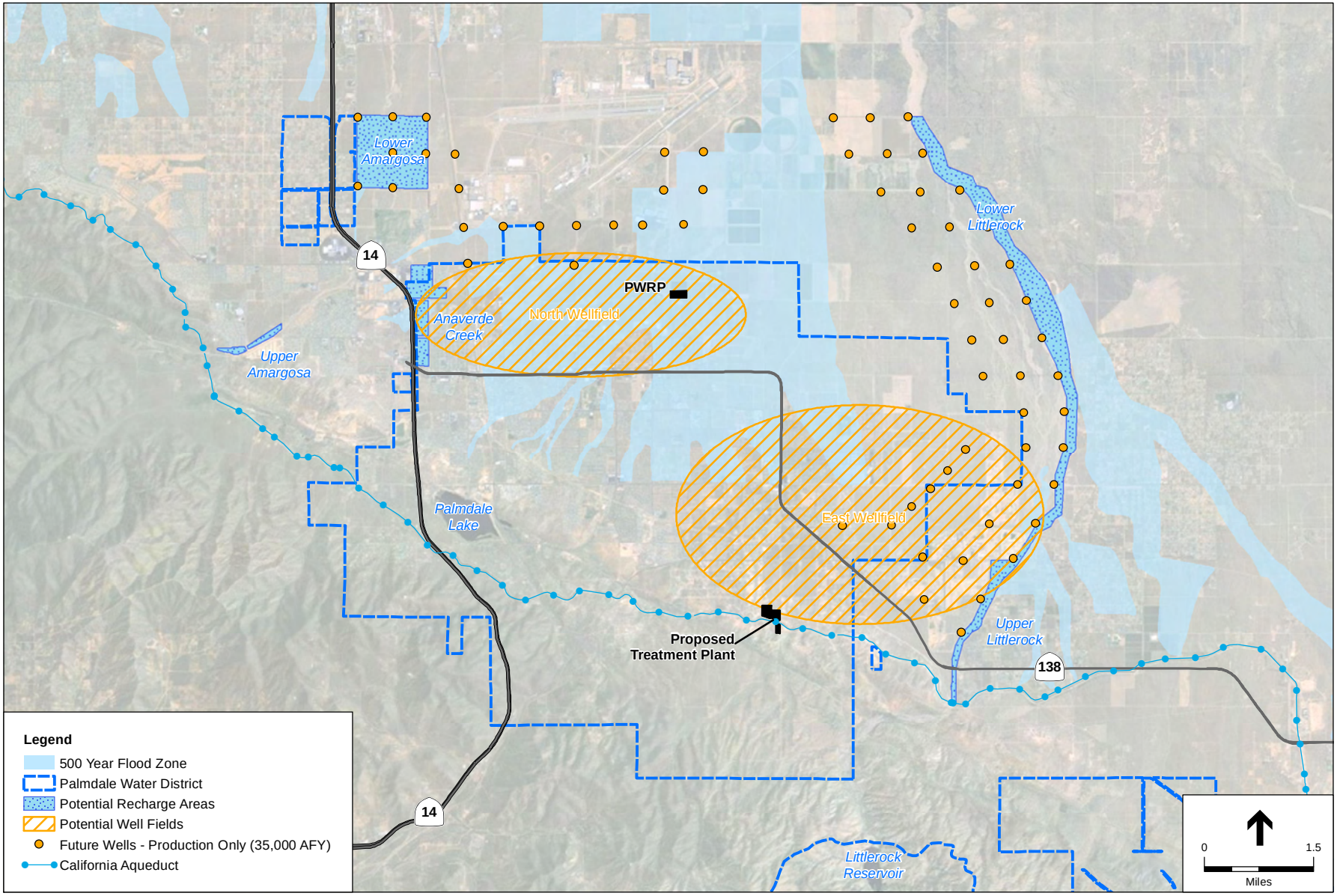
CWA Section 303(d)

CWA Section 303(d) requires states to develop lists of water bodies that will not attain water quality standards after implementation of technology-based effluent limitations by point-source dischargers. These water bodies, referred to as "water quality limited segments," do not meet water quality standards even after discharges of wastes from point sources have been treated by the minimum required levels of pollution control technology. Section 303(d) requires states to develop a total maximum daily load (TMDL) for each of the listed pollutants and water bodies. A TMDL is the amount of pollutant loading that the water body can receive and still meet water quality standards.

On June 28, 2007, the USEPA approved a revised list of water quality limited segments (herein referred to as the 303(d) list) prepared by the RWQCB. No waterways within the immediate vicinity of the project area are identified on the 303(d) list (Lahontan RWQCB, 2006).

CWA Section 402

CWA Section 402 regulates storm water discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program. In California, the USEPA authorizes the SWRCB to oversee the NPDES program through the RWQCBs.



SOURCE: FEMA; RMC, 2011.

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Figure 3.7-1

500 Year Flood Zone

The RWQCBs, under the guidance of the USEPA, issue NPDES permits to any construction project over one acre that are not covered by an individual NPDES permit. As mentioned above, there are no waters of the U.S. in the Antelope Valley; therefore, the proposed project would not be subject to regulation under the NPDES program. However, the Lahontan RWQCB encourages implementation of best management practices (BMPs) similar to those required for NPDES storm water permits to protect the waters of the State.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) was created to promote flood awareness and reduce flood losses of properties within Special Flood Hazard Areas. Drainage and related flooding hazards are managed in response to requirements established by the National Flood Insurance Act of 1986 and the Flood Disaster Protection Act of 1973, as amended. Requirements of the NFIP are included in the Building Code and through overall City and interagency programs for flood management. In implementing the NFIP, the Federal Emergency Management Agency (FEMA) requires that new construction in a flood hazard area meet minimum design standards to place occupied structures above flood hazard areas.

State

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Control Act, also known as the California Water Code, is California's statutory authority for the protection of water quality. Under this act, the State must adopt water quality policies, plans, and objectives that protect the State's waters. The act sets forth the obligations of the SWRCB and RWQCBs pertaining to the adoption of Basin Plans and establishment of water quality objectives. Unlike the federal CWA, which regulates only surface water, the Porter-Cologne Act regulates both surface water and groundwater.

Anti-Degradation Policy

The SWRCB's Anti-Degradation Policy, otherwise known as Resolution No. 68-16, sets specific restrictions for surface and groundwater that have higher than the required quality in order to avoid degradation of those water bodies (SWRCB, 2010). Requirements of this policy must be included within all Water Quality Control Plans throughout California (discussed below). Under this policy, actions that would lower the water quality in designated water bodies would only be allowed: if the action would provide a maximum benefit to the people of California, if it will not unreasonably affect beneficial uses, and if it will not lower water quality below applicable standards (SWRCB, 2010).

Water Quality Control Plan

The *Water Quality Control Plan for the Lahontan Region: North and South Basins* (Basin Plan) provides the framework for the RWQCB's regulatory program (Lahontan RWQCB, 2005a). Specifically, it:

1. Sets forth surface and groundwater quality standards for the Lahontan Region;
2. Identifies beneficial uses of water and discusses objectives that shall be maintained or attained to protect those uses;

3. Provides an overview of types of water quality issues, and discusses them in the context of potential threats to beneficial uses;
4. Denotes recommended or required control measures to address the aforementioned water quality issues;
5. Prohibits certain types of discharge in particular areas of the Region;
6. Summarizes relevant State Board and Regional Board planning and policy documents, and discusses other relevant water quality management plans adopted by federal, state, and regional agencies; and
7. Identifies past and present water quality monitoring programs, and discusses monitoring activities that could be implemented in future Basin Plan updates.

Overall, the Basin Plan functions as the regulatory authority for water quality standards established in local NPDES permits and other RWQCB decisions.

Lake and Streambed Alteration Program

The California Department of Fish and Game (CDFG) oversees the Lake and Streambed Alteration Program, which is governed under Section 1602 of the Fish and Game Code (CDFG 2010). This program applies in instances where an activity may substantially adversely affect fish and wildlife resources. In those instances, the CDFG will require preparation of a Lake or Streambed Alteration Agreement, which contains a reasonable assessment of necessary conditions to protect those resources during construction and operation of proposed activities.

Local

City of Palmdale General Plan

The *City of Palmdale General Plan Public Services Element* (City of Palmdale, 1993) includes the following policies addressing water quality, water supply, and flooding:

> **Policy ER4.1.1:** Incorporate the use of flood control measures which maximize groundwater recharge and the use of floodways as native habitat.
>
> **Policy ER4.1.2:** Restrict building coverage and total impervious area in the vicinity of natural recharge areas.
>
> **Policy ER4.1.3:** Protect from pollutants or other materials which might degrade groundwater supplies, and enhance natural recharge areas such as the Littlerock and Big Rock Washes, and Amargosa and Anaverde Creeks, and ensure that no mineral resources recovery activities extend below the groundwater table.
>
> **Policy ER4.1.4:** Require that all new commercial, industrial, and residential development connect to sanitary sewers as required by Policy PS2.2.4 of the Public Services Element.
>
> **Policy ER4.1.5:** Cooperate with Los Angeles County Health Department and the Regional Water Quality Control Board in monitoring industrial and commercial uses utilizing hazardous or potentially polluting materials and fluids, to prevent their discharge into the groundwater aquifer.
>
> **Policy ER4.1.5:** Cooperate with Los Angeles County Health Department and the Regional Water Quality Control Board in monitoring industrial and commercial uses utilizing hazardous or potentially polluting materials and fluids, to prevent their discharge into the groundwater aquifer.

Policy ER4.3.1: Assess the feasibility of utilizing reclaimed water for landscape irrigation on a city-wide basis. Factors to be considered include the potential quantities of reclaimed water as determined by the Sanitation Districts, and costs associated with developing infrastructure and delivery systems to facilitate utilization. Within those areas in which it is determined to be feasible to utilize reclaimed water, consider establishment of an ordinance requiring installation of secondary water delivery systems to service landscaped areas.

Policy ER4.3.2: Work with local water purveyors to assess the potential for capturing local run-off and utilization of imported water (water banking) for groundwater recharge within the Planning Area; through the land use planning process, ensure that important recharge areas are retained for that use.

Policy ER4.3.3: Continue to seek out long-range water management techniques as new technology is developed; promote implementation of systems which are feasible and appropriate to the Planning Area.

Policy ER4.3.4: Encourage residents and businesses to recycle water where feasible, and where water recycling does not result in health and safety concerns, within their homes and/or businesses.

Policy ER4.3.5: Participate in regional efforts to retain imported water allocations and seek out other sources as they become available.

Policy PS2.1.4: Support water suppliers and other jurisdictions within the Antelope Valley in studying the current status and projected needs for water supply and delivery.

Policy PS2.2.1: Coordinate with the Los Angeles County Sanitation District to evaluate the sewage disposal system as often as necessary (at least biannually), to ensure adequacy of the system to meet changes in demand and changes in types of waste which occur as a result of development.

Policy PS2.2.2: Require new development to pay necessary fees for expansion of the sewage disposal system to the appropriate agencies, to handle the increased load which it will generate.

Policy PS2.2.3: Support the Los Angeles County Sanitation District in preparation of a master plan for regional sewer facilities in Palmdale.

Policy PS2.2.4: Require that all commercial, industrial, institutional, multiple family and single family residential uses with lot sizes of less than one acre be connected to a public sewer system.

Policy PS3.1.1: Continue the drainage impact fee program and periodically adjust fees as needed.

Policy PS3.1.2: Evaluate the impact of all new development and expansion of existing facilities on storm runoff and ensure that the cost of upgrading existing drainage facilities to handle the additional runoff is paid for by the development that generates it.

Policy PS3.1.3: Make use of interim local drainage detention basins to slow stormwater runoff, until such time as permanent drainage facilities are constructed.

Policy PS3.1.4: Through the development review process, reserve land from development in appropriate locations for construction of drainage facilities.

Policy PS3.1.5: Require and provide for on-going maintenance of drainage and detention facilities, to ensure their continued effectiveness in controlling runoff.

Policy S4.2.3: Promote the use of emergency water supplies or water filtration systems at point-of-delivery for acceptable water quality in emergency situations.

3.7.3 Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the significance of impacts related to hydrology and water quality are based on Appendix G of the *CEQA Guidelines*. The proposed project would result in a significant impact to hydrology or water quality if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river in a manner that would result in substantial erosion or siltation;
- Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, substantially increase the rate or amount of surface runoff in a manner that would result in onsite or offsite flooding;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam;
- Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow.

A discussion of the impacts and mitigation measures for the proposed project are presented below.

Impacts Discussion

Flood Hazards: Housing and Structures

There are no lands within the proposed project area that are designated as 100-year flood zones (FEMA, 1996). The project would not involve construction of housing, and therefore would not place new housing within a flood hazard area. Further, the proposed project would not result in placement of structures that could redirect flood flows. Therefore, no impact would occur and no mitigation is necessary.

Seiche, Tsunami, Mudflow

As described within Section 3.5, Geology and Soils, the project area is not located in an area susceptible to seiche, tsunami, or mudflow. Therefore, no impact would occur and no mitigation is necessary.

Water Quality Standards and Waste Discharge Requirements

Impact 3.7-1: The proposed project could violate water quality standards or waste discharge requirements. (Less than Significant with Mitigation)

Construction Impacts

Construction of the proposed project would potentially involve drilling, trenching, excavation, grading, and other ground-disturbing activities. Construction activities would be required for the installation of new water facilities throughout the project area, including installation of new recharge facilities, pipelines, pump stations, storage tanks, wells, and potentially construction of a treatment plant and aqueduct turnouts. The anticipated construction activities associated with each new facility would potentially expose and disturb soils, which could result in increased erosion and siltation in and downstream of the project area. These activities could violate water quality standards if excess sediment loads were to enter receiving water bodies, including the AVGB or the Los Angeles Aqueduct. In addition, construction activities could potentially involve the use of hazardous materials such as fuel and other chemicals that could potentially enter receiving water bodies if spilled or stored improperly. If construction-related hazardous materials are not handled properly, construction activities could generate contaminated storm water runoff, which would potentially threaten the water quality of receiving water bodies within or downstream of the project area.

The construction-related impacts discussed above, although temporary, could potentially violate water quality standards or waste discharge requirements within or downstream of the project area. Although the proposed project would not be subject to the general construction storm water NPDES permit under CWA Section 402, implementation of **Mitigation Measure HYD-1** would require that PWD implement BMPs to reduce the potential for storm water runoff from the construction site to deliver pollutants into adjacent water bodies or groundwater. Applicable BMPs are identified in the California Stormwater Quality Association's *Construction Best Management Practices Handbook/Portal* (2009). Further, hazardous materials Mitigation Measures HAZ-1 and HAZ-2 described in Chapter 3.6, Hazards and Hazardous Materials, would reduce construction-related water quality impacts to a less than significant level.

Operational Impacts

Once constructed, operation of the proposed project would involve groundwater storage and recovery activities to store additional water supplies generated as a result of implementation of the Recommended Strategy. Additional water supplies may include imported water from the SWP and treated surface water sources from Lake Palmdale. Groundwater recharge with recycled water produced by Los Angeles County Sanitation District No. 20 (LACSD No. 20) will be

analyzed in detail in a separate environmental document, if PWD decides to pursue that course of action. Groundwater storage and recovery proposed by the Recommended Strategy could potentially contribute to violating water quality standards or waste discharge requirements. The analysis below provides information regarding potential water quality impacts as they relate to the four potential actions that would be undertaken as part of the groundwater storage and recovery program. As discussed above, water quality objectives for groundwater throughout the South Lahontan Hydrologic Region are established based on the MCLs and SMCLs specified for drinking water in Title 22 of the California Code of Regulations.

Table 3.7-2 summarizes water quality data from PWD's *Consumer Confidence Reports* for local groundwater and treated water sources from 2005 to 2009. The table also includes a summary of water quality data for raw water (imported water) from Check 41 of the SWP from 2005 to 2010.

Surface Recharge Facilities

The proposed project assumes that by 2035, approximately 70 percent of PWD's water supply would be obtained through groundwater pumping. To achieve this goal, PWD would need to increase groundwater recharge and recovery by 35,000 AFY by 2035. PWD anticipates achieving this goal by expanding their groundwater banking program either locally or externally (outside of PWD's service area).

If PWD were to participate in an external groundwater banking program, a new surface water treatment facility would be required to treat groundwater pumped outside of PWD and delivered via the California Aqueduct. It is anticipated that the new treatment facility would be located on land already owned by PWD and would have an initial treatment capacity of 10 mgd, with the potential for expansion to 30 mgd. The external groundwater banking program would not be anticipated to contribute to violating water quality standards or waste discharge requirements, because it would involve treatment of water prior to initiation of recharge activities. PWD would ensure that external groundwater is treated to a level such that it would not jeopardize or otherwise impact local groundwater quality.

If PWD were to participate in an internal groundwater banking program, it would need to construct new groundwater spreading basins to percolate imported water from the SWP. In this scenario, it is anticipated that SWP water would be drawn directly from the Palmdale Ditch or other SWP conveyance facilities, and spread at various groundwater recharge areas. The City of Palmdale is already in the initial implementation stages of establishing a groundwater recharge area in Upper Amargosa Creek, and is also exploring the following potential recharge areas: Lower Amargosa Creek, Anaverde Creek, Lower Littlerock, and Upper Littlerock.

TABLE 3.7-2
WATER QUALITY OF LOCAL, IMPORTED, AND TREATED WATER SOURCES

						Local Groundwater		Raw Imported Water		Treated Surface Water	
Constituent		**Abbrv.**	**Unit**	**Regulatory Limit**		**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Inorganic Constituents	Arsenic	As	ug/L	MCL	10	ND	ND	**1***	**6***	ND	ND
	Barium	Ba	ug/L	MCL	1,000	ND	ND	**51***	**53***	**37***	**37***
	Chromium VI	Cr	ug/L	MCL	N/A	4.17	4.46	0.001	**5***	N/A	N/A
	Fluoride	F	mg/L	MCL	2	0.1	0.6	0.1	0.1	0.1	0.14
	Lead	Pb	ug/L	MCL	15	ND	ND	ND	ND	**1.2**[a]	**1.2**[a]
	Nitrate	NO3	mg/L	MCL	45	3.1	6.7	0.4	**33***	ND	ND
Disinfection	Total Trihalomet-hanes	TTHM	ug/L	MCL	80	N/A	N/A	N/A	N/A	44	55
	Haloacetic Acids (5)	HAA5	ug/L	MCL	60	N/A	N/A	N/A	N/A	11	16
	Chlorine Residual	-	mg/L	MCL	4	N/A	N/A	N/A	N/A	0.01	2.88
Radioactivity	Gross Alpha Activity	-	pCi/l	MCL	15	0.97	0.97	N/A	N/A	ND	ND
	Uranium	-	pCi/l	MCL	20	2.1	7.92	N/A	N/A	N/A	N/A
	Radium 228	-	pCi/l	MCL	5	ND	ND	N/A	N/A	ND	ND
Secondary (Aesthetic) Standards	Aluminum	Al	ug/L	SMCL	200	12.5	12.5	**17**[a]	**17**[a]	14	**38**[a]
	Chloride	Cl	mg/L	SMCL	500	4.5	93	**12**[a]	**116**[a]	1	**119**[a]
	Color	-	-	SMCL	15	<5	<5	N/A	N/A	<5	<5
	Copper	Cu	mg/L	SMCL	1	N/A	N/A	0.001	0.003	0.345	0.345
	Iron	Fe	ug/L	SMCL	300	67	67	4	38	**290**[a]	**290**[a]
	Manganese	Mn	ug/L	SMCL	50	N/A	N/A	67	67	N/A	N/A
	Odor	-	-	SMCL	3	<1	<1	N/A	N/A	**1**[a]	**1**[a]
	Specific Conductance	-	umhos/ cm	SMCL	1,600	227	664	19	600	480	617
	Sulfate	SO4	mg/L	SMCL	500	16	105	3	81	39	74
	TDS	TDS	mg/L	SMCL	1,000	110[c]	570[c]	3	351	290	330
	Turbidity	-	NTU	SMCL	1	0.26	**8.8**[a]	0.005	**24**[a]	0.04	**1.4**[a]
	Zinc	Zn	ug/L	SMCL	5,000	20	190	5	38	0	**710**[a]

[a] Value exceeds local groundwater levels
[b] Value exceeds Regulatory Limit
[c] Updated values based on pers. Comm., Kerschner 2011.

SOURCES: PWD, 2010 and DWR, 2010.

As indicated in Table 3.7-2, a number of constituents within raw water from the SWP are found to exceed concentrations in native groundwater. These constituents include arsenic, barium, nitrate, aluminum, chloride, and turbidity. Turbidity has been detected within imported water

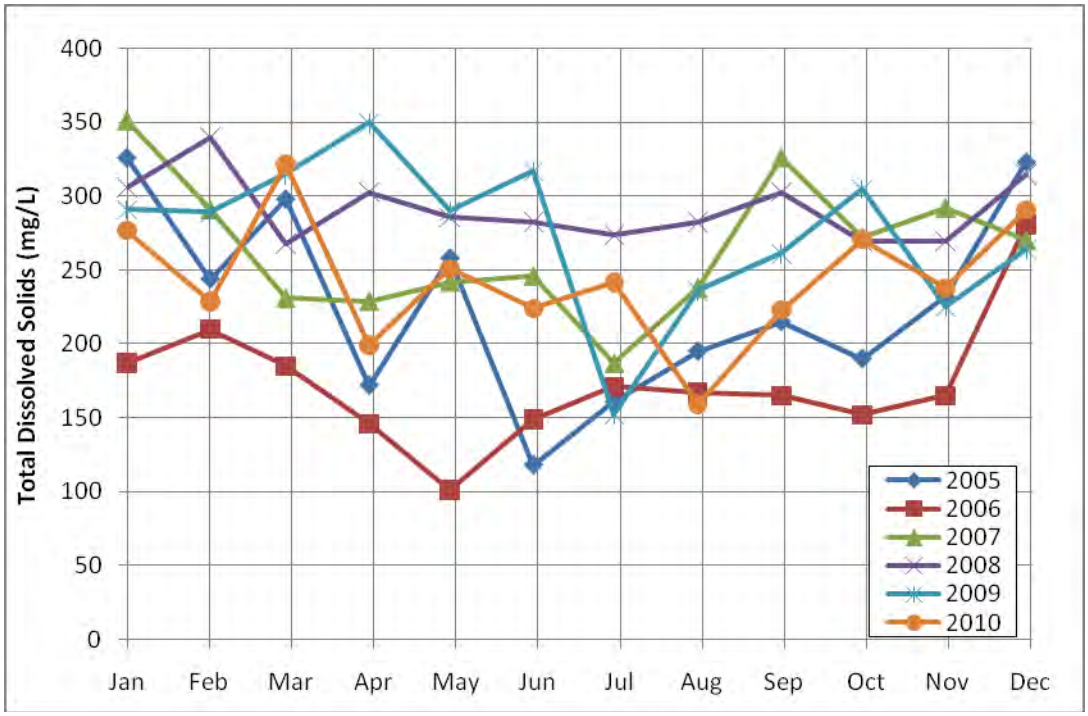
supplies near the project area at levels that exceed the SMCL standard. Despite this fact, turbidity within imported water would not pose a threat to local groundwater quality due to the use of imported water for recharge purposes. Particles and other components that cause turbid conditions would be naturally removed from imported water supplies during the percolation process, and would therefore not be anticipated to enter local groundwater supplies.

The other constituents of concern listed above are found to exceed levels currently found in the local groundwater table, but they do not exceed MCL or SMCL standards that form the basis of water quality objectives for the AVGB. Arsenic, barium, and nitrate are regulated as primary constituents of concern, which could potentially cause negative health effects if they were to exceed MCL standards. In contrast, aluminum and chloride are regulated as secondary (aesthetic) standards. The presence of these constituents of concern within imported water supplies could potentially degrade local groundwater quality if they are spread into local recharge areas. Because imported water contains higher levels of these constituents compared to local groundwater, groundwater recharge activities with imported water could degrade the quality of local groundwater over time. The significance of this impact would be reduced to a less than significant level with implementation of **Mitigation Measure HYD-2**.

The range of total dissolved solids (TDS) within imported water varies from 152 to 350 mg/L, compared to 130 to 390 mg/L for local groundwater. While the TDS range for imported water does not exceed the TDS range for local groundwater by a substantial margin, due to seasonal variation of TDS in imported water, it is likely that the TDS difference between these two sources varies more considerably at certain points throughout the year. **Figure 3.7-2** below demonstrates seasonal variation within the TDS of imported water from 2005 to 2010, which is approximately 5% to 20% higher than the yearly average between November and April. Due to the variation of TDS within imported water supplies, it is possible that groundwater recharge activities with imported water could degrade the quality of local groundwater over time. The significance of this impact would be reduced to a less than significant level with implementation of **Mitigation Measures HYD-3** and **HYD-4**.

ASR Injection Facilities

To fulfill groundwater pumping goals set as part of the Recommended Strategy, PWD would install aquifer storage and recovery (ASR) wells to increase the amount of additional imported water that would be stored in the local groundwater basin. ASR wells would be used for both injection of treated imported water into the groundwater aquifer and extraction of stored groundwater. PWD anticipates constructing between four and twelve ASR wells with a total maximum injection capacity of 6,000 gallons per minute by 2035, and has identified potential areas to install these wells within the North Well Field and the East Well Field areas (refer to Figure 2-1). PWD anticipates installing a dechlorination facility in conjunction with the proposed ASR wells, including sodium hypochlorite disinfection facilities with each ASR well. Chlorine and disinfection byproducts are relatively volatile and reactive, and trihalomethanes (THMs) have been observed to dissipate in some ASR settings. THMs and other disinfection byproduct issues will need to be evaluated during testing.



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SOURCE: DWR, 2010

Figure 3.7-2
Monthly TDS of Raw Imported Water from 2005 to 2010

The ASR injection facilities would involve actions to increase the storage of imported water, which would involve storing additional treated water from Lake Palmdale (combination of surface runoff and SWP supply) within the AVGB. Table 3.7-2 (above) demonstrates that treated surface water within PWD's service area has greater levels of various constituents of concern when compared to local groundwater. Such constituents of concern include barium, lead, aluminum, chloride, iron, odor, and zinc. As described above for surface recharge facilities, increased groundwater recharge with water containing constituents of concern at higher concentrations compared to local groundwater could potentially degrade local groundwater quality over time.

Expanding upon information within Table 3.7-2, **Table 3.7-3** shows the TDS levels of treated surface water from 2005 to 2009, demonstrating that these values range from 290 to 330 mg/L, with an average of 304 mg/L.

Potential impacts associated with injection of treated surface water into the AVGB were analyzed using mass balance calculations. These calculations utilized recharge and basin volumes and TDS concentrations to determine the expected concentration of TDS within the AVGB, as well as the

TABLE 3.7-3
TDS VARIATION IN TREATED SURFACE WATER
(2005–2009)

Year	Average TDS (mg/L)
2005	330
2006	290
2007	290
2008	310
2009	300

SOURCE: PWD 2010

expected concentration of TDS within treated surface water that will be pumped into the AVGB. The values for AVGB groundwater were determined based on PWD's *2005 Urban Water Master Plan* and DWR's *Bulletin 118: California's Groundwater* (PWD, 2005; DWR, 2004). Although PWD does have TDS data for project area wells (see discussion below), mass loading calculations were based on the groundwater storage capacity and documented TDS concentrations of the larger AVGB. This is because the PWD service area overlays portions of two sub-units and the San Andreas Rift Zone, and therefore cannot be precisely defined.

The calculation used to determine the mass loading of TDS expected due to ASR activities assumed that the average TDS of treated surface water remains at a constant rate of 304 mg/L over time. According to the Recommended Strategy, by 2035 the maximum ASR capacity is expected to be 800 AF per month, or 9,600 AF per year. **Table 3.7-4** below shows the results of mass loading calculations, and demonstrates that the maximum mass loading of TDS that would occur into the AVGB due to proposed ASR activities would be 7,919,545 pounds (lbs) per year. In comparison, the total concentration of TDS within the AVGB, given its approximate size of 20,000,000 AF (PWD 2005) and its current measured TDS of 374 mg/L (DWR, 2004) is over 20 billion lbs per year.

Given the high concentration of TDS currently found within the AVGB, and the calculated maximum loading that would occur as a result of projected ASR activities (0.039% increase in TDS), it is not anticipated that implementation of the proposed project would substantially increase TDS within the AVGB compared to existing conditions.

For purposes of analyzing specific TDS levels on a local basis (within the project area), this environmental analysis also evaluated TDS variation of existing PWD groundwater wells compared to treated surface water data. **Figure 3.7-3** demonstrates the location of PWD's existing groundwater wells, and shows TDS values measured at these locations in 2001 and 2010. Please note that for two wells (Well 11A and Well 16) data from 2007 were reported, because TDS values were not measured at these wells in 2010. Figure 3.7-3 only presents data for Well 29 for the year 2010 (pers. comm., Kerschner 2011). **Table 3.7-5** below provides a tabular summary of the TDS data represented wtihin Figure 3.7-3.

TABLE 3.7-4
SUMMARY OF MASS BALANCE CALCULATIONS

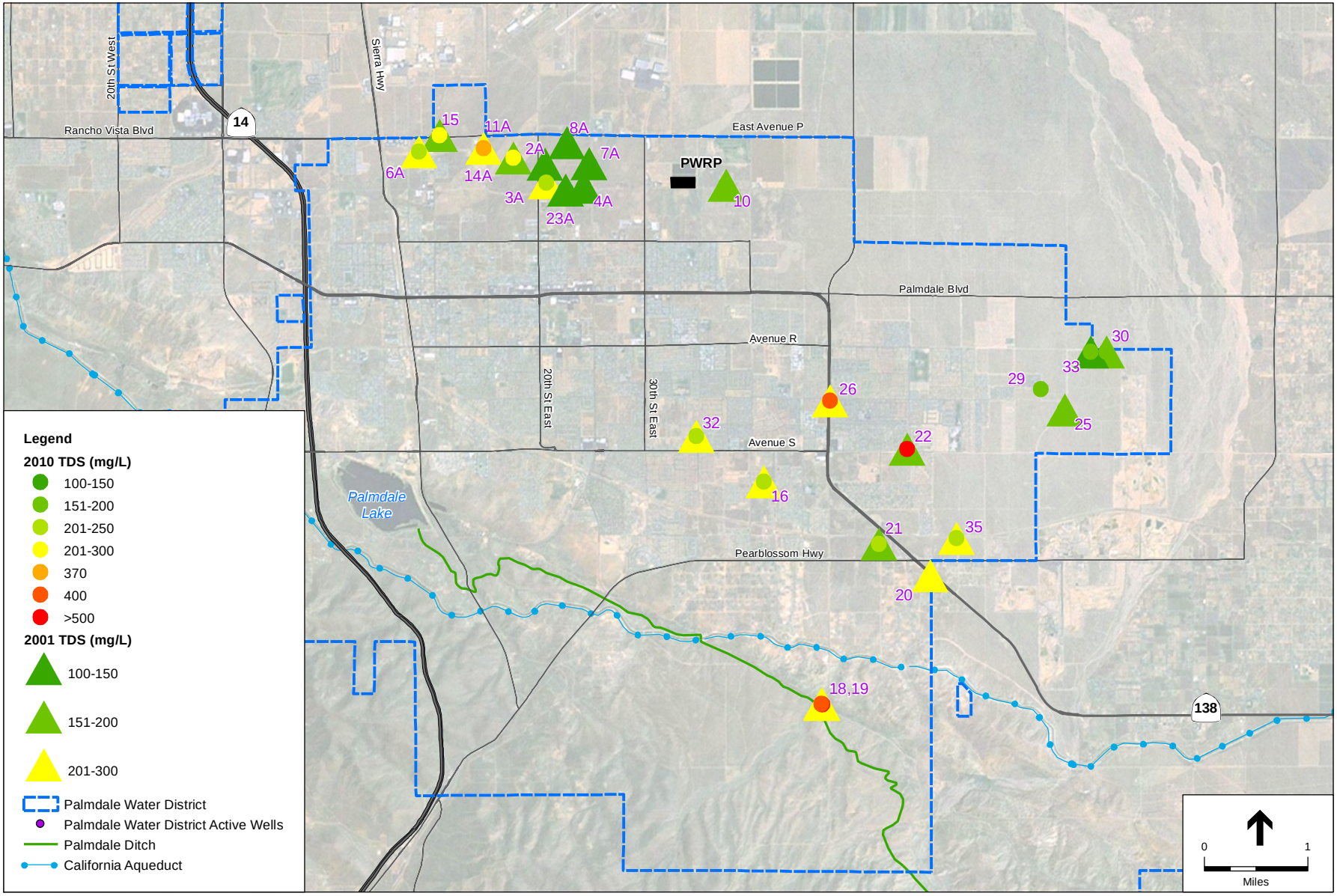
	ASR Activities (Treated Surface Water)	AVGB Groundwater
Groundwater Capacity (AF)[a]	9,600	20,000,000
TDS Concentration (mg/L)[a]	304	374
L/AF	1,233,482	1,233,482
lbs/mg	2.2×10^{-6}	2.2×10^{-6}
Total Mass Loading (lbs)	**7,919,545**	**20,340,827,504**
% Increase in TDS	**0.039%**	

[a] Sources: PWD 2005 and DWR 2004

Data from Figure 3.7-3 demonstrates that TDS levels vary spatially across PWD's service area, with wells located within the North Well Field/Area having generally lower TDS when compared to wells within the East Well Field/Area. In addition, Figure 3.7-3 demonstrates that TDS levels vary from 2001 to 2010, and that in general, TDS levels have increased over this time period. This last observation is particularly true of wells within the East Well Field/Area, where TDS has increased substantially, by between 200 and 300 mg/L in certain wells. In total, in 2010 the average TDS across all PWD groundwater wells was 245 mg/L, within a minimum of 110 mg/L and a maximum of 570 mg/L (pers. comm., Kerschner 2011).

Another notable conclusion is that TDS levels are noticeably lower within groundwater wells in the north end of the North Well Field/Area. In particular, wells 2A, 8A, 4A, and 7A have TDS levels ranging from 110 to 140 mg/L, which is substantially lower than the average value of 245 mg/L. As described within Chapter 3.6, Hazards and Hazardous Materials, there is a United States Air Force Plant (AFP 42) located north of PWD's service area, less than 500 feet from the aforementioned well locations. Due to contamination on this site, the U.S. Air Force began conducting remediation activities in 2004, including pumping out contaminated groundwater, treating it, and placing it back into the groundwater basin (refer to Section 3.6 for more information). It is possible that these remediation activities have lowered TDS concentrations within various PWD groundwater wells. This possibility is supported by the fact that from 2001 to 2010, TDS levels decreased within wells 2A, 4A, and 7A, which is notable considering that most other wells increased in TDS levels during that same time period.

While mass loading calculations demonstrate that ASR injection facilities are not anticipated to impact TDS levels within the larger AVGB, it is possible that ASR activities could have a localized impact on groundwater quality. The average TDS of treated surface water exceeds the average TDS of local groundwater wells (304 mg/L vs. 245 mg/L), and as shown in Table 3.7-5, the majority of wells within PWD's service area have measured TDS values below 304 mg/L. Although it is possible that AFP 42 remediation activities have led to reduced TDS levels within some local groundwater wells, it is still possible that ASR recharge activities would degrade local groundwater quality within the project area. Implementation of Mitigation Measures HYD-2,



SOURCE: RMC, 2011; ESA, 2011.

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Figure 3.7-3

PWD Existing Groundwater Wells and TDS Levels

TABLE 3.7-5
TDS VARIATION IN EXISTING PWD GROUNDWATER WELLS

Well Number	2001 TDS (mg/L)	2010 TDS (mg/L)
2A	150	110
3A	210	210
4A	140	120
6A	220	220
7A	140	130
8A	110	130
10	160	160
11A	290	370[a]
14A	190	270
15	190	260
16	230	240[a]
18	220	570
19	210	400
20	215	260
21	200	240
22	190	500
23A	150	150
25	170	190
26	290	400
29	N/A[b]	190
30	160	190
32	220	250
33	130	180
35	210	250

[a] 2010 data not available for this well, reported data is from 2007
b N/A = data not available

SOURCE: pers. comm, Kerschner 2011

HYD-3, and HYD-4 would be anticipated to reduce water quality impacts associated with ASR injection facilities to a less than significant level.

Groundwater Production Wells

In addition to the facilities described above, PWD anticipates that between 60 and 90 new groundwater production wells would be required to extract groundwater from the AVGB. These facilities would have separate sodium hypochlorite storage and additional facilities to disinfect groundwater prior to introducing it into the potable water distribution network. These activities would not involve the addition of water supplies into the groundwater basin. Potable water would be conveyed and distributed throughout PWD's service area, and would not be anticipated to come into contact with the local groundwater. Therefore, this component of the proposed project would not be anticipated to impact water quality beyond anticipated construction impacts that have been previously described. No additional mitigation measures are recommended.

Recycled Water Replenishment

As part of its local groundwater banking program, PWD may choose to recharge recycled water at the spreading basins described above. This strategy is considered an optional component of the Recommended Strategy. All recycled water that would be used for groundwater recharge would meet the specific requirements of the Water Recycling Regulations that are issued by the California Department of Public Health, and California Title 22 requirements. In addition, recycled water would be applied to the spreading basins along with raw water from the SWP, which would follow requirements set forth as part of Mitigation Measures HYD-2, HYD-3, and HYD-4 when applicable, and would therefore not substantially degrade water quality within the AVGB.

Anti-Degradation Analysis

Implementation of groundwater monitoring activities, a salt and nutrient management plan, and an operations protocol is anticipated to prevent violation of groundwater quality objectives in a manner consistent with the State of California's Anti-Degradation Policy (Resolution No. 68-16). Consistent with SWRCB Resolution No. 68-16, recharge activities anticipated as part of the proposed project would not be prohibited, because they:

1. Provide a maximum benefit to the people of the state. These activities will assist PWD in substantially increasing and diversifying its water portfolio in a manner that will increase water supply reliability and reduce future projected imported water demands. Due to environmental, legal, and other issues implicit in imported water from the Sacramento-San Joaquin Bay Delta, reducing PWD's future imported water supply and increasing local water supply reliability will provide a benefit to all residents of California.
2. The anticipated recharge activities are not anticipated to unreasonably affect beneficial uses of groundwater. In contrast, these proposed groundwater recharge activities will provide for increased future uses of groundwater.
3. The water that will be utilized for recharge activities will not result in water quality less than that prescribed in state policies. None of the water anticipated for recharge activities would violate MCL or SMCL standards.

Mitigation Measures

HYD-1: Construction Best Management Practices (BMPs). PWD shall require the construction contractor to develop and implement BMPs to reduce the potential for storm water runoff from construction sites to deliver pollutants into adjacent water bodies or groundwater. PWD shall include in contractor specifications that the contractor is responsible for developing and implementing the BMPs. The BMPs shall be maintained at the site for the entire duration of construction.

The objectives of the BMPs are to identify pollutant sources that may affect the quality of storm water discharge and to implement measures to reduce or eliminate construction-related water quality effects. Mitigation also shall include monitoring activities to ensure that BMPs are properly implemented and maintained. The BMPs for the proposed project shall represent the best available technology that is economically feasible and include, but not be limited to, the implementation of the following:

- Identification of all pollutant sources, including sources of sediment that may affect the quality of storm water discharges associated with construction activity from the construction site;
- Identification of non-storm water discharges;
- Estimation of the construction area and impervious surface area;
- Preparation of a site map and maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs);
- Implementation of all applicable erosion and sedimentation control measures, waste management practices, and spill prevention and control measures that are acceptable to the Lahontan RWQCB, such as those identified in the California Stormwater Quality Association's *Construction Best Management Practices Handbook/Portal* (2009);
- Maintenance and training practices; and
- A sampling and analysis strategy and sampling schedule for discharges from construction activities.

The construction contractor shall perform routine inspections of the construction areas to verify that the BMPs are properly implemented and maintained. The construction contractor shall notify PWD immediately if there is a noncompliance issue that requires correction.

HYD-2: Groundwater Quality Monitoring Program. PWD shall develop and implement a Groundwater Monitoring Program to monitor the impact of groundwater recharge strategies identified in the SWRP on groundwater quality and to ensure that groundwater storage and recovery activities do not substantially degrade groundwater quality. PWD shall be responsible for developing a Groundwater Monitoring Program that details monitoring and groundwater sampling frequency, parameters to be monitored and/or analyzed, detailed monitoring and operational constraints.

Prior to development of the plan, PWD shall conduct a basin-wide survey to identify existing wells that are suitable (based on construction criteria, location and accessibility) for use in a long-term monitoring program. No significant long-term impacts are expected from these monitoring activities as no pumping or injection facilities will be installed as part of these efforts and the well locations will be visited on, at most, a monthly basis.

In addition, PWD shall ensure that the project operates under the Waste Discharge Requirements (WDRs) established by the Lahontan RWQCB. These requirements include application and effluent management requirements that will ensure there is no runoff to surface water and that groundwater is protected. If necessary, PWD will construct and maintain an additional water treatment plant to protect water quality and associated beneficial uses within the project area.

HYD-3: Salt and Nutrient Management Program. PWD shall prepare and/or participate in the preparation of a Salt Nutrient Management Plan for the AVGB, which is designed to minimize potential impacts of salt buildup in the basin related to recharge of imported and treated water supplies. Such plans are required under the SWRCB's Recycled Water Policy in basins using significant amounts of reclaimed water, and are intended to aid in

addressing just these types of issues. As specific projects are developed, an analysis shall be performed to evaluate potential patterns in seasonal changes in treated surface water quality as it relates to local groundwater quality. Recharge operations shall be conducted to the degree possible so that higher TDS water is percolated in areas of higher salinity groundwater, and near larger extraction wells where subsequent removal of the water is more extensive.

HYD-4: Groundwater Injection Operations Protocol. PWD shall prepare a protocol for the injection and extraction of stored groundwater to define operational parameters and conditions under which injection and/or extraction operations are to be modified and/or cease. This protocol shall be implemented in order to minimize any potential impacts to the AVGB that may result in significant changes to either groundwater quality (i.e. increased concentrations of constituents of concern) and/or groundwater levels (i.e. decreased groundwater levels resulting in adverse impacts such as land subsidence).

Significance after Mitigation: Less than significant

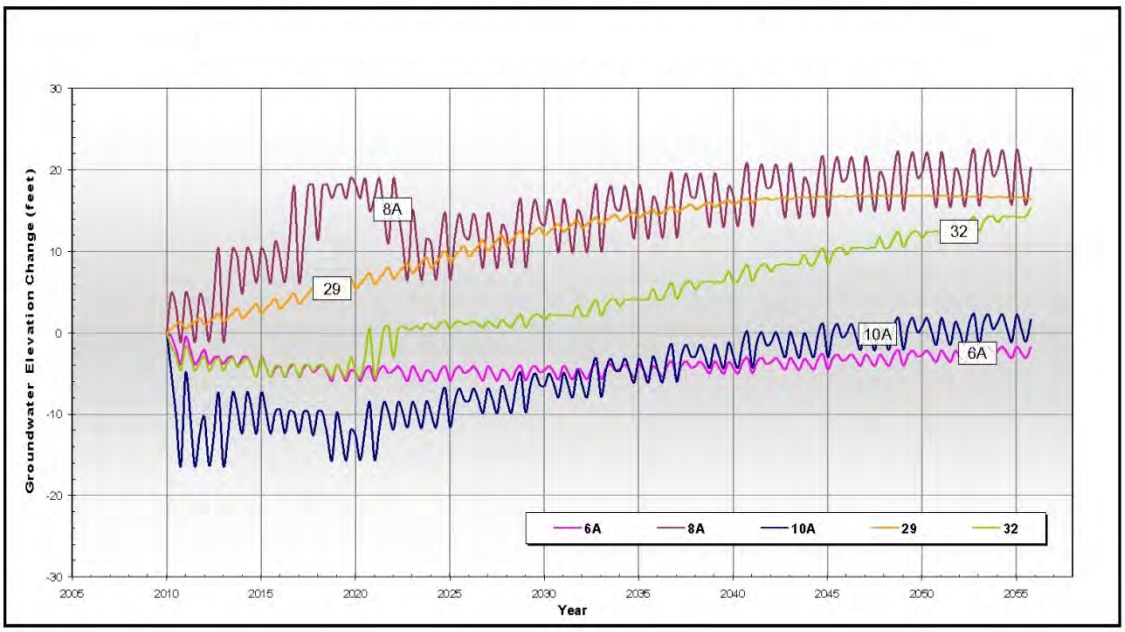
Groundwater Supplies

Impact 3.7-2: The proposed project could substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. (Less than Significant with Mitigation)

Operation of the proposed project would involve groundwater storage and recovery as required to store additional water supplies generated as a result of implementation of the Recommended Strategy. Additional water supplies may include imported water from the SWP, treated surface water sources from Lake Palmdale, and recycled water produced by LACSD No. 20. Recharge activities are anticipated to occur in and alongside existing stream channels, as well as several off-stream basins (refer to Figure 2-1). Water may be recharged until water levels rise to ground surface, at which time no additional recharge is possible. The project will involve extraction of as much water as is recharged, and therefore is not anticipated to change the overall water balance within the AVGB.

Under project conditions, as much as 105,000 AF of treated water will be recharged over a three month period once every three years, and would therefore result in an average annual artificial recharge of 35,000 AFY. Recharged water is anticipated to be extracted using existing wells, as well as through up to 66 newly constructed wells. Groundwater modeling (Wildermuth, 2009) indicates that this pattern of recharge and extraction does not appreciably change regional water levels relative to existing conditions, but rather indicates that seasonal fluctuations in groundwater levels are on the order of 10 feet for both existing (baseline) conditions and proposed project conditions (refer to **Figures 3.7-4** and **3.7-5**). Over the fifty-four year period that Wildermuth modeled (2010 through 2055), water levels under project conditions were projected to be generally close to (within 20 feet of) baseline (existing) conditions. The reason that groundwater levels do not change substantially under proposed project conditions is because the

proposed project does not alter the basic net water balance of the basin, and anticipates injecting as much water as is withdrawn from the AVGB.



Palmdale Water District Strategic Water Resources Plan / 210170

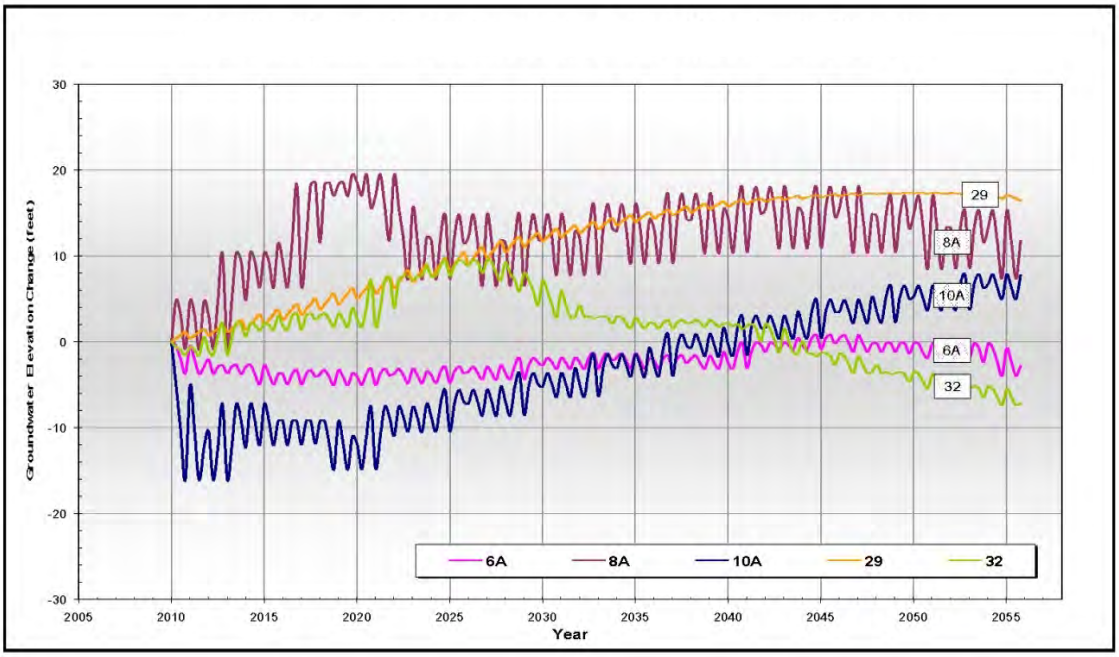
SOURCE: Wildermuth 2009

Figure 3.7-4
Modeled Groundwater Elevation – Baseline Scenario

Although the project is not anticipated to substantially alter groundwater levels over time, wells near the new recharge and extraction facilities would likely experience greater fluctuations during project operation. As such, it is possible that operation of groundwater extraction and recharge facilities could alter groundwater recharge in a way that would temporarily lower the groundwater table on a localized level. Implementation of **Mitigation Measure HYD-5** would reduce this impact to a less than significant level.

Mitigation Measures

HYD-5: Groundwater Supply Monitoring Program. As specific groundwater recharge and extraction projects are developed, PWD shall implement a Groundwater Supply Monitoring Program to ensure that implementation of the SWRP does not pose a significant threat to groundwater supplies within the AVGB. This program shall include modeling efforts that will identify and assess water level fluctuations near proposed project facilities. The program shall also provide details regarding existing wells located near project facilities, including structural details, well use, and operational characteristics (including pumping rates and associated drawdown). Results of detailed modeling in these areas shall be used to assess potential site-specific impacts.



Palmdale Water District Strategic Water Resources Plan / 210170

SOURCE: Wildermuth 2009

Figure 3.7-5
Modeled Groundwater Elevation – With Project Scenario

In the event that modeling efforts demonstrate that potential impacts to local groundwater supplies would occur as a result of implementation of the SWRP, PWD shall implement all necessary actions to mitigate for this impact. Such mitigation may include deepening wells or pump settings, and/or supplying local well users with water from project wells at times when drawdown from their wells is excessive.

Significance after Mitigation: Less than significant

Erosion and Siltation

Impact 3.7-3: The proposed project could substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river in a manner that would result in substantial erosion or siltation. (Less than Significant with Mitigation)

The proposed project involves activities necessary to implement the Recommended Strategy, including but not limited to: construction of new recharge facilities, pipelines, storage tanks, wells, a treatment plant, aqueduct turnouts, a grade control structure, and installation of additional supporting infrastructure. As shown in Figure 2-1, the proposed PWD pipeline extensions and options would be generally located within existing roadway ROWs. Construction of other relatively small facilities, including storage tanks, wells, pumping stations, and other supporting infrastructure generally would be constructed on existing developed lands or vacant lands and would have small development footprints. As such, these smaller facilities would not substantially alter the drainage patterns of their sites or substantially alter the course of a stream

or river in a manner that would result in substantial erosion or siltation within or outside of the project area. Additionally, compliance with the BMPs to be implemented in accordance with **Mitigation Measure HYD-1** would ensure that construction-related impacts to water quality associated with erosion or siltation are reduced to a less than significant level.

Larger facilities that would be built as part of this project, including a potential water treatment plant, aqueduct turnouts, recharge facilities, the grade control structure, and other supporting infrastructure, could potentially alter site drainage patterns or the course of a stream or river in a manner that would result in substantial erosion or siltation within or outside of the project area. Compliance with the BMPs to be implemented in accordance with Mitigation Measure HYD-1 would ensure that construction-related impacts to water quality associated with erosion or siltation are reduced to a less than significant level. With respect to impacts associated with facility operation, the design of larger project components, such as the treatment plant, typically would include surfaces and onsite drainage features that capture and direct onsite runoff and minimize increases in offsite runoff, thus avoiding substantial effects to offsite drainage patterns and the course of any stream or river. The proposed grade control structure inherently would reduce erosion and siltation by implementing an improvement within the bed of Littlerock Creek that would provide stability and resitance to erosive and scouring forcs that otherwise would result in downstream sedimentation. The proposed recharge facilities would be located within Amargosa Creek and/or Littlerock Creek and as such could alter the course of surface flow in these creeks. The recharge facilities could introduce structures within the creeks that could slow or capture surface flow and reduce erosion or downstream sedimentation. Overall, impacts associated with erosion or siltation due to operation of larger facilities would be considered less than significant

Mitigation Measures

Implementation of **Mitigation Measure HYD-1**.

Significance after Mitigation: Less than significant

Drainage and Flooding

Impact 3.7-4: The proposed project could alter the existing drainage pattern of facility sites, through the alteration of the course of a stream or river or by other means, increasing surface runoff and resulting in onsite or offsite flooding. (Less than Significant with Mitigation)

Construction of proposed pipelines generally would be located within existing roadway ROWs, which already consist of impervious surfaces. Construction of other proposed facilities, including storage tanks, wells, pumping stations, and other supporting infrastructure would generally be constructed on existing developed lands or vacant lands. Restoration of the ground surface following construction would include returning the surface to its pre-project condition with some potential additional impervious surfaces added for parking and site access surrounding such facilities. Given the relatively small footprint of such storage tanks, wells, pump stations, and

other small requisite facilities, only a very minor increase in impervious surfaces and runoff is expected. Resulting onsite or offsite flooding would be less than significant.

The proposed grade control structure would be below ground and would not alter the drainage patterns of the site at Littlerock Reservoir. Grade control structures are improvements made within the streambed that provide stability and resistance to erosive and scouring forces that otherwise result in downstream sedimentation. Surface water from Littlerock Creek would continue to flow unimpeded over the proposed grade control structure into Littlerock Reservoir. There would be no change to the potential for onsite or offsite flooding.

Larger facilities that would be built as part of the proposed project, including a new water treatment plant and aqueduct turnouts, could potentially have greater impacts to the alteration of existing site drainage patterns. However, during the design of such facilities, onsite drainage features would be developed to capture and direct runoff to new or existing storm water drainage facilities to move storm water offsite or retain it onsite in a manner that would avoid any onsite or offsite flooding. PWD would be required to submit a drainage plant to the appropriate jurisdiction, either the City of Palmdale or County of Los Angeles Department of Public Works, to verify that drainage would not contribute to runoff that would result in flooding. Implementation of **Mitigation Measure HYD-6** would ensure that any alteration to site drainage would not result in onsite or offsite flooding.

Operational activities would include actions to increase imported water supplies and increase surface water deliveries from Littlerock Reservoir. These activities would increase water flows within designated waterways such as the Palmdale Ditch and the East Branch of the California Aqueduct. It is anticipated that additional local conveyance facilities would be required to carry additional flows to the project area, which could potentially alter the course of the Palmdale Ditch. Operational activities would also include groundwater storage and recovery activities, including the construction of future groundwater wells, aquifer storage recovery (ASR) wells, and potentially the expansion of local recharge areas within Amargosa Creek, and/or Littlerock Creek. These activities could potentially alter the course of these creeks, and other minor surface features in a way that would alter existing drainage patterns. Adherence to requirements as outlined in **Mitigation Measure HYD-6** below would reduce impacts to flooding to a less than significant level.

Mitigation Measures

> **HYD-6: Implementation of a Drainage Plan.** Prior to construction of any facilities that would potentially alter drainage pattern, the applicant must submit a drainage plan to the City of Palmdale and/or the County of Los Angeles Department of Public Works. In addition, all new drainage should be designed in accordance with standards and regulations set forth in the Hydrology Manual of the Los Angeles County Department of Public Works. Drainage shall be designed such that alterations to the course of a stream or river will not result in flooding within or outside of the project area, and drainage will not contribute to runoff which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.

Significance after Mitigation: Less than significant

Storm Water Runoff

Impact 3.7-5: The proposed project could create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. (Less than Significant with Mitigation)

As discussed above, the proposed project would result in a very minor net increase in runoff due alterations to site drainage. Implementation of **Mitigation Measure HYD-6** would ensure that proposed facilities would not contribute runoff that would exceed the capacity of existing or planned storm water drainage systems. In addition, runoff from new facilities, particularly those utilizing chemicals such as the proposed treatment plant and wellhead treatment facilities, could result in sources of polluted runoff. Implementation of Mitigation Measure HYD-6 would require the drainage plan to incorporate systems to prevent additional sources of polluted runoff. Impacts would be less than significant with mitigation.

Mitigation Measures

Implementation of **Mitigation Measure HYD-6**.

Significance after Mitigation: Less than significant

Flood Hazards

Impact 3.7-6: The proposed project could expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam. (Less than Significant)

There are no lands within the proposed project area that are designated as 100-year flood zones (FEMA 1996). The Recommended Strategy is anticipated to include construction of storage tanks within the project area. These storage tanks would be designed according to seismic design standards set forth by the American Water Works Association and the California Building Code, which include required safety factors to prevent catastrophic failure. Sufficient freeboard would be maintained in the storage tanks to allow for water sloshing during an earthquake, thereby reducing potential pressure on the tank walls and cover. In this context, the potential risk of loss, injury, or death involving flooding from release of water to the surrounding environment due to tank failure would be less than significant. No mitigation is required.

The proposed project would remove accumulated sediment from Littlerock Reservoir to reclaim storage capacity behind Littlerock Dam. It is anticipated that the operation of the dam and the maximum water surface elevation would not change as a result of sediment removal activities. It is also anticipated that the project would not introduce a new risk relative to existing conditions that would result in the failure of a levee or dam. As such, impacts are anticipated to be less than significant. Any significant or potentially significant impacts resulting from sediment removal activities will be addressed as part of the project-level environmental analysis being conducted for these proposed activities.

Mitigation Measures

None required.

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Personal Communications

Kerschner, Joe. Water Quality Supervisor, Palmdale Water District. February 10, 2011. Email to Rosalyn Prickett, RMC Water and Environment, with Excel file containing data from PWD's active surface and groundwater sources.

3.8 Land Use, Agricultural Resources, and Forestry

This section describes the environmental setting for land use, agriculture, and forestry resources, summarizes the applicable regulatory framework, and identifies impacts to land use, agriculture, and forestry resources that could occur as a result of implementation of the proposed project.

3.8.1 Environmental Setting

Palmdale Water District Service Area

The District's existing water service area is located almost entirely within the City limits of the City of Palmdale, and extends on its southern and eastern boundaries into the unincorporated areas of Los Angeles County that are within the City's sphere of influence (**Figure 3.8-1**). The District is bordered to the south and west by the San Gabriel Mountain Range, the north by the City of Lancaster, and the east by the unincorporated community of Little Rock. The County of San Bernardino is located immediately to the east. The District encompasses 47 square miles of mainly developed areas of the City and surrounding sphere of influence, with agricultural uses around its perimeter

Project Area

The project area includes the PWD service area and outlying areas where facilities are proposed (see Figure 2-1 in the Project Description). Thus, the project area includes portions of the City of Palmdale, unincorporated communities of Littlerock, Sun Village, and Lakeview, and Angeles National Forest.

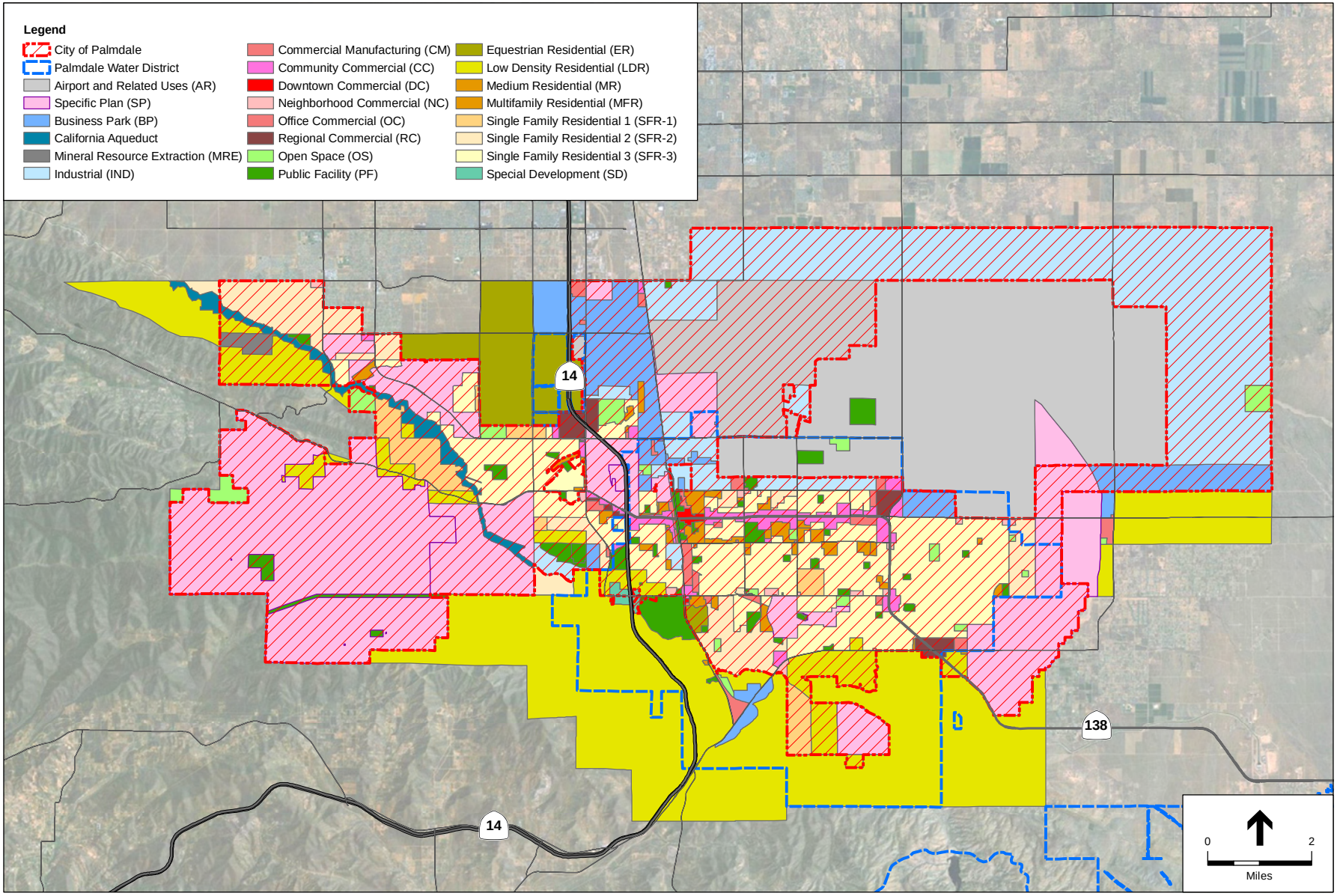
The City of Palmdale and the County have independent planning documents that guide the development of urban, agricultural, commercial, and other land uses within their jurisdictional boundaries.

City of Palmdale

The City of Palmdale Planning Area encompasses approximately 174 square miles within a transitional area between the foothills of the San Gabriel and Sierra Pelona Mountains and the Mojave Desert to the north and east. The Planning Area referred to in the General Plan generally extends east to 120th Street East, south to the alignment of Avenue W (Angeles National Forest) to the east of SR-14 and follows an irregular boundary along the Sierra Pelona ridgeline west of SR-14, north to Avenue M and L, west to 80th Street West south of the Ritter Ridge and 110th Street West north of Portal Ridge (City of Palmdale, 1993).

Air Force Plant 42

The United States Air Force (USAF) owns Air Force Plant 42 in the City of Palmdale. Los Angeles World Airports (LAWA) and the USAF signed an agreement in 1989, allowing LAWA to lease the facility for commercial use. Plant 42 was renamed LA/Palmdale Regional



SOURCE: City of Palmdale GIS, 2011.

Palmdale Water District SWRP . 210170

Figure 3.8-1

City of Palmdale Land Use Map

Airport (PMD) by the Los Angeles Board of Airport Commissioners in 2006, and PMD reopened for commercial airline service on June 7, 2007.

Existing Land Use Designations

Several new water facilities would be required for each implementation action under the Recommended Strategy to achieve the water supply goals and objectives of the SWRP (see Table 3-1). The specific locations of some facilities have not yet been established, with the exception of the proposed treatment plant. The general locations for facilities such as ASR and production wells and recharge areas are shown in Figure 2-1 in the Project Description. The potential land use designations associated with each category of proposed facilities are briefly discussed below.

Palmdale Regional Airport is located within the City of Palmdale on land leased by the Los Angeles County (i.e., LAWA) from the USAF. The recharge basin and production wells proposed near Lower Armagosa are located in close proximity to this airport and within airport influence areas (AIA) as designated by Airport Land Use Compatibility Plans (ALUCPs).

Pipelines

The locations of the proposed pipelines are still not determined at this time. However, pipelines would most likely be located within roadway ROWs throughout the project area.

Pump Stations

The locations of the pump stations are still to be determined. However, the location of pump stations could be located anywhere within the project area along the pipeline routes.

Recharge Facilities

Upper and Lower Littlerock Creek recharge facility would be located in Littlerock Wash within a large expanse of open space located in Los Angeles County. The land use designations for the recharge facilities in this area include Public and Semi-Public Facilities (P), Non-Urban (R), and Significant Ecological Area (SEA) (County of Los Angeles, 1980).

Lower Amargosa Creek and Anaverde Creek are two other recharge sites characterized by open space and desert vegetation. The City of Palmdale land use designations for the Anaverde Creek recharge area is Specific Plan while the land use designation for Lower Amargosa recharge area is Business Park and Specific Plan (City of Palmdale, 1993).

ASR and Production Wells

The North well field area for the ASR wells is located in the City of Palmdale and characterized by intermittent urbanized developments with open spaces providing a separation from developments such as Plant 42 and Palmdale Regional Airport located to the north. The land use designations in the north well field area include Industrial, Business Park, Public Facility, Office Commercial, and Airport and Related Uses (City of Palmdale, 1993).

The East well field area for the ASR wells is located in the City of Palmdale and characterized by residential development with some vacant land and open space around the outer edges of the well field area. Land use designations in the east well field include Single Family Residential, Multifamily Residential, Low Density Residential, Community Commercial, Specific Plan, and Public Facility (City of Palmdale, 1993).

In general, production wells would be located in both the City and County in more open space areas, including the flood plain and alluvial fans of Littlerock Creek and Lower Amargosa Creek and the vacant lands in and around Air Force Plant 42 and Palmdale Regional Airport. Land use designations in areas proposed for production wells include Public and Semi-Public Facilities, Non-Urban, and Significant Ecological Area near Littlerock Creek, and Business Park, Specific Plan, Industrial, and Airport and Related Uses near Lower Amargosa and Plant 42.

Treatment Plant

The treatment plant would be located adjacent to the California Aqueduct and residential properties in Los Angeles County. The land use designation for the treatment plant is Non-Urban (County of Los Angeles, 1980).

Grade Control Structure

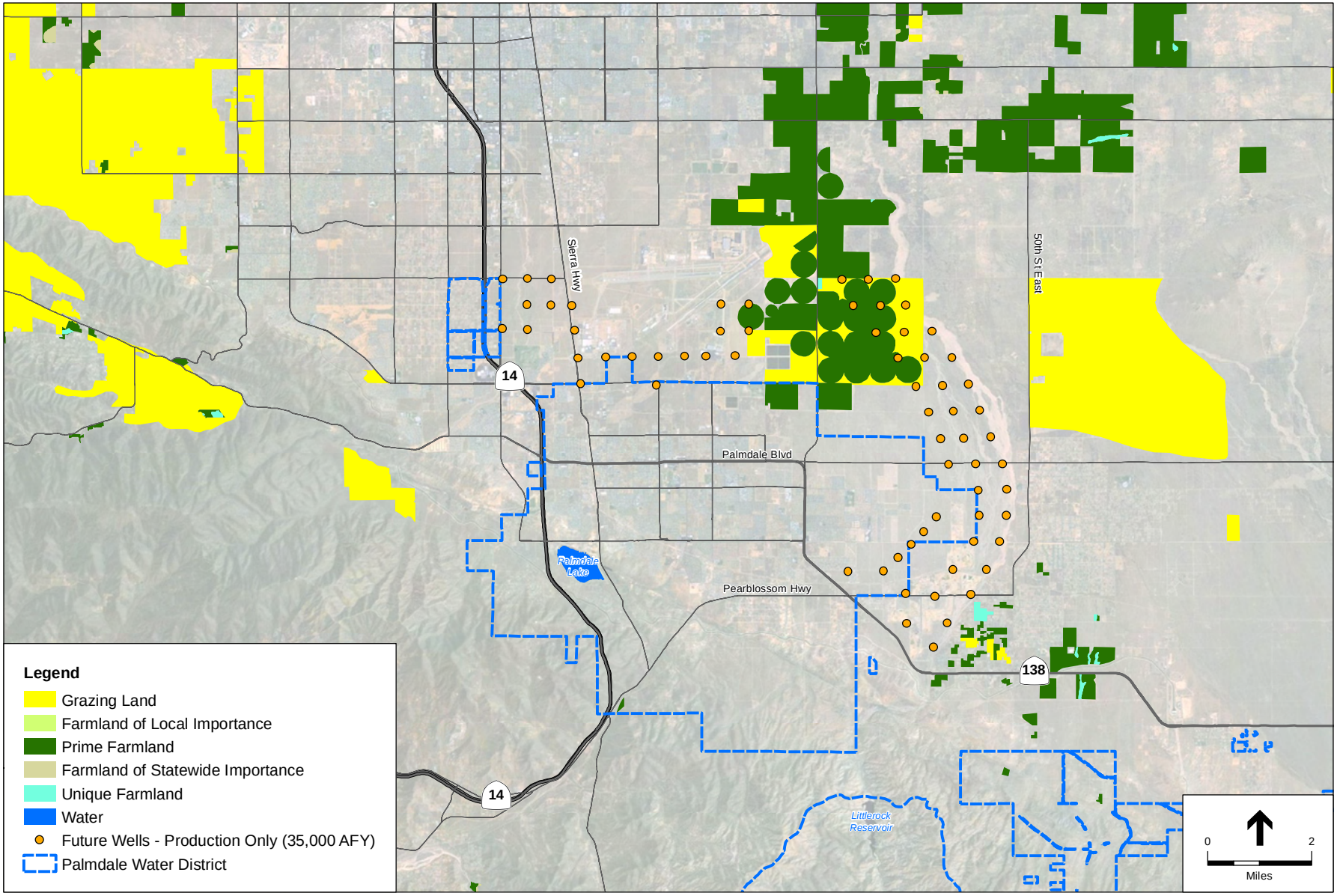
The proposed grade control structure at Littlerock Reservoir would be located in unincorporated Los Angeles County in Angeles National Forest. The land use designation is open space (County of Los Angeles, 1980).

Agriculture

There are several parcels of land designated by the California Department of Conservation as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance within the project area (California Department of Conservation, 2007). Some of the project components could be located on or adjacent to these agricultural lands. Although the layout of wells shown in Figure 2-1 is preliminary, as currently shown up to four production wells could be located on Prime Farmland (?) on the northern end of Littlerock Creek (See **Figure 3.8-2**). Given the small portion of the project area that includes designated farmland, the majority of the proposed facilities would not be located on soil protected by the Farmland Monitoring and Mapping Program (FMMP).

Forestry

The Angeles National Forest is located within the unincorporated areas of Los Angeles County, south of the City of Palmdale. The PWD service area encompasses a portion of the Angeles National Forest, including the area surrounding Littlerock Reservoir.



SOURCE: Department of Conversation, Farmland Mapping and Monitoring Program, 1984-2006.

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Figure 3.8-2

Agricultural Resources

3.8.2 Regulatory Framework

Federal

Federal Aviation Administration

The Federal Aviation Administration (FAA) is the branch of the U.S. Department of Transportation with regulatory responsibility for civil aviation. The FAA is responsible for establishing policies and regulations to ensure the safety of the traveling public. The FAA oversees airports that are open to the public or airports that receive federal funding (Rodriguez, 2006). FAA Advisory Circular (AC) 150/5200-33B addresses hazardous wildlife attractants on or near airports (FAA, 2007). This Advisory Circular is intended to provide guidance on siting certain land uses that have the potential to attract potentially hazardous wildlife to a public-use airport or its vicinity. The FAA Advisory Circular recommends against "land use practices that attract or sustain populations of hazardous wildlife within the vicinity of airports or cause movement of hazardous wildlife onto, into, or across the approach or departure airspace, aircraft movement area, loading ramps, or aircraft parking area of airports." The Advisory Circular recommends a separation distance of 5,000 feet between airports using piston-powered aircraft and any project or change in land use that could attract hazardous wildlife, such as open-air water storage facilities. For airports using turbine-powered aircraft, the FAA recommends a separation distance of 10,000 feet between an airport and a potential hazardous wildlife attractant. For projects that are located outside the 5,000/10,000-foot criteria but within five statute miles of the airport's air operations area[1], the FAA may review development plans, proposed land use changes, operational changes, or wetland mitigation plans to determine whether such changes in land use would create potential wildlife hazards to aircraft operations. The majority of the facilities associated with the Recommended Strategy would fall within this statutory five-mile radius of PMD.

A sponsor proposing any type of construction of, or alteration of, a structure that may affect the National Airspace System (NAS) is required under the provisions of Title 14 Code of Federal Regulations (14 CFR Part 77) to notify the FAA by completing the Notice of Proposed Construction or Alteration form (FAA Form 7460-1)

Angeles National Forest

The City of Palmdale is bordered by the Angeles National Forest along its southern boundary. The U.S. Forest Service (USFS) publishes a Land Management Plan, also referred to as a Forest Plan, which guides forest managers in site-specific planning and decision making for each forest. The Forest Plan for the Southern California National Forests (Forest Plan), which includes the Angeles National Forest, was most recently updated in 2005. While the Forest Plan acknowledges widespread urbanization adjacent to all four National Forests in southern California as a primary management challenge, it describes goals and objectives for lands within the jurisdiction of the

[1] Any area of an airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved areas or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiways, or apron.

USFS only, and does not prescribe actions applicable to surrounding municipalities, such as the City of Palmdale (USFS, 2010).

State

Caltrans Division of Aeronautics

The State Aeronautics Act, Public Utilities Code (PUC) section 21001 *et seq*., provides the foundation for the California Department of Transportation's (Caltrans) aviation policies. The Division of Aeronautics issues permits for and annually inspects public-use airports throughout the State, and provides grants and loans for safety, maintenance and capital improvement projects at airports (Caltrans, 2006b). To foster compatible land use around airports, the Division administers noise regulation and land use planning laws and encourages environmental mitigation measures to lessen noise, air pollution, and other impacts caused by aviation. The Division's System Planning group provides for the integration of aviation into transportation system planning on a regional, statewide, and national basis.

The State Aeronautics Act[2] requires local jurisdictions that operate public airports to establish Airport Land Use Commissions (ALUCs) or an equivalent designated body to protect the public health, safety, and welfare. The ALUC or equivalent is responsible for promoting the orderly expansion of airports and adoption of land use measures by local public agencies to minimize exposure to excessive noise and safety hazards near airports. Each ALUC or equivalent designated body is responsible for preparing and maintaining an Airport Land Use Compatibility Plan (ALUCP) that identifies compatible land uses near each public use airport within its jurisdiction. The ALUCP must provide policies for reviewing certain types of development that occur near airports. State law requires consistency between airport land use compatibility plans and any associated general plans. Caltrans is responsible for the review and approval of all ALUCPs within the State of California.

California Farmland Mapping and Monitoring Program

The California Department of Conservation, under the Division of Land Resource Protection, has established the Farmland Mapping and Monitoring Program (FMMP). The FMMP monitors the conversion of the state's farmland to and from agricultural use. The map series identifies eight classifications and uses a minimum mapping unit size of 10 acres. The FMMP also produces a biannual report on the amount of land converted from agricultural to non-agricultural use. The FMMP maintains an inventory of state agricultural land and updates its "Important Farmland Series Maps" every two years (California Department of Conservation, 2007). Important farmlands are divided into the following five categories based on their suitability for agriculture.

> **Prime Farmland.** Prime Farmland is land with the best combination of physical and chemical characteristics able to sustain long-term production of agricultural crops. This land has produced irrigated crops at some time within the four years prior to the mapping date.

[2] The State ALUC law is contained in Public Utilities Code Article 3.5, State Aeronautics Act, Section 21661.5, Section 21670 *et seq*., and Government Code Section 65302.3 *et seq*.

Farmland of Statewide Importance. Farmland of Statewide Importance is land that meets the criteria for Prime Farmland but with minor shortcomings such as greater slopes or lesser soil moisture capacity.

Unique Farmland. Unique Farmland has even lesser quality soils and produces the state's leading agricultural crops. This land is usually irrigated but also includes non-irrigated orchards and vineyards.

Farmland of Local Importance. Farmland of Local Importance is land that is important to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

Grazing Land. Grazing Land is land on which the existing vegetation is suited to the grazing of livestock

Williamson Act

The California Land Conservation Act of 1965, also known as the Williamson Act, is designed to preserve agricultural and open space lands by discouraging their premature and unnecessary conversion to urban uses. Williamson Act contracts, also known as agricultural preserves, create an arrangement whereby private landowners contract with counties and cities to voluntarily restrict their land to agricultural and compatible open-space uses. The vehicle for these agreements is a rolling term 10-year contract.[3] In return, restricted parcels are assessed for tax purposes at a rate consistent with their actual use, rather then potential market value. At the end of the 10-year contract, either the local government, or landowner, can initiate the nonrenewal process. A "notice of nonrenewal" starts a 9-year nonrenewal period. During the nonrenewal process, the annual tax assessment gradually increases. At the end of the 9-year nonrenewal period, the contract is terminated. Contracts renew automatically every year unless the nonrenewal process is initiated. Williamson Act contracts can be divided into the following categories: Prime Agricultural Land, Non-Prime Agricultural Land, Open Space Easement, Built up Land, and Agricultural Land in Non-Renewal. There are no Williamson Act contracts within the project area.

Land Evaluation and Site Assessment Model (LESA)

The Land Evaluation and Site Assessment (LESA) is a point-based approach for rating the relative importance of agricultural land resources based upon specific measurable features.

The California LESA Model was developed to provide lead agencies with an optional methodology to ensure that potentially significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process (Public Resources Code Section 21095), including in California Environmental Quality Act (CEQA) reviews.

[3] Information about the basic provisions of Williamson Act contracts can be found on the California Department of Conservation, Division of Land Resource Protection web site: http://www.consrv.ca.gov/DLRP/lca/basic_contract_provisions/index.htm, accessed June 22, 2007.

The California Agricultural LESA Model evaluates measures of soil resource quality, a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, the factors are rated, weighted, and combined, resulting in a single numeric score. The project score becomes the basis for making a determination of a project's potential significance.

California Public Resources Code section 12220(g)

The California Public Resources Code defines "forest land" under section 12220(g) as land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. Projects are subject to this code if there are any potentially significant changes to existing areas zoned as forest land. None of the project sites are zoned as forest land.

California Public Resources Code section 4526

The California Public Resources Code defines "timberland" as land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined by the board on a district basis after consultation with the district committees and others. Project may have significant impacts to timberland if the project conflicts with existing zoning. None of the project sites are zoned as timberland.

California Government Code section 51104(g)

The California Government Code defines "timberland production zone" under section 51104(g) as an area which has been zoned pursuant to Sections 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, as defined in subdivision (h) of the Government Code 51104. Projects may significantly impact timberland resources if the project conflicts with existing areas zoned for timberland production. None of the project sites are zoned for timberland production.

Local

The local land use regulations that apply to this proposed project include the following planning documents which govern land use in the area.

City of Palmdale General Plan (1993)

The following is a selected list of General Plan goals, objectives, and polices that are applicable to the proposed project.

Goal L1: Create a vision for long-term growth and development in the City of Palmdale which provides for orderly, functional patterns of land uses within urban areas, a unified and coherent urban form, and a high quality of life for its residents.

Goal L2: Adopt land use and development policies which encourage growth and diversification of the City's economic base.

Goal ER4: Protect the quality and quantity of local water resources.

Objective ER4.1: Ensure that ground water supplies are recharged and remain free of contamination.

Objective ER4.2: Minimize the impacts of urban development on groundwater supplies.

> **Policy ER4.2.4**: Coordinate with local water agencies to monitor ground water levels, State water allocations and development approvals, to assure that development does not outpace long-term water availability. In the event applicable water agencies notify the City that ground water levels and State water allocations are insufficient to serve existing development or projected development, the City will determine whether it is appropriate to reevaluate this General Plan and take other appropriate actions, as permitted by law.

Objective ER4.3: Maintain and further the City's commitment to long-term water management within the Antelope Valley by promoting and encouraging planning for the conservation and managed use of water resources, including groundwater, imported water, and reclaimed water.

> **Policy ER4.3.1**: Assess the feasibility of utilizing reclaimed water for landscape irrigation on a city-wide basis. Factors to be considered include the potential quantities of reclaimed water as determined by the Sanitation Districts, and costs associated with developing infrastructure and delivery systems to facilitate utilization. Within those areas in which it is determined to be feasible to utilize reclaimed water, consider establishment of an ordinance requiring installation of secondary water delivery systems to service landscaped areas.
>
> **Policy ER4.3.3**: Continue to seek out long-range water management techniques as new technology is developed; promote implementation of systems which are feasible and appropriate to the Planning Area.
>
> **Policy ER4.3.4**: Encourage residents and businesses to recycle water where feasible, and where water recycling does not result in health and safety concerns, within their homes and/or businesses.
>
> **Policy ER4.3.5**: Participate in regional efforts to retain imported water allocations and seek out other sources as they become available.

Antelope Valley Areawide General Plan (1986)

The County of Los Angeles has developed the Antelope Valley Areawide (AVA) General Plan, in conjunction with the other chapters and elements of the County of Los Angeles General Plan. The AVA General Plan is a coordinated statement of public policy by the County for use in making public decisions relating to the future of the Antelope Valley. The AVA General Plan is designed to provide decision makers with a policy framework to guide them in efforts to improve the quality of life in the valley. The following is a list of selected AVA General Plan polices that apply to the proposed project.

> **Policy 2**: Closely monitor growth in the Antelope Valley to maintain a balance between development and the capacity of the environmental, economic, and man-made or social services.

Policy 5: Assign priority for future land use growth in the Antelope Valley considering for the following criteria:

a. Hazards or constraints of natural environmental systems on land use;

b. Sensitivities of natural environmental systems;

c. Constraints of man-made systems.

Policy 23: Protect underground water supplies by enforcing controls on sources of pollutants.

Policy 29: Encourage development of services to meet the needs of Antelope Valley residents including health, education, welfare, police and fire, governmental operations, recreation, cultural, and utility services. Such services should be expanded at a rate commensurate with population growth. Phasing of their implementation should be timed to prevent gaps in services as the area grows. Where feasible, service facilities will be established in central urban area with branches located in outlying communities. When the population base in a community is too small to support a facility, a common facility should be shared by a number of small communities and established at a central point.

Policy 39: Ensure conservation of natural resources through the establishment of public programs to encourage continued agricultural production and to control energy consumption, mineral extraction, groundwater recharge, construction, and other public and private activities which affect the future availability and quality of such resources.

Policy 101: Develop and use groundwater sources to their safe yield limits.

Policy 102: Use imported water, when available, to relieve overdrafted groundwater basins and maintain their safe yield for domestic uses outside of urban areas.

Policy 103: Encourage utilization of flood waters and reclaimed wastewater for groundwater recharge.

Los Angeles County Airport Land Use Plan

The State Aeronautics Act of the California Public Utilities Code establishes statewide requirements for airport land use compatibility planning and requires nearly every county to create an Airport Land Use Commission (ALUC) or alternative designated body to implement these requirements. Los Angeles County established a county-wide ALUC, which is charged with the responsibility of preparing and implementing an airport land use plan (ALUP).

An ALUP provides for the orderly growth of an airport and the area surrounding the airport, excluding existing land uses. Its primary function is to safeguard the general welfare of people and property within the airport vicinity and the public in general. The *Los Angeles County Airport Land Use Plan* (ALUP) includes several components:

- *Airport Land Use Commission Review Procedures* (Review Procedures), adopted on December 1, 2004. The Review Procedures are County-wide procedures that apply to all 11 public-use airports in the County, including Palmdale Regional Airport.
- Airport Land Use Plan, adopted December 19, 1991. Although some of the county-wide policies addressed in this plan have been superseded by the 2004 Review Procedures, the 1991 plan includes background on compatibility issues and each airport for which the ALUC is responsible for policy development.

- Other airport-specific plans. The County is in the process of developing an individual Airport Land Use Compatibility Plan for the Palmdale Regional Airport.

Taken together, these document components define the procedures and criteria through which the County can address, evaluate, and review airport compatibility issues in the vicinity of any of its public use airports.

The goal of an airport land use compatibility plan is twofold: To protect the public from the adverse affects of aviation, and to protect air travelers from land uses that could present unsafe conditions. The ALUP provides specific policies and procedures for proposed changes in land use within the AIA to ensure compliance with four types of compatibility concerns:

- Exposure to aircraft noise;
- Land use safety with respect to both people and property on the ground and air travelers;
- Airspace protection; and
- General concerns related to aircraft overflights.

The ALUC has identified the Airport Influence Area (AIA) for each public use airport in Los Angeles County. The AIA is the geographic area that could be affected by present or forecasted aircraft operations and the area in which new land uses or changes in land uses could cause adverse effects to flight operations and safety. Proposals for development within an AIA, as defined by the adopted ALUP, are reviewed for their consistency with ALUP compatibility criteria. As shown in **Figure 3.8-3**, the AIA for PMD includes a large portion of the City of Palmdale, a portion of the City of Lancaster, and portions of unincorporated Los Angeles County.

The ALUP includes policies and programs that apply to PMD, including the following:

General Policies

G-1: Require new uses to adhere to the Land Use Compatibility Chart.

G-4: Prohibit any uses which will negatively affect safe air navigation.

Policies related to safety

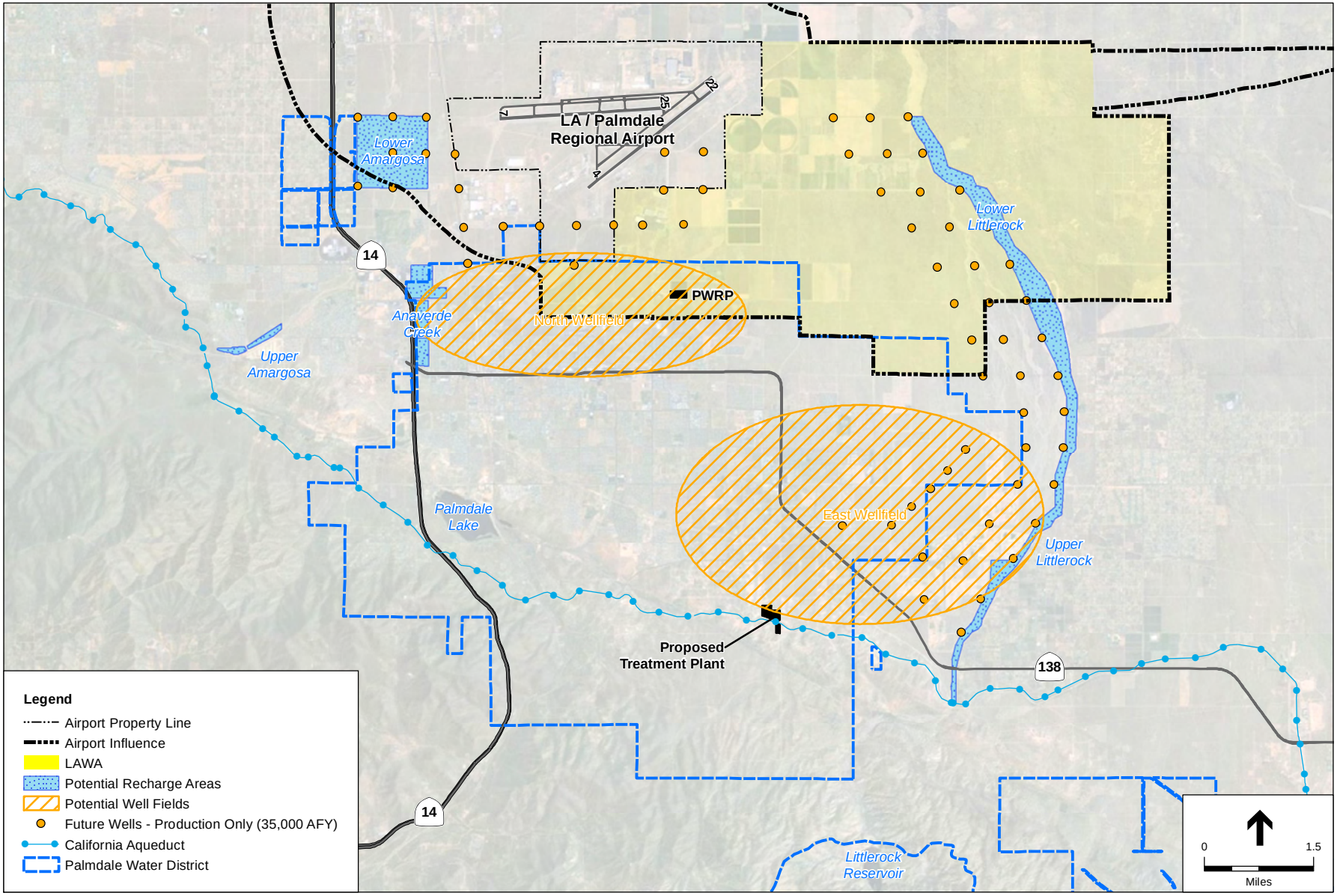
S-1: Establish “runway protection zones” contiguous to the ends of each runway. These runway protection zones shall be identical to the FAA’s runway protection zone (formerly known as “clear zones”).

S-3: Prohibit, within a runway protection zone, any use which would direct a steady light or flashing light of red, white, green or amber colors associated with airport operations towards an aircraft engaged in an initial straight climb following take-off or toward an aircraft engaged in final approach toward landing at an airport.

S-4: Prohibit, within a designated runway protection zone, the erection or growth of objects which rise above the approach surface unless supported by evidence that it does not create a safety hazard and is approved by the FAA.

S-5: Prohibit uses which would attract large concentrations of birds, emit smoke, or which may otherwise affect safe air navigation.

S-7: Comply with the height restriction standards and procedures set forth in FAR Part 77.



SOURCE: LA County GIS; ESA, 2011.

Palmdale Water District SWRP. 210170

Figure 3.8-3

PMD Airport Influence Area

Palmdale Airport Land Use Compatibility Plan

At this time, the County has not prepared a specific Land Use Compatibility Plan for PMD; however, an AIA has been established for PMD. Any proposed facilities within the AIA would be subject to the county-wide policies in the ALUP and Review Procedures. However, airport-specific policies have not been developed at this time.

Air Installation Compatible Use Zone Study

The *Air Installation Compatible Use Zone (AICUZ) Study* provides extensive analysis on the effects of aircraft noise, aircraft accident potential, and land use development upon present and future land uses in the vicinity of PMD. The AICUZ identifies military clear zones (CZs) and accident potential zones (APZs) for runways 7/25 and 4/22 (see **Figure 3.8-4**). The CZ, which is located at each runway end, represents the area at the highest risk of experiencing aircraft accidents. (The CZs presented in the AICUZ Study coincide with the RPZs identified by the ALUCP for PMD.) APZs I and II, which extend beyond the CZ, represent diminishing levels of risk for aircraft accidents, yet 60 percent of Air Force accidents occur within these three zones. There are no proposed facilities within the CZs (or RPZs) for PMD; however the recharge basins in the Lower Amargosa and Anaverde Creek areas, along with some proposed production wells, could be located within the APZs for both runways.

Table 3.8-1 depicts the recommended land uses for both the CZs and the APZs.

TABLE 3.8-1
RECOMMENDED LAND USE FOR CLEAR ZONES AND ACCIDENT POTENTIAL ZONES

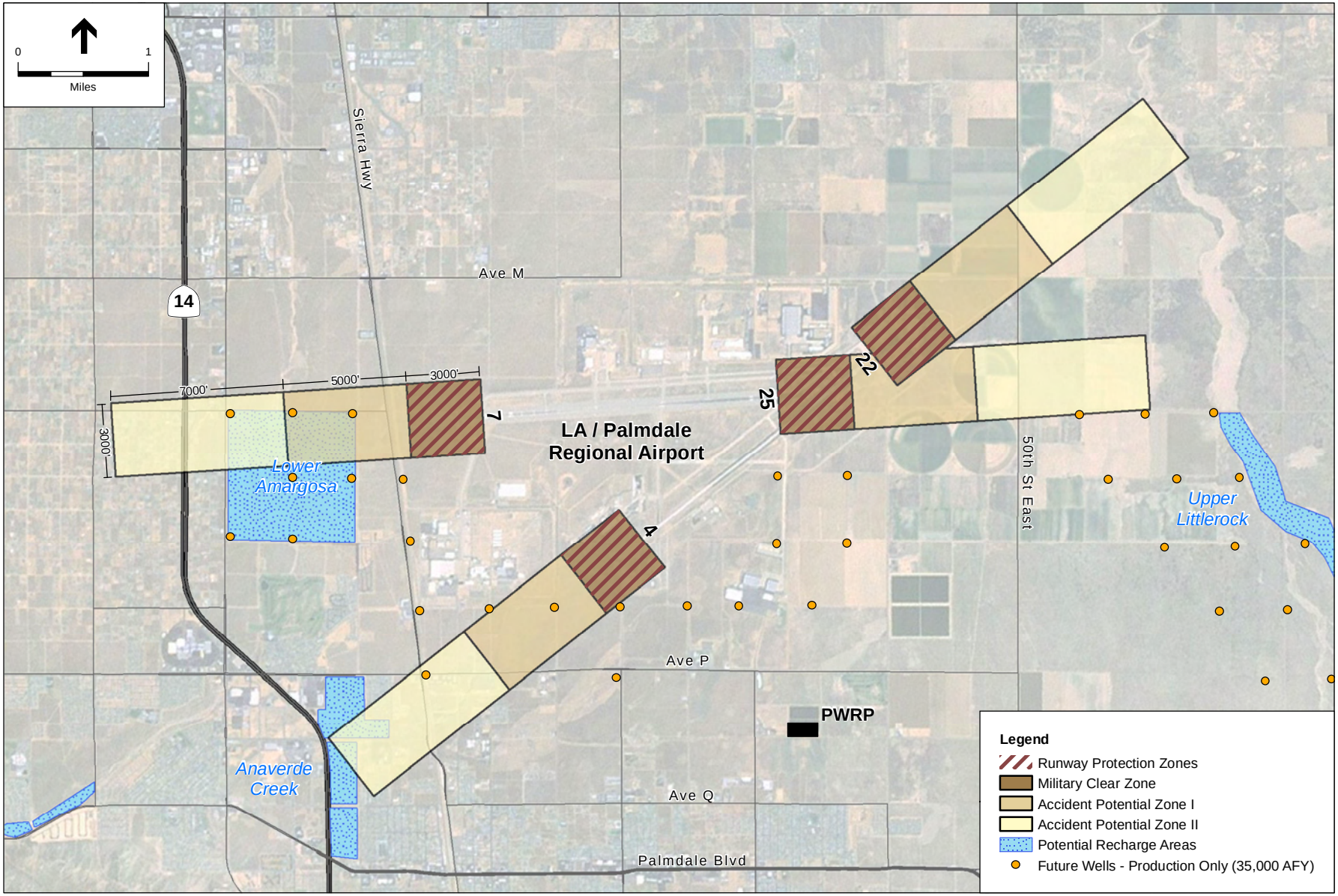
Generalized Land Uses	Clear Zones	APZ I	APZ II
Residential	No	No	Yes[a]
Commercial	No	No[b]	Yes[b]
Industrial	No	Yes	Yes[b]
Public/Quasi-Public	No	No	Yes[b]
Recreational	No	Yes[b]	Yes[b]
Open/Agriculture/Low Density	No	Yes[b]	Yes[b]

[a] Suggested maximum density 1 dwelling unit per acre.
[b] Only limited low-density, low-density uses recommended.

SOURCE: *Air Installation Compatible Use Zone Study*, 2002.

Antelope Valley Significant Ecological Areas

As part of the County General Plan Conservation/Open Space and Land Use elements, Los Angeles County has identified and adopted policies for Significant Ecological Areas (SEAs). The purpose of establishing a SEA is to maintain biological diversity by establishing boundaries which follow natural biological parameters, including habitats, linkages, and corridors, and have



SOURCE: LA County GIS; ESA, 2011.

Palmdale Water District SWRP . 210170

Figure 3.8-4

PMD Clear Zones and Accident Potential Zones

self-sustaining populations of their component species contained within each area. Currently, SEA #49, which is located within Littlerock Creek, has the potential to be affected by the proposed project (see **Figure 3.8-5**). This region contains habitats and provides a nesting environment for birds and a variety of mammals. Littlerock Wash supports diverse wildlife, serves as a migration corridor, and helps in seed dispersal of desert plants

3.8.3 Impacts and Mitigation Measures

Significance Criteria

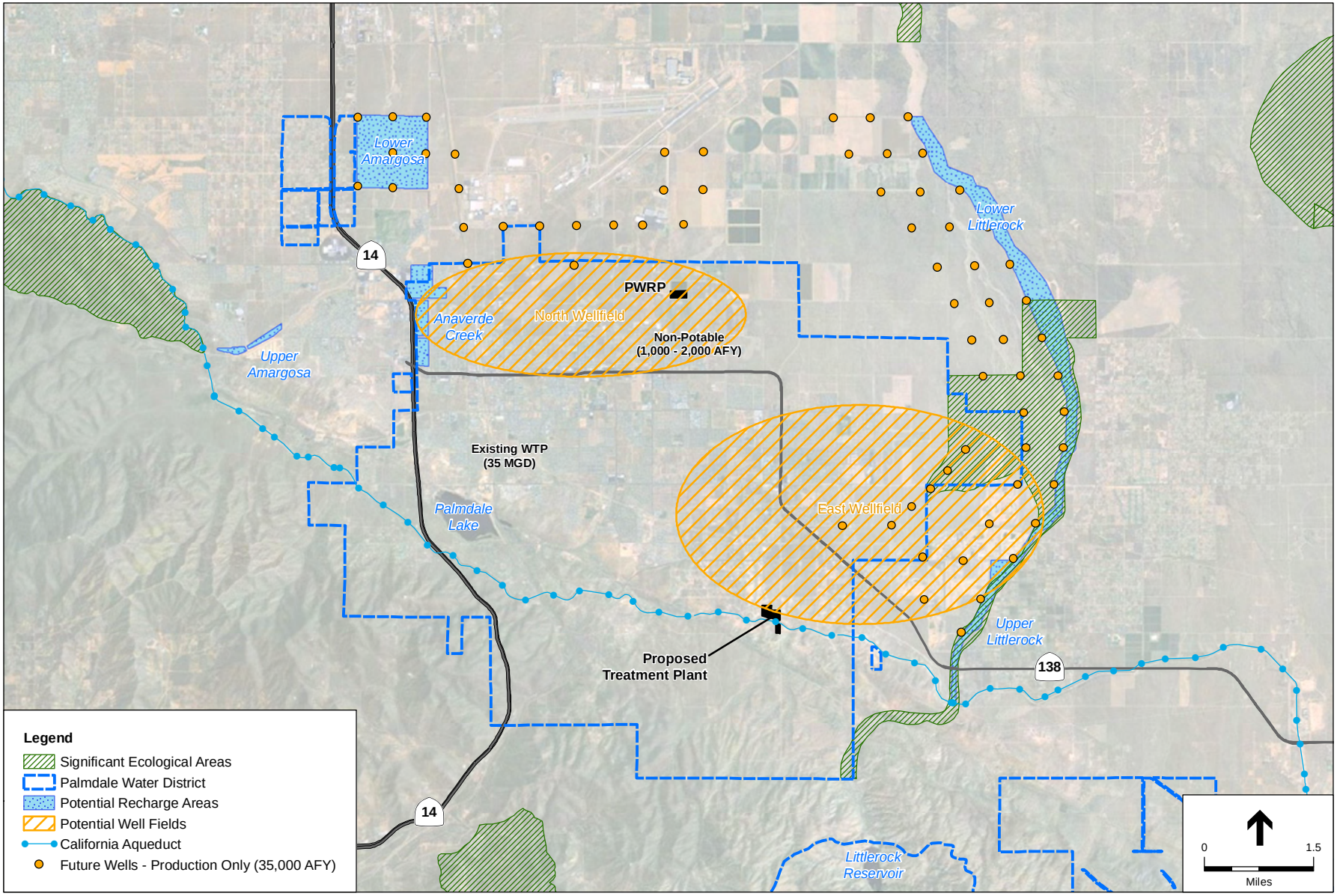
The criteria used to determine the significance of impacts related to Agricultural and Forestry resources are based on Appendix G of the *CEQA Guidelines*. The proposed project would result in a significant impact to Agricultural and Forestry resources if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act Contract;
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g));
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use; or
- Result in the loss of forest land or conversion of forest land to non-forest use.

The criteria used to determine the significance of impacts related to Land Use and Planning are based on Appendix G of the *CEQA Guidelines*. The proposed project would result in a significant impact to Land Use and Planning if it would:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purposed of avoiding or mitigating an environmental effect; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

A discussion of the impacts and mitigation measures for the proposed project are presented below.



SOURCE: LA County GIS; ESA, 2011..

Palmdale Water District Strategic Water . 210170

Figure 3.8-5

Antelope Valley Significant Ecological Areas

Impacts Discussion

Williamson Act Contract

The proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract. There are no Williamson Act lands in the project area (California Department of Conservation, 2008). There would be no impact.

Forest Zoning and Forest Land Conversion

The proposed project would construct new facilities within and around the PWD service area on land that generally consists of industrial, commercial, residential, and open space uses. The City of Palmdale does not have any land use designations or zoning designations for forest land or timberland. The proposed treatment plant and aqueduct turnout are located in the County of Los Angeles and also are not classified as forest land or timberland. The proposed grade control structure is located at Littlerock Reservoir within Angeles National Forest. The land use designation by the County of Los Angeles is open space. The grade control structure would be built and operated within the boundaries of Littlerock Reservoir. There would be no direct impacts to surrounding forest lands owned by the National Forest Service, no loss of forest lands, and no conversion of forest land to non-forest use. There would be no impact.

Dividing an Established Community

The proposed facilities associated with the Recommended Strategy (Table 3-1) are not linear features that would create a barrier or physically divide an established community. The proposed pipelines are linear features, but as underground facilities, they would not divide an established community. Implementation Action 6 would include the construction of spreading basins/recharge areas within the existing Littlerock Creek, which runs south to north on the east side of the City of Palmdale. Littlerock Creek is a natural feature that separates the unincorporated community of Little Rock from the City of Palmdale. Access roads between Palmdale and Little Rock are provided via E. Palmdale Blvd, East Ave. T., and Pearblossom Highway, which are elevated roadways over Littlerock Creek. Implementation of the recharge basins would not reduce access between both communities as the proposed roadways and bridges over Littlerock Creek would be maintained. Recharge basins would be contained within the natural creek channel and would not require elimination of these primary access roadways. Therefore, Implementation Action 6 would not affect existing access conditions. There would be no impact.

Compatibility with Land Use Plans and Policies

The locations of many proposed facilities associated with the Recommended Strategy have not been determined. The treatment plant would be located on land that is designated as Non-Urban by the County of Los Angeles. The recharge facilities would be located on lands with various potential designations, such as Specific Plan or Business Park in the City of Palmdale, and Non-Urban, Public/Semi-Public Facilities or SEA in the County of Los Angeles. These proposed facilities would be compatible with most land use designations as public utility water facilities.

Nonetheless, these and all proposed facilities under the Recommended Strategy would be exempt from building or zoning regulations pursuant to Government Code Section 53091. As a result, there would be no conflict with the City or County land use ordinances. The proposed project also would support many policies in the City of Palmdale General Plan and the County's Antelope Valley Areawide Plan that pertain to long-term integrated planning and management of water resources; protection and conservation of groundwater resources; correction of groundwater overdraft; utilization of recycled water to offset potable water use and recharge groundwater; and retention of imported water allocations.

Farmland Conversion

Impact 3.8-1: Installation of proposed production wells could convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or other lands under agricultural production to non-agricultural use. (Less than Significant with Mitigation)

Based on the conceptual facility siting, the proposed project may result in the construction of four above-ground production wells that could be located on land that is designated as Prime Farmland in the area west of Lower Littlerock Creek (see Figure 3.8-2).

A Land Evaluation and Site Assessment (LESA) was completed for these four proposed productions wells, which are located on the northeast portion of the of the project site. The LESA assessed the agricultural viability of the land and soils to determine the potential impact of constructing the production wells, which would result in the conversion of agricultural resources to non-agricultural uses.

Utilizing the LESA Model, a final score of 62.26 was calculated for the production wells (see **Appendix E, Land Evaluation and Site Assessment**). According to the Model Scoring Thresholds of CEQA, the construction of these four production wells would be considered to have a significant impact on agricultural resources (See "Instruction Manual" for making significance determinations). With implementation of **Mitigation Measure LU-1**, PWD would be required to ensure that the siting of production wells would not be located on land that is designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. With implementation of Mitigation Measure LU-1, direct conversion of farmland to non-agricultural use would be avoided and impacts would be considered less than significant.

Mitigation Measures

> **LU-1:** As part of the siting of the production wells, PWD shall ensure that the proposed production wells do not limit the use of Prime Farmland or result in conversion of significant acres of land to non-agricultural uses as determined through use of the LESA model.

Significance after Mitigation: Less than significant

Impact 3.8-2: The proposed importation of water through the State Water Project could result in the conversion of farmland to non-agricultural use. (Less than Significant)

Under the Recommended Strategy, PWD would acquire approximately 25,000 AFY of additional imported supplies by 2020 and 37,000 AFY by 2035, by acquiring new imported water rights through permanent transfers, multi-year leases, and short-term transfers. Additional supplies could also be made available through a proposed delta conveyance project and other SWP improvements that could lead to an increase in SWP allocations. PWD would also consider short-term transfers of wet year water when available. The initial 10,000 AFY of new imported water supply would maximize PWD's current Table A allocation of 21,300 AFY on an annual basis and would make use of PWD's existing remaining capacity in the aqueduct.

The potential exists that these new imported water rights could be transferred or leased from lands throughout the State that are designated by the California Department of Conservation as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, or non-designated farmland that is otherwise in agricultural production. Although transferring SWP water rights may reduce productivity, the affected agricultural lands would remain in agricultural zones and could be irrigated with water from other sources (such as groundwater), used for grazing or other agricultural-related purposes, or fallowed consistent with normal agricultural practices. In addition, the agricultural lands may be removed from active production depending on its productivity and life-cycle consistent with normal agricultural practices. Therefore, the transfer of water may not necessarily result in the conversion of agricultural land to non-agricultural use. Once PWD develops specific transfer or lease agreements, additional CEQA documentation may be prepared to evaluate indirect effects to agricultural resources, if any.

Mitigation Measures

None required.

Airport Land Use Plan

Impact 3.8-3: The proposed project could construct new structures within the airport influence area (AIA) for PMD and could conflict with the Los Angeles County Airport Land Use Plan policies. (Less than Significant with Mitigation)

Construction and operation of several of the project components could occur within the AIA for PMD (Figure 3.8-3), including recharge basins in the Lower Amargosa and Lower Littlerock areas, ASR wells, production wells and pipelines in and around the airport. In addition, recharge basins and production wells are proposed within the Accident Potential Zones (APZs) associated with PMD (Figure 3.8-4).

Potential short-tem impacts associated with construction of the proposed facilities would be potentially significant due to their close proximity PMD and potential to disrupt airport operations. The presence of construction equipment, particularly cranes and lights, could pose

hazards to aviation. To prevent potential intrusions to navigable airspace, PWD would notify the airport of proposed construction activities in advance and participate in the FAA's 7460 process to ensure that the proposed construction equipment does not pose hazards to aviation. In addition to FAA airspace review, ongoing coordination with the airport would be required to ensure that proposed construction activities do not disrupt airport operations and to ensure that appropriate notice is provided to aviators using the airport. Implementation of Mitigation Measures LU-2, LU-3, and LU-4 would minimize potential effects associated with construction activities.

Long-term impacts associated with operation of proposed facilities would be based on the height of new structures and the potential to intrude upon and obstruct navigable airspace. Recharge basins, ASR wells, and production wells are proposed within the AIA for PMD. The locations for many aboveground facilities associated with the Recommended Strategy have yet to be determined and also could be located with the AIA, such as storage tanks and pump stations. Implementation of Mitigation Measures LU-2 and LU-4 would require PWD to submit project design plans to Los Angeles County ALUC and PMD airport staff to ensure facility locations and heights would not pose a hazard to aviation and to participate in the FAA's 7460 process. Mitigation Measures LU-2 and LU-4 would minimize potential effects associated with project design issues.

The proposed recharge basins could conflict with safety policies of the Los Angeles County ALUP by constructing facilities within the AIA that would attract birds (Policy S-5). Proposed recharge facilities also could conflict with FAA policy to avoid developing new open water facilities within 10,000 feet of aircraft operation areas for airports serving turbine powered (jet) aircraft. According to the FAA, such open water facilities can attract potentially hazardous wildlife and pose risks to aviators (FAA AC 150/5200-33B). The FAA suggests that airports prepare a Wildlife Hazard Monitoring Plan (WHMP) to monitor, evaluate, and mitigate hazards associated with land uses surrounding the airport. The potential hazards associated with the proposed recharge facilities would be reduced to less-than-significant levels with the implementation of Mitigation Measure LU-5. With design features and a mitigation plan in place that adequately reduce the hazard, the proposed project would be compatible with the ALUP.

Mitigation Measures

LU-2: For project components occurring within the AIA, PWD shall submit their proposed project plans to the Los Angeles County ALUC for review and comment prior to final design.

LU-3: Prior to conducting construction activities within an AIA, PWD shall prepare an airport construction safety plan that would identify best management practices. The plan may include construction timeframes and hours, lighting and flagging requirements, air traffic control communication requirements, access and egress restrictions, equipment staging area requirements, personal safety equipment requirements for construction workers, and appropriate notification to aviators. The plan would be reviewed and approved by airport staff.

LU-4: Prior to final design of the project components within an AIA, PMD shall identify the ground elevation associated with each project component and submit their project plans to airport staff for review and comment. Working with airport staff, PMD shall submit their design plans for airspace analysis (FAA Part 7460 review) to determine whether any of the proposed project components or proposed construction equipment would protrude into protected airspace. If such objects are identified, the implementing agencies, airport staff, and FAA will identify appropriate steps to adjust project plans or include appropriate markings to identify hazards to aviators pursuant to FAA Part 7460.

LU-5: PWD shall reduce the potential attraction of its proposed facilities to wildlife through project design features and ongoing monitoring. PWD shall coordinate with the Palmdale Municipal Airport to develop a Wildlife Hazard Management Plan for recharge basins located in areas determined to pose a risk to aviation pursuant to FAA guidelines. The Plan shall include wildlife deterrent design measures to minimize attracting wildlife. Measures could include installation of a wire grid over the proposed recharge basin as well as other mechanical means of deterring avian wildlife. The Plan also shall include maintenance, monitoring, and reporting requirements.

Significance after Mitigation: Less than significant

Habitat Conservation Plans and Natural Community Conservation Plans

Impact 3.8-4: The proposed project could conflict with County development policies within Sensitive Ecological Area #49. (Less than Significant)

Implementation Action 6, 7 and 8 of the proposed project would require the construction of spreading basins/recharge areas, ASR wells, and new groundwater production wells within Upper and Lower Littlerock Wash, which is designated as Sensitive Ecological Area #49 by the Los Angeles County General Plan.

The County General Plan specifies policies for development within SEAs relating to the protection of biological resources. The policies call for the protection of core populations of sensitive species and rare communities and the preservation of habitat linkages.

A Sensitive Ecological Area Conditional Use Permit (SEACUP) is required before any building or grading permits are issued for any project in a SEA (County Code 22.56.215). Public utilities are not exempt from SEACUPs. Therefore, PWD would be required to obtain a SEACUP for construction of its recharge basin within SEA #49 and would submit an application to SEATAC for review and comment. SEATAC would provide recommended measures in support of the County's SEA policies. SEATAC's recommendations would be submitted to the County Planning Commission for consideration prior to approval of the SEACUP. With issuance of the SEACUP, no conflicts with the County SEA land use policies would be anticipated for construction of recharge basins.

Mitigation Measures

None required.

References – Land Use, Agricultural Resources and Forestry

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3.9 Noise

This section provides background information on noise and vibration and applicable noise guidelines and standards, including City of Palmdale and Los Angeles County noise standards. This section assesses the potential for noise impacts of the proposed project.

3.9.1 Environmental Setting

Environmental Noise Fundamentals

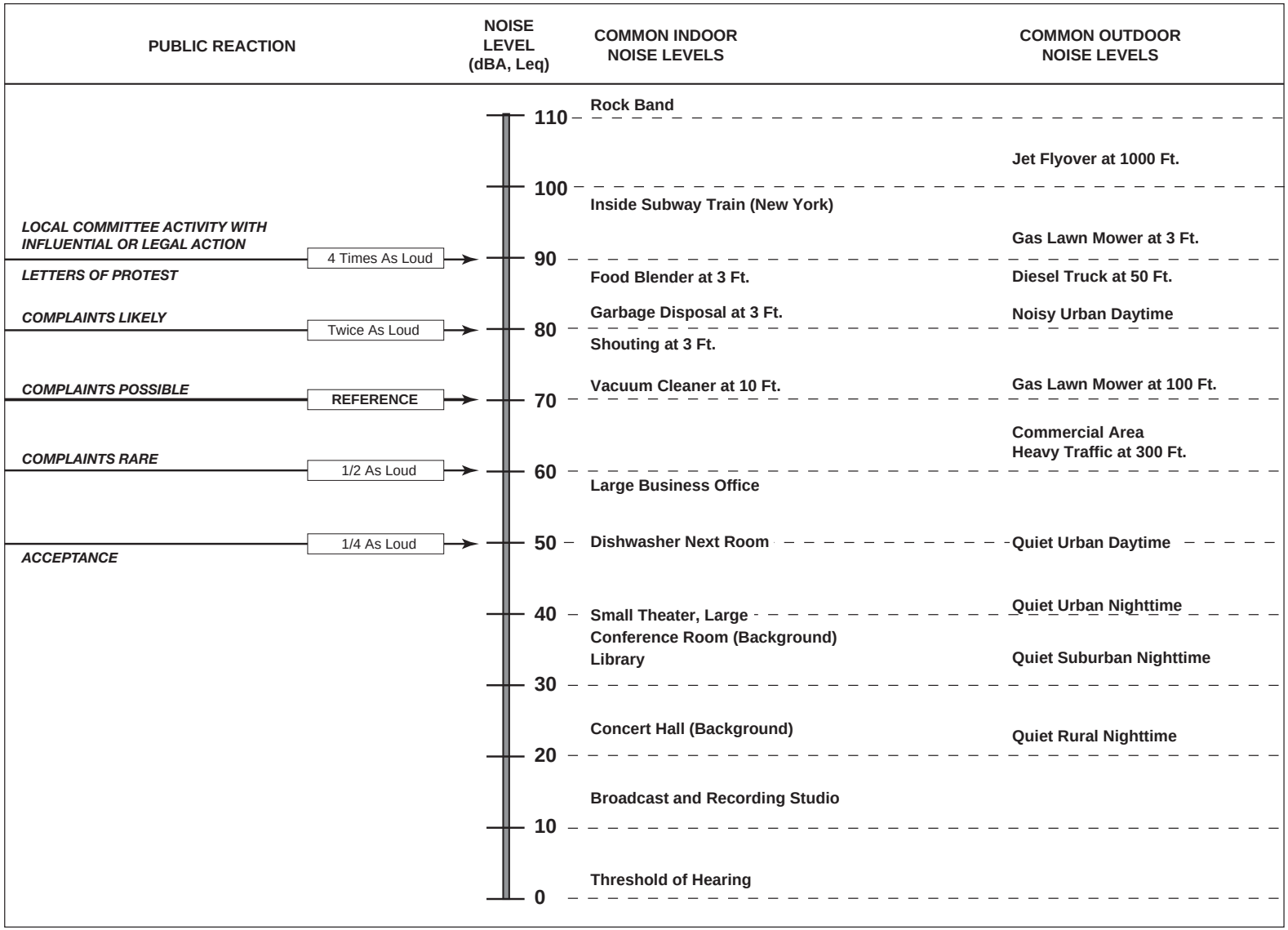
Noise is defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequencies spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown in **Figure 3.9-1**.

Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. The noise levels presented in Figure 3.9-1 are representative of measured noise at a given instant in time, however, they rarely persist consistently over a long period of time. Rather, community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable.



SOURCE: Caltrans Transportation Laboratory Noise Manual, 1982; and modification by ESA.

Palmdale Water District Strategic Water . 210170

Figure 3.9-1
Effects of Noise on People

The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment varies the community noise level from instant to instant requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

Leq: the equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The Leq is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

Lmax: the instantaneous maximum noise level for a specified period of time.

L50: the noise level that is equaled or exceeded 50 percent of the specified time period. The L50 represents the median sound level.

L90: the noise level that is equaled or exceeded 90 percent of the specified time period. The L90 is sometimes used to represent the background sound level.

Ldn/or DNL: 24-hour day and night A-weighted noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 PM and 7:00 AM is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

CNEL: similar to the Ldn, the Community Noise Equivalent Level (CNEL) adds a 5-dBA penalty during the evening hours between 7:00 PM and 10:00 PM in addition to a 10-dBA penalty between the hours of 10:00 PM and 7:00 AM

As a general rule, in areas where the noise environment is dominated by traffic, the Leq during the peak-hour is generally equivalent to the Ldn at that location (within +/- 2 dBA) (Caltrans, 1998).

Effects of Noise on People

The effects of noise on people can be placed into three categories:

- subjective effects of annoyance, nuisance, dissatisfaction;
- interference with activities such as speech, sleep, learning; and
- physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so called "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- a change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- a 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites. Line sources (such at traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans, 1998).

Fundamentals of Vibration

As described in the Federal Transit Administration's *Transit Noise and Vibration Impact Assessment* (FTA, 2006), ground-borne vibration can be a concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving and operating heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include structures (especially older masonry structures), people (especially residents, the elderly and sick), and vibration sensitive equipment.

The effects of ground-borne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin. A vibration level that causes annoyance will be well below the damage threshold for normal buildings.

Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others because of the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residences, hotels, schools, rest homes, and hospitals are generally more sensitive to noise than commercial and industrial land uses. Noise-sensitive land uses and proposed project facilities are located throughout the project area including residences, schools, and hospitals.

3.9.2 Regulatory Framework

Federal

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 Code of Federal Regulations (CFR), Part 205, Subpart B. The federal truck pass-by noise standard is 80 dBA at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers.

State

California Code of Regulations has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure, as shown in **Figure 3.9-2** below. The State of California also establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the State pass-by standard is consistent with the federal limit of 80 dB.

	Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements
	Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
	Normally Unacceptable	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.
	Clearly Unacceptable	New construction or development generally should not be undertaken.

SOURCE: State of California, Governor's Office of Planning and Research, 2003. *General Plan Guidelines*.

Figure 3.9-2
Land Use Compatibility For Community Noise Environment

The State pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80 dBA at 15 meters from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanction of vehicle operators by state and local law enforcement officials.

The State has also established noise insulation standards for new multi-family residential units, hotels, and motels that would be subject to relatively high levels of transportation-related noise. These requirements are collectively known as the California Noise Insulation Standards (Title 24, California Code of Regulations). The noise insulation standards set forth an interior standard of DNL 45 dBA in any habitable room. They require an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than DNL 60 dBA. Title 24 standards are typically enforced by local jurisdictions through the building permit application process.

Local

Local noise issues are addressed through implementation of general plan policies, including noise and land use compatibility guidelines, and through enforcement of noise ordinance standards. Noise ordinances regulate such sources as mechanical equipment and amplified sounds as well as prescribe noise limits in residential and commercial zones. For this proposed project, noise regulations and standards of the City of Palmdale and Los Angeles County were considered with respect to the proposed facilities and nearby sensitive receptors.

City of Palmdale Municipal Code

The following portions of the municipal code are relevant to the proposed project:

> **9.18.010 Noise:** It shall be unlawful for any person to willfully make or continue, or cause or permit to be made or continued, any loud, unnecessary, or unusual noise which unreasonably disturbs the peace and quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.
>
> **8.28 Building Construction Hours and Operation and Noise Control**: Restriction of hours of operation for construction equipment, power mowers, garbage collection, street sweeping, truck deliveries, leaf blowers, and other noise activities within the hours of 6:30 a.m. and 8:00 p.m., unless the work is made in response to an emergency or special purpose.

City of Palmdale General Plan Noise Element

The following portions of the General Plan are relevant to the proposed project:

> **Policy N1.1.3**: When proposed stationary noise sources could exceed an exterior noise level of 65 dBA CNEL at present, or could impact future noise sensitive land uses, require preparation of an acoustical analysis and mitigation measures to reduce noise levels to no more than 65 dBA CNEL exterior and 45 dBA CNEL interior; if the noise level cannot be reduced to these thresholds through mitigation, the new noise source should not be permitted.
>
> **Policy N1.2.2:** Restrict construction hours during the evening, early morning and Sundays.

Los Angeles County Code

The following portions of the County Code are relevant to the proposed project:

TABLE 3.9-1
EXTERIOR NOISE STANDARDS

Affected Land Uses (Receiving Noise)	Daytime Leq (7 am- 10 pm)	Nighttime Leq (10 pm- 7 am)
Residential	50 dBA	45 dBA
Commercial Properties	60 dBA	55 dBA
Industrial Properties	70 dBA	70 dBA

Leq = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level containing the same total energy as a time varying signal over a given sample period, typically 1, 8 or 24 hours.

dB(A) = (A-weighted Sound Pressure Level). The sound pressure level, in decibels, as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitivity range of the human ear.

Ldn = (Day-Night Noise Level). The average equivalent A-weighted sound level during a 24-hour day obtained by adding 10 decibels to the hourly noise levels measured during the night (from 10 pm to 7 am). In this way Ldn takes into account the lower tolerance of people for noise during nighttime periods.

SOURCE: Los Angeles County Code (Ord. 11778 § 2 (Art. 4 § 403), 1978: Ord. 11773 § 2 (Art. 4 § 403), 1978.)

12.12.030 Construction Noise: Except as otherwise provided in this chapter, a person, on any Sunday, or at any other time between the hours of 8:00 p.m. and 6:30 a.m. the following day, shall not perform any construction or repair work of any kind upon any building or structure, or perform any earth excavating, filling or moving, where any of the foregoing entails the use of any air compressors; jackhammers; power-driven drill; riveting machine; excavator, diesel-powered truck, tractor or other earth moving equipment; hand hammers on steel or iron, or any other machine, tool, device or equipment which makes loud noises to the disturbance of persons occupying sleeping quarters in a dwelling, apartment, hotel, mobile home, or other place of residence. (Ord. 9818 § 1, 1969: Ord. 8594 § 6, 1964.)

12.12.060 Exemptions--Work by public utilities—Conditions: The provisions of Section 12.12.030 do not apply to the construction, repair or excavation by a public utility which is subject to the jurisdiction of the Public Utilities Commission as may be necessary for the preservation of life or property, and where such necessity makes it necessary to construct, repair or excavate during the prohibited hours. (Ord. 8594 § 10, 1964.)

Los Angeles County General Plan Noise Element

The following portions of the General Plan are relevant to the proposed project:

Goal N-1 An environment that is protected from unacceptable levels of noise.

Policy N 1.1: Employ effective noise abatement measures to achieve acceptable levels of noise as defined by the Los Angeles County Exterior Noise Standards.

Policy N 1.2: Ensure the compatibility of land uses throughout the County to minimize excessive noise levels.

Policy N 1.3: Ensure cumulative impacts related to noise do not exceed excessive levels by utilizing development monitoring techniques.

3.9.3 Impacts and Mitigation Measures

Significance Criteria

Consistent with the CEQA *Guidelines* Appendix G, the proposed project would result in a significant impact on the environment if it would result in:

- Exposure of persons to or generation of noise levels in excess of standards of the City of Palmdale and Los Angeles County, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels existing without the project;
- Exposure of people residing or working in the project area to excessive noise levels, for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport; or
- Expose people residing or working in the project area to excessive noise levels if the project is located in the vicinity of a private airstrip.

Some guidance as to the significance of changes in ambient noise levels is provided by the 1992 findings of the Federal Interagency Committee on Noise (FICON), which assessed the annoyance effects of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Annoyance is a summary measure of the general adverse reaction of people to noise that generates speech interference, sleep disturbance, or interference with the desire for a tranquil environment. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been asserted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the Ldn, as shown in **Table 3.9-2**.

TABLE 3.9-2
MEASURES OF SUBSTANTIAL INCREASE FOR NOISE EXPOSURE

Ambient Noise Level without Project (Ldn)	Significant Impact Assumed to Occur if the Project Increases Ambient Noise Levels By:
<60 dB	+ 5.0 dB or more
60-65 dB	+ 3.0 dB or more
>65 dB	+ 1.5 dB or more

SOURCE: Federal Interagency Committee on Noise (FICON), 1992.

The rationale for the Table 3.9-2 criteria is that, as ambient noise levels increase, a small increase in decibel levels is sufficient to cause significant annoyance. The quieter the ambient noise level is, the more the noise can increase (in decibels) before it causes significant annoyance.

Methodology

Noise impacts are assessed based on a comparative analysis of the noise levels resulting from the proposed project and the noise levels under existing conditions.

Construction Noise

Analysis of temporary construction noise effects is based on typical construction phases, published or previously measured decibel levels of construction equipment and attenuation of those noise levels due to distances, presence of any barriers between the construction activity and the sensitive receptors near the sources of construction noise, and time of day and expected duration of construction activity.

Noise impacts from short-term construction activities could exceed noise thresholds and could result in a significant construction impact if short-term construction activity occurred outside of the daytime hours permitted by the City's/County's noise municipal code. However, project construction would be temporary in duration and only occur in short intervals (i.e. as long as the particular piece of construction machinery is running), and would adhere to noise standards in the appropriate Municipal Code.

Vibration from construction is evaluated for potential impacts at sensitive receptors. Typical activities evaluated for potential building damage due to construction vibration include demolition, pile driving, and drilling or excavation in close proximity to structures. The ground-borne vibration is also evaluated for perception to eliminate annoyance. Vibration propagates according to the following expression, based on point sources with normal propagation conditions:

$$PPV_{equip} = PPV_{ref} \text{ x } (25/D)^{1.5}$$

Where PPV (equip) is the peak particle velocity in inches per second of the equipment adjusted for distance, PPV (ref) is the reference vibration level in inches per second at 25 feet, and D is the distance from the equipment to the receiver. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration and is often used in monitoring vibration because it is related to the stresses experienced by structures.

To determine the potential for annoyance, the RMS vibration level (L_v) at any distance (D) is estimated based on the following equation:

$$L_v(D) = L_v(25 \text{ ft}) - 30\log(D/25)$$

Stationary Noise

A resulting off-site noise level at residences and other sensitive receptors from stationary, non-transportation sources that exceed levels in Table 3.9-1 would result in a significant noise impact.

Traffic Noise

As described in Table 3.9-2 above, the proposed project would result in a significant traffic noise impact if mobile noise would result in increased noise levels of 1.5 dBA Ldn or more in an ambient noise environment greater than 65 dBA Ldn; or increased noise of 3 dBA Ldn or more in an ambient noise environment between 60 and 65 dBA Ldn; or increased noise of 5 dBA Ldn or more in an ambient environment of less than 60 dBA Ldn. The FICON thresholds are representative of noise increases that could adversely affect sensitive receptors along the roadway. Although an increase in noise may be significant based on the thresholds, if there are no sensitive receptors along the roadway and thus no receptors that would be adversely impacted, then the noise would be deemed less than significant.

Impacts Discussion

Noise Standards

Impact 3.9-1: Project construction could temporarily increase noise levels at nearby sensitive receptor locations. (Less than Significant with Mitigation)

Noise levels associated with the installation the proposed facilities would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Material haul trips (from spoils and pipelines) would raise ambient noise levels along haul routes, depending on the number of haul trips made and types of vehicles used. **Tables 3.9-3** and **3.9-4** show typical noise levels during different construction stages and those produced by various types of construction equipment.

TABLE 3.9-3
TYPICAL NOISE LEVELS FROM CONSTRUCTION ACTIVITIES

Construction Phase	Noise Level[a] (dBA, Leq)
Ground clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

a Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: Bolt, Baranek, and Newman, 1971; Cunniff, 1977.

If a sensitive receptor was located 50 feet from project construction, assuming an attenuation rate of 6 dBA per doubling of distance, this receptor would experience noise levels of approximately 89 dBA Leq during excavation and finishing activities, the loudest of the construction phases that would occur.

TABLE 3.9-4
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Construction Equipment	Noise Level[a] (dBA, Leq at 50 Feet)
Dump truck	88
Portable air compressor	81
Concrete mixer (truck)	85
Scraper	88
Jackhammer	88
Dozer	87
Paver	89
Generator	76
Backhoe	85
Rock Drilling	98

a Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: Bolt, Baranek, and Newman, 1971; Cunniff, 1977.

Construction in the City of Palmdale

In order for excavation and finishing noise to be below the City of Palmdale daytime residential threshold of 65 dBA, it would have to occur at an approximate distance of at least 800 feet from a sensitive receptor. If jack and bore drilling were to be used at this distance during construction the sensitive receptor would be exposed to noise levels of approximately 74 dBA Leq. Other sensitive receptors located further away from construction would be exposed to construction noise at incrementally lower levels. Noise during construction of pump stations, wells, treatment facilities, recharge ponds, storage tanks, and pipelines could, depending upon the location of future facilities, exceed the City of Palmdale maximum permissible sound levels. Construction activities, however, would be short-term in duration and would expose sensitive receptors to temporary increases in noise levels. Furthermore, construction activities that occur between 6:30 a.m. and 8 p.m. on Monday through Saturday would be exempt from the City Palmdale Municipal Code noise thresholds. However, if certain construction activities within 800 feet of a sensitive receptor were to occur outside of these times/days, such as during 24-hour well drilling activities, sensitive receptors could be exposed to increased noise in excess of the Municipal Code. Implementation of **Mitigation Measure NOISE-1** and **NOISE-2** would reduce impacts associated with construction noise to less than significant levels.

Construction in Los Angeles County

In order for excavation and finishing noise to be below Los Angeles County daytime residential threshold of 50 dBA, it would have to occur at an approximate distance of at least 4,500 feet from a sensitive receptor. If jack and bore drilling were to be used at this distance during construction the sensitive receptor would be exposed to noise levels of approximately 59 dBA Leq. Other sensitive receptors located further away from construction would be exposed to construction noise at incrementally lower levels. Noise during construction of pump stations, wells, treatment facilities, recharge ponds, storage tanks, and pipelines could, depending upon the location of future facilities, exceed the Los Angeles County maximum permissible sound levels. Construction activities, however, would be short-term in duration and would expose sensitive receptors to temporary

increases in noise levels. Furthermore, construction activities that occur between 6:30 a.m. and 8 p.m. on Monday through Saturday would be exempt from the Los Angeles County Code noise thresholds. However, if certain construction activities within 4,500 feet of a sensitive receptor were to occur outside of these times/days, such as during 24-hour well drilling activities, sensitive receptors could be exposed to increased noise in excess of the County Code. Implementation of **Mitigation Measure NOISE-1** and **NOISE-2** would reduce impacts associated with construction noise to less than significant levels.

Mitigation Measures

NOISE-1: PWD shall require the construction contractor to implement the following measures, as applicable, during construction of proposed facilities:

- Construction activities in the City of Palmdale shall meet municipal code requirements related to noise. Construction activities shall be limited to between 6:30 a.m. and 8 p.m. Monday through Saturday to avoid noise-sensitive hours of the day. Construction activities shall be prohibited on Sundays and holidays.
- Construction activities in Los Angeles County shall meet county code requirements related to noise. Construction activities shall be limited to between 6:30 a.m. and 8:00 p.m. Monday through Saturday to avoid noise-sensitive hours of the day. Construction activities shall be prohibited on Sundays and holidays.
- Prior to nighttime construction activities that would generate noise in excess of noise standards, the construction contractor shall secure a noise waiver from the relevant jurisdiction (City or County) and comply with any terms and conditions of the waiver.
- Construction equipment noise shall be minimized by muffling and shielding intakes and exhaust on construction equipment (per the manufacturer's specifications) and by shrouding or shielding impact tools.
- Construction contractors shall locate fixed construction equipment (such as compressors and generators) and construction staging areas as far as possible from nearby sensitive receptors including residences, schools, and hospitals.
- Where feasible, construct barriers between noise sources and noise-sensitive land uses to block sound transmission. Enclose construction equipment where practicable.
- If construction were to occur near a school, the construction contractor shall coordinate the most noise producing construction activities with school administration in order to limit disturbance to the campus.

NOISE-2: PWD shall require the construction contractor notify in writing all landowners and occupants of properties within 500 feet of the construction area of the construction schedule at least two weeks prior to groundbreaking. The construction contractor shall designate a Noise Complaint Coordinator who will be responsible for responding to complaints regarding construction noise. The Coordinator shall ensure that reasonable measures are implemented to correct any problems. A contact telephone number for the Coordinator shall be conspicuously posted at the construction site and included in the written notification of the construction schedule sent to surrounding properties.

Significance after Mitigation: Less than significant

Ground-borne Vibration

Impact 3.9-2: Project construction could expose persons and structures to ground-borne vibration or ground-borne noise levels. (Less than Significant with Mitigation)

Vibration associated with noise, which takes the form of oscillatory motion, can be described in terms of acceleration, velocity, and displacement. There are several different methods that are used to quantify vibration. The PPV is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The RMS amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. The FTA's threshold of architectural damage for conventional sensitive structures is 0.2 in/sec PPV and the FTA threshold of human annoyance to ground-borne vibration is 80 RMS (FTA, 2006). Construction of the project would employ conventional activities and the equipment/techniques to be used would not cause excessive ground-borne vibration; however drilling could be required during well and pipeline installation. As shown in **Table 3.9-5**, use of heavy equipment during construction generates vibration levels of up to 0.089 PPV or 87 RMS (large bulldozer) at a distance of 25 feet. Construction could require jack and bore drilling depending on the local geology and locations. The proposed pipeline could get as close as 42 feet from sensitive receptors to be below the annoyance threshold of 80 RMS and 15 feet from a structure to be below the potential building damage threshold of 0.2 PPV. However, if certain construction activities within 42 feet of a sensitive receptor were to occur, sensitive receptors could be exposed to ground-borne vibration or ground-borne noise in excess of FTA standards. With implementation of **Mitigation Measure NOISE-3**, impacts would be less than significant.

TABLE 3.9-5
VIBRATION VELOCITIES FOR CONSTRUCTION EQUIPMENT

Construction Equipment	PPV at 25 feet (inches/second)[a]	RMS at 25 feet (VDB)[b]
Loaded Trucks	0.076	86
Caisson Drilling	0.089	87
Large Bulldozer	0.089	87
Jackhammer	0.035	79

a. Buildings can be exposed to ground-borne vibration levels of 0.2 PPV without experiencing structural damage.
b. The human annoyance response level is 80 RMS.

SOURCE: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

Mitigation Measures

NOISE-3: PWD shall require the construction contractor to implement the following measures, as applicable, during construction of proposed facilities:

- Limit jack and bore drilling to 45 feet from sensitive receptors and 15 feet from any structures; or
- If jack and bore drilling must occur within 15 feet of any structure, the construction contractor shall conduct crack surveys before drilling to identify existing potential architectural damage to nearby structures and implement measures to prevent any additional damange during project construction. The surveys shall be done by photographs, video tape, or visual inventory, and shall include inside as well as outside locations. All existing cracks in walls, floors, and driveways shall be documented with sufficient detail for comparison after construction to determine whether actual vibration damage occurred. A post-construction survey shall be conducted to document the condition of the surrounding buildings after the construction is complete.

Significance after Mitigation: Less than significant

Ambient Noise Levels

Impact 3.9-3: Activities associated with operation of proposed project facilities including treatment facilities and pump stations could increase ambient noise levels at nearby land uses. (Less than Significant with Mitigation)

Project operations that would generate noise include maintenance vehicle trips and the operation of certain mechanical equipment such as stationary pumps, fans, and generators.

It is not anticipated that implementation of the proposed project would result in large numbers of new employees because the plants are highly automated. The pipelines would be largely underground and serviced on an as-needed basis. Maintenance and inspection of facilities would result in a minimal increase in traffic trips, and therefore operational vehicle trip increases would not generate a substantial increase in noise along local roadways.

The proposed treatment plant would be constructed on land owned by PWD in unincorporated Los Angeles County. Pump stations would be constructed at various locations throughout the project area. All facilities would be designed in accordance with noise ordinances of the relevant jurisdiction to ensure that noise thresholds at the property boundary do not exceed day and nighttime limitations for neighboring land uses. For example, the proposed treatment plant site is adjacent to residential land uses. The proposed treatment facilities would be designed to ensure operational noise does not exceed 50 dBA at neighboring residential property lines during the day and 45 dBA during the nighttime, in accordance with Los Angeles County exterior noise standards for residential land uses (Table 3.9-1). Implementation of **Mitigation Measure NOISE-4** would ensure that operations of new facilities are in compliance with local noise ordinances.

Mitigation Measures

NOISE-4: PWD shall conduct post-construction noise surveys to ensure that operation of new equipment is in compliance with local noise ordinances at the property boundary. If operational noise exceeds local thresholds, then PWD shall implement further noise-reducing measures, such as enclosing noise generating-equipment, until facilities are in compliance with local ordinances.

Significance after Mitigation: Less than significant

Noise Near Airports

Impact 3.9-4: Operation of project facilities adjacent to an airport could expose employees to excessive noise levels. (Less than Significant)

The proposed project could include the installation of new water facilities, such as pipelines, pump stations, storage tanks, and wells, within two miles of the Palmdale Municipal Airport and U.S. Air Force Plant 42. However, maintenance and inspection would be minimal for such facilities; therefore future employees at the project sites would not be subjected to excessive noise levels. Exposure to airport noise would be a less than significant impact.

Mitigation Measures

None required.

References – Noise

Caltrans, 1998. *Technical Noise Supplement*. October 1998.

City of Palmdale, Palmdale General Plan, January 1993.

Cunniff, Environmental Noise Pollution, 1977.

Federal Interagency Committee On Noise (FICON). 1992. *Federal Agency Review of Selected Airport Noise Analysis Issues*, August 1992.

Federal Transit Administration (FTA). 2006. *Transit Noise and Vibration Impact Assessment*, May 2006.

State of California, Governor's Office of Planning and Research, 1998. *General Plan Guidelines*

U.S. Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, 1971.

3.10 Recreation

This section describes the existing recreational resources in the vicinity of the project area and evaluates potential impacts associated with implementation of the SWRP. This section also describes the regulations that govern recreational lands, including general plan goals and policies.

3.10.1 Environmental Setting

The project area is located in southern California, approximately 60 miles northeast of the City of Los Angeles, within the Antelope Valley. The Antelope Valley contains a variety of recreational opportunities of varying sizes and amenities. Park classification consists of community parks, neighborhood parks, county parks, and national parks. Recreation facilities within the project area are discussed below (Palmdale, 1993).

Parks

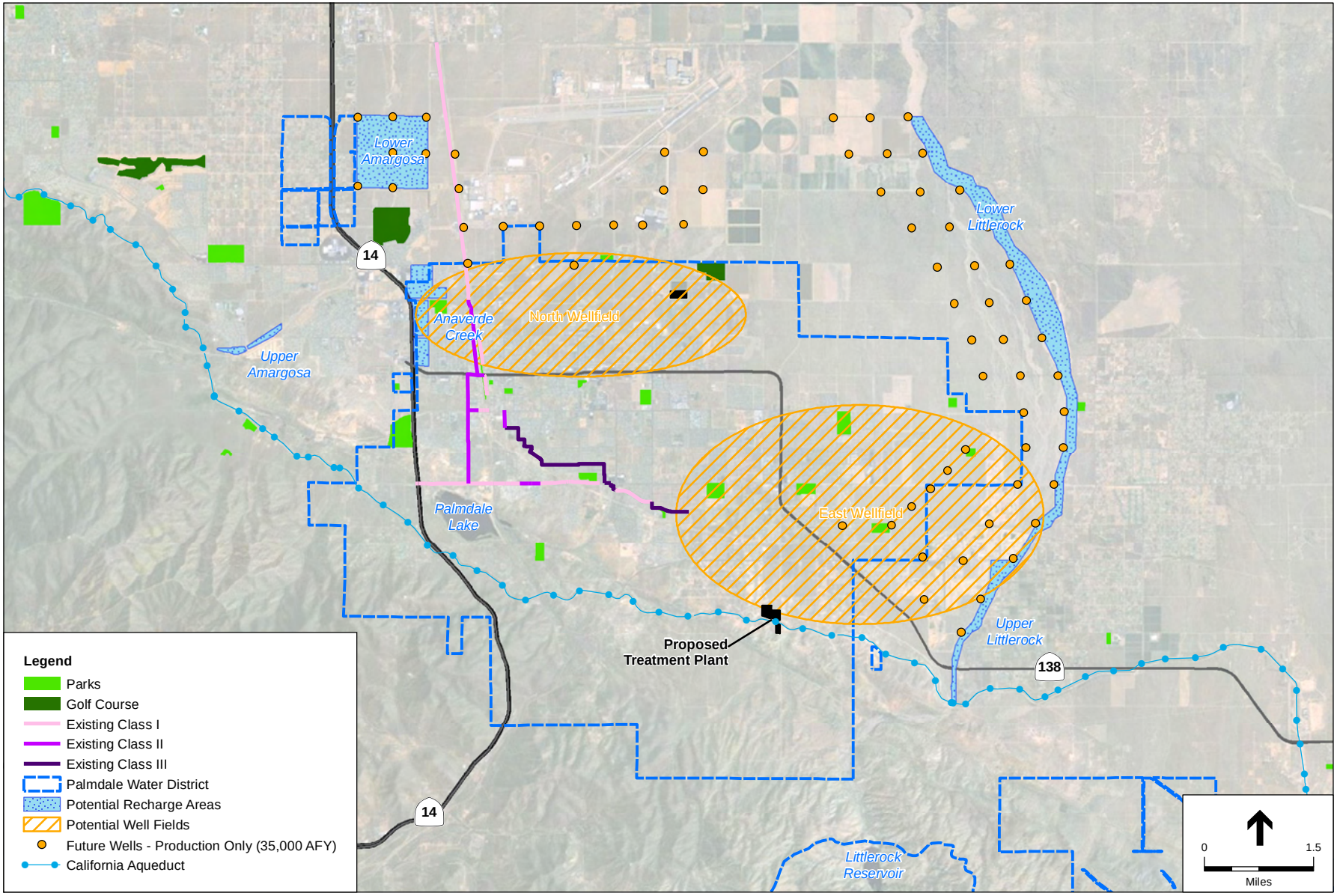
City of Palmdale

The City of Palmdale's Department of Parks and Recreation manages the operation of 316.6 acres of developed parkland throughout the City of Palmdale (see **Figure 3.10-1**). The Department also operates 18 special use facilities and 28.7 miles of developed trails and pathways. Recreational facilities in the area include parks, golf courses, bikeways, open space, and multipurpose facilities. Other recreational facilities include four pools, a six-acre water park, a 12,000-person outdoor amphitheater, a seven-field state-of-the-art softball complex, two full service recreation centers, a senior citizen center, an equestrian arena, two skate parks, and two roller hockey rinks (Palmdale, 1993).

Neighborhood parks are small (usually 3 to 7 acres) and are located in areas that are easily accessed by residential communities (Palmdale, 1993). Community parks are generally larger (usually 5 to 50 acres) and are shared by the entire local community (Palmdale 1993). Based on the conceptual layout of facilities associated with the SWRP, certain components of the project could be located on or in close proximity to neighborhood and community parks listed in **Table 3.10-1.**

County of Los Angeles

Los Angeles County maintains a number of neighborhood and community parks in the incorporated portions of the Antelope Valley. These parks are designed to serve the communities surrounding the City; however, City residents can enjoy these facilities as well. Only one County park is located in the project area. Jackie Robinson Park, located at 8773 East Avenue R in Little Rock, covers a 9.2 acre site. The park provides a community building, picnic area, and game courts.



SOURCE: LA County GIS; ESA, 2011.

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Figure 3.10-1

Recreational Resources

TABLE 3.10-1
NEIGHBORHOOD PARKS AND COMMUNITY PARKS IN THE PROJECT AREA

Parks		Acreage
Parks		
Domenic Massari		40.00
Desert Sands		20.00
Pelona Vista		73.00
William J. McAdam Park		20.00
Jackie Robinson Park		4.00
	Subtotal:	**157.00**
Recreational Facilities		
Richard B Hammack Center		1.20
Larry Chimbole Cultural Center		0.80
	Subtotal:	**2.00**
Specialty Areas		
Dr. Rober C. St. Clair Parkway		8.00
American Indian Little League Fields		30.00
	Subtotal:	**38.00**
Total Park and Recreation Acres		**197.00**

SOURCE: City of Palmdale, 2003.

Bike Paths

At the present time, approximately 24.2 miles of on- and off-street (Class 1, II) bike paths have been developed throughout the City of Palmdale. This represents approximately 18.7 percent of the 129 miles of bike paths that are currently designated in the General Plan. The other 104.8 miles of bike paths (class III) represent approximately 83.3 percent of the bike paths designated in the General Plan. The portion of the Sierra Highway between Avenue H and the Kern County line is designated as a bikeway in the Antelope Valley Areawide Plan. Currently, bicycles within this bikeway use the paved shoulder of the road. In addition, the area along 6th Street from Avenue S through Avenue P is designated as a bike trail within the City of Palmdale. No special lanes have been provided for bicycles in the project area (Palmdale, 1993). The different classes of bike paths are define as follows:

- Class I: Completely separated from traffic
- Class II: A lane set aside in city streets exclusively for bikes.
- Class III: Purportedly safe city streets connected into a means of getting from one place to another on a bike

Open Space

The Palmdale Land Use Map designates 9,458 acres as open space. Of this area, approximately 1,500 acres will be developed as active parkland or golf courses. These parks will provide active recreational facilities to support the existing population and a large portion of the anticipated population of Palmdale. The remaining open space will be preserved in its present natural condition, with little or no development allowed. Trail linkages through open space areas are often utilized by citizens for recreational purposes; including hiking, camping, and bicycling.

The golf courses included in the project area include Desert Air Golf Course and the Antelope Valley Country Club Golf Course.

The Los Angeles Land Use Map designates approximately 798,512 acres of open space. Existing open spaces in the unincorporated areas of the County include County parks, conservancy lands, state parklands, and federal lands. Open space can also include private and other open space lands, such as open space parcels and easements. Open space areas near the project site, as designated by the Los Angeles General Plan, include the Angeles National Forest, Significant Ecological Areas, and County owned land to the east of the project components (Los Angeles General Plan, 1980).

Angeles National Forest

The Angeles National Forest is located within and adjacent to the PWD service area, and encompasses approximately 650,000 acres of diverse terrain, and provides recreational opportunities for residents throughout Southern California. Much of the Forest is covered with dense chaparral, which changes to pine and fir forests at higher elevations. Angeles National Forest offers over 110 camping and picnicking sites, 500 miles of hiking trails, and opportunities for fishing, hunting and target shooting, off-highway vehicle exploration, water sports, and winter sports (Angeles National Forest, 2010). The proposed grade control structure would be installed in Littlerock Reservoir which is located within Angeles National Forest, near the Rocky Point picnic area. Although originally built as a water supply facility, Littlerock Reservoir has developed into one of the more popular recreational areas in the Antelope Valley. While the Reservoir is managed by PWD, the surrounding lands within Angeles National Forest are managed by the U.S. Department of Agriculture (USDA) Forest Service.

3.10.2 Regulatory Framework

Local

City of Palmdale General Plan

The project area is located mostly within the City of Palmdale, and as such is subject to the guidelines of the Palmdale general plan. The City of Palmdale updated its General Plan in 1993. The City of Palmdale General Plan identifies the types of development that will be allowed, the spatial relationships among land uses, and the general pattern of future development in the city.

The City of Palmdale general Plan also addresses planning issues that may affect or be affected by areas outside of the existing city limits.

The City of Palmdale general Plan contains a Parks, Recreation, and Trails Element designed to guide future development of parks, recreation facilities, multi-use trails, bikeways, and open space areas. Specifically, the following goal is identified within this element.

Goal PRT3: Provide a network of open space areas to provide for passive recreation opportunities, enhance the integrity of biological systems, and provide visual relief from the developed portions of the city; and develop a system of multi-use trails which provide connections to the County trails system and the City of Lancaster trails system.
The General Plan also identifies objectives and policies for attaining the stated goals.

Los Angeles County General Plan

Since the project is located partially in an unincorporated area of Los Angeles County within the Antelope Valley, it is also governed by the policies, procedures, and standards set forth in the Antelope Valley Areawide General Plan. The Antelope Valley Areawide general Plan, in conjunction with the other chapters and elements of the County general Plan, is a coordinated statement of public policy by the County for use in a making public decisions relating to the future of the Antelope Valley. The Antelope Valley Areawide General Plan includes goals and policies relating to open space and recreation within the planning area. Two goals that are relevant to the proposed project include:

- Encourage safety considerations in the planning construction, and use of bikeways in the Antelope Valley;
- Consider land swapping as a means of expanding existing parks, and as a means of locating new parks. Lands for lands directly adjacent to existing parks and for land in more desirable locations should be explored; and

3.10.3 Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the significance of impacts related to Recreation are based on Appendix G of the *CEQA Guidelines*. The proposed project would result in a significant impact to Recreational Resources if it would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment;

A discussion of the impacts and mitigation measures for the proposed project are presented below.

Impacts Discussion

Increased Use and Deterioration of Recreational Facilities

Implementation of the proposed project would enhance reliability and redundancy of the water supply for residents currently living within PWD's service area and for projected population growth in the service area. The recommended strategy would not build new housing or otherwise have a direct impact on population growth in the project area. Therefore, the proposed project would not result in an increase in the use of existing neighborhood and regional parks, or other recreational facilities that would result in a substantial physical deterioration of these facilities. There would be no impact.

Recreational Facilities

Impact 3.10-1: The proposed project could include recreational facilities, which might have an adverse physical effect on the environment. (Less than Significant with Mitigation)

The specific locations and design for many of the proposed facilities associated with the Recommended Strategy have not been established. Many of the proposed facilities, such as storage tanks, pump stations, and wells, could be located on or near existing recreational facilities. Implementation Actions 6 and 7 of the proposed Recommended Strategy would result in the construction of recharge facilities and ASR wells in the North Well Field and East Well Field, which are near open space areas that are considered recreational land uses. These facilities also may be located in close proximity to several parks, including the Antelope Valley Golf Club, Desert Sands Park, and Jackie Robinson Park.

The proposed grade control structure would be located within Littlerock Reservoir which serves as a recreational facility in addition to a water supply facility. The structure would be installed flush with the bottom of the reservoir and would only be visible during the dry season when the Reservoir levels recede. The structure would not impede the use of Littlerock Reservoir, adjacent public facilities, or picnic areas as a recreational facility.

In order to minimize the impacts of proposed facilities on recreational resources, PWD would coordinate with the appropriate jurisdiction to identify ways to minimize impacts of the project on open space and parks. Implementation of **Mitigation Measure REC-1** would minimize impacts to recreational parks and open space land uses.

In addition, the Recommended Strategy would include conveyance pipelines within roadway rights-of-way that have the potential to be constructed near or along designated Class I, II, and III bike paths. The placement of these pipelines in the roadways would temporarily disrupt cyclists utilizing these paths. However, implementation of **Mitigation Measure REC-2** would ensure that potential impacts associated with temporary disruptions to bikeways would be mitigated to less than significant levels.

Mitigation Measures

REC-1: For implementation actions that would construct new facilities on public lands designated as open spaces or parkland, PWD shall coordinate with the appropriate recreation or park agency to identify ways to minimize impacts of project construction and operation on recreational activities. Measures may include but are not limited to:

Project Construction

- Posting of signage indicating dates during which use of recreational areas would be restricted due to construction
- Placement of fencing to isolate construction areas and allow continued use of other areas of recreational parks and facilities
- Timing of construction activities to avoid peak recreational seasons

Project Operation

- Use of vegetation to screen proposed facilities from view of adjacent recreational land uses
- Security fencing to enclose new PWD facilities, as necessary
- Potential land swaps for large projects that may displace substantial amounts of park land or open space

REC-2: For implementation actions that would construct pipelines or other new facilities within designated bikeways, PWD shall coordinate with the applicable jurisdiction to determine whether circulation and detour plans are required to minimize impacts to access to local bikeways. Circulation and detour plans may include the use of signage and flagging of cyclists through and/or around the construction zone.

Significance after Mitigation: Less than significant

References – Recreation

City of Lancaster, General Plan 2030, adopted July 14, 2009.

County of Los Angeles, General Plan, adopted November 25, 1980

City of Palmdale, General Plan, adopted January 25, 1993.

City of Lancaster, *Parks, Recreation, Open Space and Cultural Master Plan*, October 2007

Angeles National Forest, “About Us,” www.fs.fed.us/r5/angeles/about/, December 10, 2010.

3.11 Traffic and Transportation

This section describes the existing traffic and transportation system and the potential impacts associated with the implementation of the proposed SWRP.

3.11.1 Environmental Setting

The project area is located in multiple jurisdictions of the Antelope Valley, including the City of Palmdale and portions of unincorporated Los Angeles County. The Antelope Valley consists of approximately 2,400 square miles of elevated desert terrain in northern Los Angeles County, southern Kern County, and western San Bernardino County. Transportation in the Antelope Valley is composed of an interconnected network of primary roadways with local transit systems, pedestrian and bicycle facilities, and railroads. The Antelope Valley Freeway, or State Route 14 (SR 14) bisects the Antelope Valley from north to south, connecting all cities and communities within the project area. Several regional and major arterial boulevards, as well as an expressway traverse the Antelope Valley. The Antelope Valley Metrolink also runs in a north/south direction.

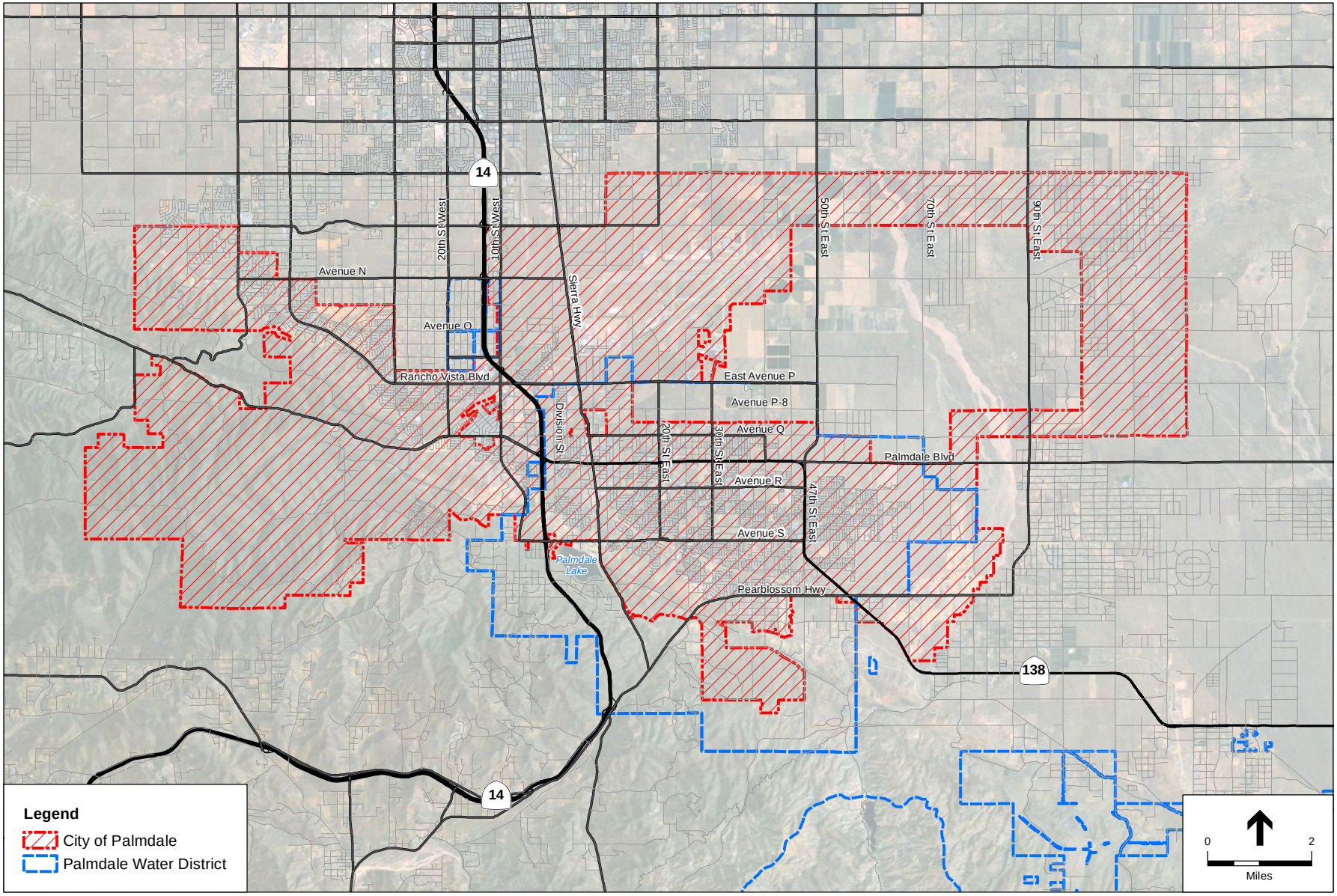
Regional Transportation System

The major roadway corridors in the project area include SR 14, SR 138), and the Angeles Forest Highway (or County Road N-3 or FH-59) The two state routes overlap on a shared segment between Avenue D in Lancaster and Palmdale Boulevard in Palmdale. The Angeles Forest Highway connects Palmdale to SR 2. The SR-14 provides regional access for the entire Antelope Valley to Los Angeles County. The SR 14 runs north into Kern County and south to the San Fernando Valley, which provides Palmdale with regional connectivity through an interchange with Interstate 5 (I-5) (City of Palmdale, 1993). **Figure 3.11-1** shows the major roads within the project area.

Existing Traffic Conditions

Traffic Volumes and Levels of Service

Roadway conditions are analyzed based on Annual Average Daily Trips (AADT), Level of Service (LOS), and Volume to Capacity (V/C) data. The AADT for roadways in the project area are provided in **Table 3.11-1**. LOS is a quality measure describing operational conditions within a traffic stream, generally in terms of service measures such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS is used to define the quality of traffic flow over a specific street or road segments or through individual intersections. LOS represents the relationship between volumes of present traffic or anticipated traffic and the ability of roadway networks to carry them. The six standard LOS for road segments are shown in **Table 3.11-2** in addition to roadway capacities for each level of service. The LOS for local roads that could be potentially impacted by the proposed project are listed in **Table 3.11-3.**



SOURCE: ESA, 2010.

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Figure 3.11-1

Major Roads

TABLE 3.11-1
AVERAGE ANNUAL DAILY TRAFFIC – AREA ROADWAYS

Roadway	Location	Average Daily Trips 2009 (AADT)
SR 14	Palmdale Ave S Interchange	77,000
SR 14	Palmdale South JCT. RTE. 138, Palmdale Blvd	87,000
SR 14	Palmdale, 10TH ST West Interchange	90,000
SR 14	Palmdale, Ave N Interchange	93,000
SR 138	JCT. RTE. 14 North, Antelope Valley Freeway	31,500
SR 138	Palmdale, Sierra Hwy	28,000
SR 138	Palmdale, 10 H ST East	26,500
SR 138	Palmdale, 20TH ST East	26,000
SR 138	Palmdale, 30TH ST East	20,800
SR 138	Palmdale, 35TH ST East	18,800
SR 138	Palmdale, 47TH ST East	21,000
SR 138	Palmdale, Pearblossom HWY/AVE T	16,100
SR 138	JCT. RTE. 18, Palmdale Road	8,100

SOURCE: Caltrans AADT, 2009

TABLE 3.11-2
LEVEL OF SERVICE DEFINITIONS

LOS Rating	Description	Unsignalized Intersections Delay (sec)	Volume to Capacity Ratio
A	Free Flow. No approach phase is fully used by traffic and no vehicle waits longer than one red indication. Insignificant delays.	0-10	0.00-0.599
B	Stable Operation. An occasional approach phase is fully used. Many drivers begin to feel somewhat restricted within platoons of vehicles. Minimal delays.	> 10-15	0.60-0.699
C	Stable Operation. Major approach phase may become fully used. Most drivers feel somewhat restricted. Acceptable delays.	> 15-25	0.70-0.799
D	Approaching Unstable. Drivers may have to wait through more than one red signal cycle. Queues develop but dissipate rapidly, without excessive delays.	> 25-35	0.80-0.899
E	Unstable Operation. Volumes at or near capacity. Vehicles may wait through several signal cycles. Long queues form upstream from intersection. Significant delays.	> 35-50	0.90-0.999
F	Forced Flow. Represents jammed conditions. Intersection operates below capacity with several delays; may block upstream intersections.	> 50	≥ 1.000

SOURCE: Transportation Resource Board, 2000.

TABLE 3.11-3
LOCAL ROADWAY SERVICE LEVELS IN THE PROJECT AREA

Roadway Link	From/To	LOS
SR 14	Ave N/Ave P	C
SR 14	Palmdale Blvd/Ave S	A
SR 2	Ave P/Ave Q	D
SR 2	Ave Q/Palmdale Blvd	A
SR 138	40th St E/47th St E	B
Rancho Vista Blvd	50th St W/Towncenter Dr	A
47th Street East	Palmdale Blvd/Ave S	B
47th Street East	Ave S-8/SR 138	A
Avenue S	SR14/ SR 2	B
Palmdale Blvd	Elizabeth Lake Rd/SR14	B
Palmdale Blvd	SR 14/Division St	D
30th Street East	Ave P/Ave Q	B
35th Street East	Ave Q/Palmdale Blvd	C
Division St	Ave M/Ave O	C
Avenue P-8	25th St W/15th St W	C
Avenue N	SR-14/10th St W	B
Avenue O	10th St W/SR-2	A
10th Street West	Ave N/Ave P	C
70th Street East	Ave R/Ave S-8	C
20th Street West	Ave P/Palmdale Blvd	A

SOURCE: City of Palmdale, 1993.

Major Roadways

Several major roadways provide regional and local function around and within the project area . The major arterial roadways extend throughout the project's vicinity. According to the City of Paldmale's General Plan the following roadways are in the project area. (City of Palmdale, 1993):

SR 138 extends from the San Bernardino County border to Sierra Highway, where it branches into SR 14 and (SR 138). In the City of Palmdale, SR138 has four through lanes west of Old Nadeau Road, and two lanes to the east. Old Nadeau Road is located about 600 feet north of Sierra Highway. The proposed recharge facilities along Littlerock Creek may potentially be built near SR 138 (near West Avenue N and Avenue O) approximately three miles west from where SR-138 branches into SR 14. Recharge facility also may be built in the vicinity of Lower Amargosa Creek, which is adjacent to SR 14. The North Well Field area of the proposed ASR wells could be located near SR138 and SR 14 in the vicinity of the Lower Amargosa Creek.

Palmdale Boulevard/Elizabeth Lake Road has a total of two through lanes west of Foxholm Drive near the City limit, four lanes between Foxholm Drive and 47th Street East, and two lanes east of 47th Street East; in addition Palmdale Boulevard has a full(partial cloverleaf)

interchange configuration with the SR-14 and a raised, landscaped median island between 10th Street West and 11th Street East.

Sierra Highway extends from the City of Mojave, in Kern County, through Palmdale to the I-5/SR-14 interchange to the south. Sierra Highway generally runs adjacent to SR-14. Sierra Highway is considered a regional arterial between Avenue M and Avenue P and a major arterial south of Avenue P. The proposed ASR wells in the North Well Field area could be located in the vicinity of the Sierra Hwy.

25th Street West/Highland Avenue is a two-lane north-south roadway. Between Avenue P and Summerwind Drive, this street is considered a secondary arterial and a major arterial south of that until Elizabeth Lake Road.

47th Street East is an arterial roadway (47th/50th Street East) that has two through lanes. It is a major arterial north of SR-138 and as a secondary arterial to the south. The proposed water treatment plant site is north of SWP aqueduct on the west side of 47th Street East.

70th Street East is a two-lane north-south roadway. It extends from north of Avenue K to Palmdale Blvd. The proposed ASR wells in the East Well Field area would be located along 70th Street East. The proposed Lower Littlerock and Upper Littlerock recharge facilities and the production wells in the vicinity of the East Well Field area also could be located adjacent to 70th Street East.

Avenue P-8 is considered a major arterial and runs east-west. The proposed ASR wells in the North Well Field area and proposed Upper Amargosa recharge facilities could be located near Avenue P-8.

Avenue S is an east-west roadway in the vicinity of proposed ASR wells in the East Well Field area.

Rancho Vista Boulevard/Avenue P is a two-lane highway and is considered a major arterial. Proposed ASR wells in the North Well field Area could be located in the vicinity of this major arterial roadway.

Public Transportation

Bus service within the City of Palmdale is provided through the Antelope Valley Transit Authority (AVTA), a joint powers agency whose members also include the City of Lancaster and Los Angeles County (City of Palmdale, 2003). According to the AVTA several public transportation routes are within the project area. These routes include: Routes 1, 2, 3, 6, 12, and the Lake L.A Express (AVTA, 2010).

Bicycle and Pedestrian Transportation

Existing bikeways and newly-adopted Palmdale Master Plan bikeway routes are located throughout the Antelope Valley. Approximately 24.2 miles of on- and off- street

bike paths have been developed throughout the City (City of Palmdale, 1993). The portion of the Sierra Highway between Avenue H and the Kern County line is designated as a bikeway in the Antelope Valley Areawide Plan. Bicycles within this bikeway use the paved shoulder of the road. In addition, the area along 6th Street from Avenue S through Avenue P is designated as a bike trail within the City of Palmdale. No special lanes have been provided for bicycles in the project area (Palmdale, 1993).Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. The project area currently contains pedestrian facilities along most roadways within the Antelope Valley.

3.11.2 Regulatory Framework

State

California Department of Transportation (Caltrans)

Caltrans manages interregional transportation, including management and construction of the California highway system. In addition, Caltrans is responsible for permitting and regulation of the use of state roadways. Caltrans has jurisdiction over state highways and sets maximum load limits for trucks and safety requirements for oversized vehicles that operate on highways. Caltrans' construction practices require temporary traffic control planning "during any time the normal function of a roadway is suspended" (FHWA, 2003). The project area includes three roadways that fall under Caltrans' jurisdiction: SR 138, SR 14, and Sierra Highway. The following Caltrans regulations apply to potential transportation and traffic impacts associated with the proposed project.

California Vehicle Code (CVC), division 15, chapters 1 through 5 (Size, Weight, and Load). Includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways.

California Street and Highway Code Sections 660-711, 670-695. Requires permits from Caltrans for any roadway encroachment during truck transportation and delivery, includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits, and requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.

Construction in roadway right-of-way, requires that Right-of-Way Agreements to be obtained and filed with Caltrans district right-of-way unit (FHWA, 2003).

Congestion Management Program (CMP)

The Congestion Management Program (CMP) was enacted by the state legislature in 1989 to improve traffic congestion in California. CMP is funded by Proposition III, passed in 1990, which increased the state gas tax by nine cents over a five year period. CMP provide cities and counties with funds for regional road improvements only if the city is in compliance with CMP. In Los Angeles County, the Congestion Management Agency is the Los Angeles County Transportation Commission (LACTC). Southern California Association of Regional

Governments (SCAG) adopted a countywide Congestion Management Plan which determined the necessary steps each City within the County must take to properly administer the elements of the plan. This includes: assisting in monitoring the CMP system; adopting and implementing a trip reduction and travel demand ordinance; analyzing the impacts of local land use discussion on the regional transportation system; and preparing annual deficiency plans for portions of the CMP where levels of service are not maintained (City of Palmdale, 1993). LACTC monitors each City's performance annually to ensure they are in compliance with the CMP. The major roadways that are in the project area that are included in the CMP are SR 14 and SR 138.

Southern California Association of Governments

On May 8, 2008, the Southern California Association of Governments (SCAG) adopted its 2008 Regional Transportation Plan (RTP). The 2008 RTP presents the transportation vision for the SCAG region through the year 2035 and provides a long-term investment framework for addressing the region's transportation and related challenges. The RTP focuses on maintaining and improving the transportation system through a balanced approach and considers system preservation, operation, and management, improved coordination between land-use decisions and transportation investments, and strategic expansion of the system to accommodate future growth.

Local

City of Palmdale General Plan

The following is a selected list of General Plan goals, objectives, and polices that are applicable to the proposed project.

Goal C1: Establish, maintain and enhance a system of streets and highways which will provide for the safe and efficient movement of people and goods throughout the Planning Area, while minimizing adverse impacts on the community.

Objective C1.1: Adopt and implement a street and highway plan designed to meet existing and future circulation needs.

> **Policy C.1.1.9:** Ensure that the cumulative and regional impacts of new development on the circulation system are mitigated to the extent feasible, concurrent with development. Concurrent shall mean that required facilities are installed as needed during various stages of development.

Objective C1.4: Adopt policies and standards for street design and construction which promote safety, convenience and efficiency.

> **Policy C1.4.1:** Strive to maintain a Level of Service (LOS) C or better to the extent practical; in some circumstances, a LOS D may be acceptable for a short duration during peak periods.
>
> **Policy C1.4.2:** Ensure that approvals of new development are correlated with any roadway improvements that would be necessary to maintain the existing level of service or LOS C, whichever is less, and other performance characteristics applicable to the affected roadways. Development shall not be authorized until measures are in place to construct any necessary improvements; these measures may include, but not be limited to, payment of

traffic impact fees or construction of street improvements as required in the conditions of approval.

Objective C1.7: Ensure adequate access within the Planning Area for trucks, while protecting incompatible uses from through truck traffic.

Policy C.1.7.1: Review periodically, and update as necessary, City Code provisions concerning truck routes and enforcement.

Policy C.1.7.2: To the extent feasible, route through truck traffic around existing and future residential neighborhoods.

Policy C.1.7.3: Designate truck routes which will serve commercial/industrial areas while minimizing adverse impacts of heavy truck traffic on these uses.

Goal C2: Reduce the number of trips and vehicle miles traveled by individuals within the Planning Area, to meet regional transportation and air quality goals.

Objective C2.1: Encourage development and implementation of a variety of measures to reduce trips and vehicle miles traveled by existing and future residents and workers within the Planning Area.

Policy C2.1.5: Ensure compliance with the County's Congestion Management Plan.

Los Angeles County General Plan

The following is a selected list of General Plan goals, objectives, and polices that are applicable to the proposed project:

Objectives of Transportation Element

- To achieve transportation system that is responsive to the economic, environmental, energy conservation and social needs at the local community, area and countywide levels.
- To achieve an efficient, balanced, integrated, multimodal transportation system that will satisfy short and long term travel needs for the movement of people and goods.

Policies

Policy 19: Support traffic-operation improvements for improved flow of vehicles.

Policy 22: Avoid or minimize the adverse impacts upon people, businesses and communities caused by development of transportation facilities.

Policy 25: Develop alternative transportation systems and procedures which will effectively reduce vehicle miles traveled (VMT) by automobiles.

3.11.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this EIR and consistent with Appendix G of the *CEQA Guidelines*, the proposed project would have a significant impact on transportation and traffic if it would:

- Conflict with an applicable plan, ordinance or policy establishing measure of effectiveness for the performance of the circulation system, taking into account all modes

of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;

- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards and travel demand measures, or other standards established by the county congestion management agency for designated road or highways;
- Result in change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risk;
- Substantially increase hazards due to a design feature;
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.

Impacts Discussion

Air Traffic Patterns

Construction and operation of the proposed project would not affect air traffic patterns, levels, or locations. For additional discussion of the project impacts associated with compatibility with airport land use plans, please refer to Chapter 3.8, Land Use, Agricultural Resources and Forestry**.**

Traffic Load and Circulation

Impact 3.11-1: Implementation of the proposed project could increase traffic volume on local roadways and affect circulation. (Less than Significant with Mitigation)

Operation

Operation of most proposed facilities, such as storage tanks, pump stations, groundwater wells, and recharge basins, would not require daily staffing but rather require only periodic maintenance. These facilities would not generate a noticeable number of vehicular trips that would affect traffic volume or circulation on local or regional roadways. Operation of the proposed treatment plant would require five dedicated staff that would commute daily to and from the site. In addition, operation of the proposed treatment plant would require chemical and material deliveries, approximately once per week, similar to PWD's existing treatment plant. The addition of up to six daily round trips to/from the proposed treatment plant (or 12 daily individual trips) would not have a substantial impact on local roadways. SR 138 near 47th Street East has approximately 21,000 ADT (see Table 3.11-1). Twelve additional ADTs would be negligible; impacts would be less than significant.

Construction

Construction of all proposed facilities would result in temporary impacts to traffic and circulation, resulting from construction vehicle movements to and from the project sites. Additional vehicle trips would be due to material and equipment hauling and construction worker commutes. Impacts to roadway capacity and circulation would be due to increases in trips per day on local and regional roadways and short-term and intermittent lessening of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles. Temporary impacts to roadway capacity and circulation due to increases in trips per day on local and regional roadways could be significant and would be evaluated at a project-specific level in subsequent CEQA documentation once preliminary project designs are determined for each component of the Recommended Strategy. With implementation of a Traffic Control/Traffic Management Plan as described in **Mitigation Measure TR-1**, temporary construction-related impacts to roadway capacity and circulation would be reduced to less than significant levels.

Construction of proposed pipelines would occur primarily in roadway rights-of-way using trenching techniques for installation, with special jack-and-bore or directional drilling methods used to cross features such as railroad tracks, streams, or large intersections. Pipeline installation in roadways may require lane or road closures to accommodate pipeline trench and staging areas, which would affect traffic flow and circulation in the vicinity of the active work area. These activities may require encroachment permits from Caltrans, the County of Los Angeles, or the City of Palmdale. Encroachment permits would require preparation of traffic management plans to mitigate temporary congestion and traffic delays. In addition, pipeline installation would occur at a rate of approximately 50 to 500 feet per day, and as such, impacts to any one area would occur for a short period of time. Implementation of a Traffic Control/ Traffic Management Plan as required by Mitigation Measure TR-1 would reduce temporary impacts associated with pipeline construction to less than significant levels.

Mitigation Measures

TR-1: PWD shall require the construction contractor to prepare and implement a Traffic Control/Traffic Management Plan subject to approval by the appropriate local jurisdiction prior to construction. The plan shall:

- Identify hours of construction and hours for deliveries, potentially avoiding the A.M. and P.M. peak hours to minimize disturbance on traffic flow.
- Specify both construction-related vehicle and oversize haul routes; alternative routes shall be proposed to avoid traffic disruption.
- Identify limits on the length of open trench, work area delineation, traffic control, flagging, and signage requirements.
- Identify all access and parking restrictions.
- Maintain access and minimize disruption to residence and business driveways at all times to the extent feasible.
- Layout a plan for notifications and a process for communication with affected residents and businesses prior to the start of construction. Advance public notification shall

include posting of notices and appropriate signage of construction activities. The written notification shall include the construction schedule, the exact location and duration of activities within each street (i.e., which lanes and access point/driveways would be blocked on which days and for how long), and a toll-free telephone number for receiving questions or complaints;

- For construction activities within one-quarter mile of a school facility, include a plan to coordinate all construction activities with the Antelope Valley Union High School District and Palmdale School District, at least two months in advance. The Antelope Valley Union High School District and the Palmdale School District shall be notified of the timing, location, and duration of construction activities. The implementing agencies shall require its contractor to maintain vehicle, pedestrian, and school bus service during construction through inclusion of such provisions in the construction contract; and
- Specify street restoration requirements pursuant to agreements with the local jurisdictions.

Significance after Mitigation: Less than significant

Congestion Management Program

Impact 3.11-2: Implementation of the proposed project could conflict with the Los Angeles County Congestion Management Program. (Less than Significant)

Construction

LOS standards for roadways that are part of the Los Angeles County CMP network are intended to regulate long-term traffic increases resulting from the operation of new development, and do not apply to temporary construction projects. Construction of the proposed project would not conflict with the County CMP and would have no impact on LOS standards in the project area.

Operation

The CMP's LOS standard requires that all CMP segments operate at LOS E or better. Local roadways in the Project area all have LOS A, B, C, or D ratings (see Table 3.11-2). Operational maintenance trips that would occur throughout the project area for various facilities would be intermittent and minimal and would not be expected to affect LOS standards on local roadways. Impacts would be less than significant. Operational vehicle trips associated with the proposed treatment plant would affect 47th Street East. Between SR 138 and Avenue S-8, 47th Street East is classified as LOS A (see Table 3.11-3). The addition of up to 12 ADT on this roadway would not change the LOS; impacts would be less than significant.

Mitigation Measures

None required.

Alternative Transportation

Impact 3.11-3: Construction of the proposed project could conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities. (Less than Significant with Mitigation)

Operation of the proposed project would have no long-term impact on demand for alternative transportation or on alternative transportation facilities (i.e., for transit and bicyclists). However, construction of the proposed facilities could disrupt AVTA bus routes within the project area due to construction activities within roadway rights-of-way that may result in partial lane closures or roadway closures and delays. Furthermore, construction of the proposed facilities could result in bike pathway and sidewalk closures in the project area.

Implementation of **Mitigation Measure TR-2** would require consultation with local jurisdictions to develop plans to minimize any potential impacts to bicycle or pedestrian facilities. Implementation of **Mitigation Measure TR-3** would require consultation with AVTA when necessary to minimize impacts to alternative transportation facilities and service. With implementation of these measures, impacts would be less than significant.

Mitigation Measures

> **TR-2:** PWD shall require the construction contractor to consult with local jurisdictions if bicycle or pedestrian facilities would be directly affected by construction activities. If required, the construction contractor shall develop circulation and detour plans to minimize impacts to bikeways and pedestrian facilities. This may include the use of signing and flagging to guide vehicles, cyclists, and pedestrians through and/or around the construction zone.
>
> **TR-3:** PWD shall require the construction contractor to consult and coordinate with the Antelope Valley Transit Authority at least one month prior to construction of pipelines within roadways that coincide with bus routes, to determine whether construction of the proposed project would affect bus stop locations or otherwise disrupt public transit routes. A plan shall be developed to relocate bus stops or reroute buses to avoid disruption of transit service.

Significance after Mitigation: Less than significant

Emergency Access

Impact 3.11-4: The proposed project could result in inadequate emergency access. (Less than Significant with Mitigation)

Fire protection, emergency medical services, and police services within the Antelope Valley regions are provided by the Los Angeles County Fire Department, Los Angeles County Sheriff's Department, and California Highway Patrol. Depending upon the timing, location, and duration of construction activities, construction of the proposed facilities could delay emergency vehicle

response times or otherwise disrupt delivery of emergency services. **Mitigation Measure TR-4** requires coordination with emergency service providers at least one month prior to construction. Adherence to this mitigation measure would reduce any potential impacts regarding emergency services to less than significant levels.

Mitigation Measures

> **TR-4**: PWD shall require the construction contractor to coordinate all construction activities with emergency service providers in the area at least one month in advance. Emergency service providers shall be notified of the timing, location, and duration of construction activities. All roads shall remain passable to emergency service vehicles at all times.

Significance after Mitigation: Less than significant

Incompatible Roadway Use

Impact 3.11-5: Construction of the proposed project may substantially increase hazards due to incompatible roadway uses. (Less than Significant)

The project would involve the hauling of heavy construction equipment. The use of oversize vehicles during construction can create a hazard to the public by limiting motorist views on roadways by the obstruction of space. Oversize loads associated with construction of the proposed project would be in compliance with applicable CVC Sections and California Street and Highway Codes applicable to licensing, size, weight, load, and roadway encroachment of construction vehicles. Furthermore, to reduce hazardous impacts on traffic, the construction contractor would be required to obtain permits from Caltrans and the respective jurisdiction that require specific limitations on all oversize vehicles regarding size and weight. Compliance with these regulatory requirements to reduce hazards caused by incompatible roadway uses during construction would minimize the potential for hazards to other vehicles to less than significant levels.

Mitigation Measures

> None required.

References – Transportation and Traffic

Antelope Valley Transit Authority, *2010 Transit Routes*, accessed http://www.avta.com/transit/Fixed%20Route_web.pdf, accessed on January 20, 2011.

Caltrans, *2009 Construction Manual*, accessed at http://www.dot.ca.gov/hq/construc/constmanual/, accessed March 9, 2011.

Caltrans, *2009 Annual Average Daily Trips,* accessed at http://traffic-counts.dot.ca.gov/index.htm, accessed March 20, 2011.

City of Palmdale, *General Plan*, adopted January 25, 1993.

County of Los Angeles, *General Plan*, adopted 1980.

City of Lancaster, *General Plan*, adopted 2009.

FHWA. "Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways." Federal Highway Administration, 2003.

Southern Califorina Association of Regional Governments (SCAG), *2008 Regional Transportation Plan, 2008.*

Transportation Resource Board, 2000 *Highway Capacity Manual.*

3.12 Utilities and Public Services

This section discusses existing utilities and public service in the project area and provides an analysis of potential impacts to utilities and public services that would result from the proposed project.

3.12.1 Environmental Setting

Water Agencies

The following water districts supply water to the project area: PWD, Los Angeles County Waterworks District 40 (LACWWD40), Quartz Hill Water District (QHWD), and Antelope Valley-East Kern (AVEK.) Each agency is described below:

PWD is a water retailer serving the southeastern portion of the City of Palmdale and areas of unincorporated Los Angeles County. PWD provides their customers with a combination of groundwater and surface water. Groundwater comes from PWD's operation of groundwater wells and surface water is supplied from the SWP and Littlerock Creek. Surface water from Littlerock Creek is stored in Littlerock Reservoir, which is jointly owned by PWD and Littlerock Creek Irrigation District. Both sources of surface water are transferred to Palmdale Lake for local storage. Approximately 60 percent of PWD's water is provided by surface water, while approximately 40 percent comes from groundwater wells. Palmdale Water District (PWD) has a direct entitlement of 21,300 acre-feet from the State Water Project.

LACWWD40 is a water retailer that provides treated potable water to the City of Lancaster, the western portion of the City of Palmdale, and the unincorporated communities of Pearblossom, Little Rock, Sun Village, Rock Creek, Lake LA, Desert View Highlands and northeast Los Angeles County. LACWWD40's water sources include imported SWP water through AVEK and groundwater from its own production wells. Approximately 20 to 40 percent of LACWWD40's water supply is provided by groundwater.

QHWD is a water retailer that provides treated potable water to the community of Quartz Hill, located in the southwest corner of the Antelope Valley in unincorporated Los Angeles County. QHWD's water sources include imported SWP water through AVEK and local groundwater.

AVEK is a wholesaler of raw water that is imported to the Antelope Valley through the SWP. Currently, AVEK has a contractual Table A amount of 141,400 afy from the SWP. The raw water imported from the SWP is treated at one of four water treatment plants in the Antelope Valley: Quartz Hill Water Treatment Plant (WTP), Eastside WTP, Rosamond WTP and Acton WTP. AVEK supplies treated water to LACWWD40, RCSD, and QHWD. AVEK does not have groundwater production wells and does not provide recycled water.

Wastewater

The Los Angeles County Sanitation District (LACSD) Nos. 14 and 20 provide wastewater management services for the Antelope Valley. LACSD No. 14 includes portions of the cities of Lancaster and Palmdale and adjacent unincorporated Los Angeles County areas. LACSD No. 14 owns and operates the Lancaster Water Reclamation Plant (WRP) and the adjoining network of trunk sewers. LACSD No. 20 serves an area that includes the majority of the City of Palmdale and portions of unincorporated County areas. LACSD No. 20 owns and operates the Palmdale WRP and a network of approximately 40 miles of trunk sewers. The project area is within the service area of LACSD No. 20's PWRP.

LACSD is currently the provider of recycled water in the Antelope Valley. The Lancaster WRP has been upgraded to produced tertiary-treated recycled water; the Palmdale WRP is currently under construction to also provide tertiary-treated recycled water. LACWWD40 has an agreement with LACSD for 13,500 afy of recycled water; in addition the City of Lancaster has an agreement for 950 afy and the City of Palmdale has an agreement for 2,000 afy (SWRP, 2010).

Storm Water

The City of Lancaster and the City of Palmdale maintain storm water drainage infrastructure in their respective city limits. The Los Angeles County Flood Control District manages the storm drain system in the unincorporated areas of the Antelope Valley south of Avenue S.

Solid Waste Management

Waste Management of Antelope Valley is the local division of Waste Management, Inc. that provides collection, disposal, recycling, and environmental services to the Antelope Valley. It operates two landfills, the Antelope Valley Recycling and Disposal Facility in Palmdale and the Lancaster Recycling and Disposal Facility in Lancaster. Both facilities accept construction-related debris such as wood, concrete, and asphalt, and each facility can receive up to 1,700 tons of refuse per day.

According to Waste Management of Antelope Valley, the Lancaster Facility collects an average of approximately 1,300 to 1,600 tons of waste per day. Waste Management is requesting a tonnage increase from Los Angeles County to permit deposits up to 3,000 tons per day (Lancaster Specific Plan, 2008). The landfill is projected to stay open and serve the community until 2025.

The Antelope Valley Facility is within the boundaries of the project area, located at 1200 West City Ranch Road in Palmdale. This landfill operates as a Class III landfill and consists of two separate landfills: Landfill 1 (LF 1) and Landfill II (LF II). Materials accepted by the landfill include municipal solid wastes, appliances, tires, clean dirt, concrete, wood waste, and green waste; hazardous materials are not accepted. The maximum permitted capacity for Antelope Valley LF I is approximately 7,400,000 cy, and the maximum permitted daily capacity of LF I is 1,400 tpd (Lancaster Specific Plan, 2008). As of February 2006, the estimated remaining capacity is 1.1 million cy (15 percent). In addition LF II has a daily permitted capacity of approximately

1,800 tpd, and LF II's total remaining capacity is equal to that of its permitted capacity (9.2 million cy), as it is a new facility. The Antelope Valley Facility has received between 1,100 and 1,400 tpd over the past three years (Lancaster Specific Plan, 2008).

Other Utilities

Electricity is provided to the Antelope Valley by Southern California Edison (SCE) and natural gas services are provided by the Southern California Gas Company (SCGC). Cable service to the City of Palmdale is provided by Time Warner Cable and telephone services are provided by Verizon Communication and AT&T.

Police and Fire Protection Services

City of Palmdale

The City of Palmdale receives law enforcement services from the Los Angeles County Sheriff's Department. The unincorporated areas surrounding the City receive law enforcement services from the Sheriff's Department and traffic enforcement services from the California Highway Patrol (CHP). Each agency provides emergency back up for the other. Currently there are two sheriff's stations serving the Antelope Valley, one in Lancaster and the other in Palmdale, with a total patrol area of 1,370 square miles (City of Palmdale 1993). The Palmdale substation is located at 750 East Avenue Q in the City of Palmdale and has approximately 280 sworn in deputies (Conversation with Deputy Palmdale, 2010). The substation is located within the project area.

The City of Palmdale receives fire protection services from the Los Angeles County Fire Department. Fire Stations 24, 37, and 131 are located within the project area (City of Palmdale, 2010).

3.12.2 Regulatory Framework

Federal

The Resource Conservation and Recovery Act (RCRA) (40 CFR, Part 258 Subtitle D) establishes minimum location standards for siting municipal solid waste landfills. In addition, because California laws and regulations governing the approval of solid waste landfills meet the requirements of Subtitle D, the U.S. EPA has delegated the enforcement responsibility to the State of California.

State

California Code of Regulations (CCR)

Pursuant to CCR Title 23, Division 3, Article 2 (Waste Classification and Management) and Article 3 (Waste Unit Classification and Siting), Class III (municipal solid waste) landfills are sited in accordance with criteria that are similar to those found in Subtitle D of RCRA. CCR

Title 27 includes various regulations pertaining to siting, design, construction and operation of solid waste landfills.

California Integrated Waste Management Act of 1989

The California Integrated Waste Management Act of 1989 (Public Resources Code [PRC] Division 30) enacted through AB 939 emphasized conservation of natural resources through reduction, recycling, and reuse of solid waste. AB 939 requires that all cities and counties divert 25 percent of solid waste streams from landfills by 1995 and 50 percent by 2000. In accordance with AB 939, each local agency must submit an annual report to the California Integrated Waste Management Board (CIWMB) summarizing its progress in diverting solid waste disposal.

Protection of Underground Infrastructure

The California Government Code Section 4216-4216.9 "Protection of Underground Infrastructure" requires an excavator to contact a regional notification center (e.g., Underground Services Alert or Dig Alert) at least two days prior to excavation of any subsurface installations. Any utility provider seeking to begin a project that could damage underground infrastructure can call Underground Service Alert, the regional notification center for southern California.

Underground Service Alert will notify the utilities that may have buried lines within 1,000 feet of the project. Representatives of the utilities are then notified and are required to mark the specific location of their facilities within the work area prior to the start of project activities in the area.

California Health and Safety Code

The California Health and Safety Code, Division 104, Part 12, Chapter 5, Article 2, Section 116815, requires all pipes carrying recycled water to be colored purple or wrapped in purple tape. This requirement stems from a concern in cross contamination and potential public health risks similar to those discussed for Title 17. It is also discussed in the California Health Laws Related to Recycled Water.

California Energy Action Plan II

The California Energy Action Plan II is the state's principal energy planning and policy document (California Energy Commission, 2005, 2008). The plan identifies state-wide energy goals, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. In accordance with this plan, the first priority actions to address California's increasing energy demands are energy efficiency and demand response (i.e., reduction of customer energy usage during peak periods in order to address system reliability and support the best use of energy infrastructure). Additional priorities include the use of renewable sources of power and distributed generation (i.e., the use of relatively small power plants near or at centers of high demand). To the extent that these actions are unable to satisfy the increasing energy and capacity needs, clean and efficient fossil-fired generation is supported.

In 2002, California established its Renewable Portfolio Standard program,[1] with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. The California Energy Commission subsequently accelerated that goal to 2010, and further recommended increasing the target to 33 percent by 2020. Because much of electricity demand growth is expected to be met by increases in natural-gas-fired generation, reducing consumption of electricity and diversifying electricity generation resources are significant elements of plans to reduce natural gas demand.

Local

County of Los Angeles Construction Debris Recycling and Reuse Ordinance

The County of Los Angeles Board of Supervisors adopted the Construction and Demolition (C&D) Debris Recycling and Reuse Ordinance on January 4, 2005, which has since been amended in January 2009 by the Los Angeles County Green Building Program. The Ordinance added Chapter 20.87 to the Los Angeles County Code which requires projects in the unincorporated areas to recycle or reuse 50 percent of the debris generated. Its purpose is to increase the diversion of construction and demolition debris from disposal facilities and will assist the County in meeting the State of California's 50 percent waste reduction mandate. Any construction project that requires a demolition or grading permit must submit a Recycling and Reuse Plan.

3.12.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this EIR and consistency with Appendix G of the CEQA Guidelines, applicable local plans, and agency and professional standards, the proposed project would have a significant effect on utilities and service systems if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require new or expanded water supply resources or entitlements;

[1] The Renewable Portfolio Standard is a flexible, market-driven policy to ensure that the public benefits of wind, solar, biomass, and geothermal energy continue to be realized as electricity markets become more competitive. The policy ensures that a minimum amount of renewable energy is included in the portfolio of electricity resources serving a state or country. By increasing the required minimum amount over time, the Renewable Portfolio Standard puts the electricity industry on a path toward increasing sustainability.

- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the projects projected demand in addition to the provider's existing commitments;
- Be served by a landfill with insufficient permitted capacity to accommodate the project solid waste disposal needs;
- Not comply with federal, state, and local statutes and regulations related to solid waste; or
- Effect local and regional energy supplies such that additional electrical capacity is required.

The proposed project would have a significant effect on public services if it would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services such as fire protection, police protection, schools, or parks and other public facilities.

Impacts Discussion

Wastewater Treatment Requirements, Facilities, and Capacity

The Recommended Strategy does not require the construction of wastewater treatment facilities; recycled water would be provided by LACSD from the existing PWRP and LWRP. There would be no wastewater treatment requirements imposed by the RWQCB for the proposed project. There would be no need for LACSD to provide additional wastewater treatment services to implement the proposed project.

Water Treatment Facilities

Implementation of the Recommended Strategy would result in construction and operation of new water treatment and distribution facilities as described in Chapter 2, Project Description. The impacts of implementing these facilities are discussed throughout this Draft PEIR.

Public Services

The proposed project does not include new government facilities associated with public services and would not result in the need for new public services facilities that could result in environmental impacts. The proposed project would construct new water treatment and distribution facilities that would not result in a need for substantial additional police and fire service. If the proposed treatment plant is built, it would require preparation of a Hazardous Materials Business Plan, Risk Management Plan, and Emergency Response Plan that would be submitted and kept on file with local emergency response providers. Local police and fire services may be required to service the proposed facilities in the unlikely event of an emergency. However, this would not require the City of Palmdale or County of Los Angeles to build new facilities to maintain response ratios, service ratios or other measures of performance. The

proposed project would also not result in substantial adverse physical impacts to any local schools, hospitals, parks, or other public facilities because the project is not a direct population generator, such as a residential housing project that would result in impacts to these and other public facilities due to increased use. There would be no impact.

Storm Water Facilities

Impact 3.12-1: The proposed project could result in the construction or expansion of storm water drainage facilities to accommodate storm water runoff. (Less than Significant)

Implementation of the Recommended Strategy would require construction and operation of new facilities (refer to **Table 3.1**), such as new pump stations, storage tanks, groundwater wells, wellhead treatment facilities, and a treatment plant, which would require new onsite drainage features or onsite retention basins to collect, control and direct storm water runoff to existing local drainages. The construction of these facilities would result in an increase in impervious surface area, which could increase localized runoff, but not sufficiently enough to require new offsite storm water drainage facilities or the expansion of existing offsite storm water systems. Impacts are expected to be less than significant. No mitigation is required.

Mitigation Measures

None required.

Solid Waste

Impact 3.12-2: Construction activities associated with the proposed project would generate solid waste that would increase the demand for landfill capacity. (Less than Significant with Mitigation)

The construction of new facilities associated with implementation of the Recommended Strategy (refer to Table 3.1) would generate solid waste, including excavated soils removed during construction of each facility. Excavated soils would be stockpiled and reused onsite to the extent feasible to minimize the need for disposal. Proposed facilities located in unincorporated Los Angeles County would be subject to the County's Construction and Demolition Debris Recycling and Reuse Ordinance requiring at least 50 percent diversion on all construction projects. A private contractor who would haul the waste to a local landfill for disposal would export non-recyclable construction waste for the project. Implementation of **Mitigation Measures UTIL-1** and **UTIL-2** would reduce the amount of solid waste expected to be generated by the proposed project and minimize the need for solid waste disposal. In addition, Antelope Valley LF I and LF II would have sufficient capacity to receive solid waste generated during construction of the proposed project. LF II is a newer facility with total remaining capacity equal to that of its

permitted capacity (9.2 million cy). With implementation of UTIL-1 and UTIL-2, impacts to landfill capacity would be less than significant.

Mitigation Measures

UTIL-1: Project facility design and construction methods that produce less waste or that produce waste that could be recycled or reused more readily, shall be encouraged.

UTIL-2: The contractor shall be required to describe plans for recovering, reusing, and recycling wastes produced through construction, demolition, and excavation activities described in the construction specifications.

Significance after Mitigation: Less than significant

Energy

Impact 3.12-3: Operation of the proposed project would require additional power that could affect local and regional energy supplies. (Less than Significant with Mitigation)

Operation of the proposed project would require energy to operate the proposed 30-mgd treatment plant and operate other new local facilities such as groundwater wells, pump stations, recharge facilities, and turnouts. It is estimated that the proposed 30-mgd treatment plant would require up to 25,000,000 kWH/year to operate. Operation of up to 100 new wells would require up to 28,500 kWh/year. These facilities would be served by SCE and SCGC as the local energy providers. It is not expected that additional power generation facilities would be required to serve the proposed facilities.

Importing water is energy intensive. However, the proposed project would utilize the capacity of existing SWP facilities; the proposed project would not require expansion of aqueduct conveyance capacity or SWP pumping capacity. Additional water would be imported through the SWP when capacity is available. No new offsite electrical transmission or energy generation facilities would need to be built to accommodate the proposed project. As such, impacts to regional energy supplies and energy consumption would be less than significant.

In order to support the California Energy Action Plan II to reduce the state's overall energy usage, the proposed project would need to incorporate energy efficient equipment locally such as PWD system pumps and lighting, to minimize energy impacts. In addition, scheduling PWD system pumps to operate as much as possible during off-peak energy demand periods would also be consistent with state policies for maximizing off-peak power usage for utilities. **Mitigation Measure AQ-2** (see Chapter 3.2, Air Quality and Greenhouse Gas Emissions) would require both energy efficient equipment and off-peak operation of the PWD system. Such energy efficiency measures would reduce the overall energy requirements associated with the proposed project.

In addition, the production and use of recycled water is more energy efficient than imported water. Thus, the greater the use of recycled water to offset the need for imported water, the lower

the demand on local and regional energy supplies and the greater the energy efficiency of the proposed project. Recycled water would not be able to meet all increased demand, as it would only be used for direct non-potable applications or indirect potable applications. However, the use of recycled water could reduce overall energy use because the electricity required to distribute local recycled water would be substantially less than the electricity required to import the equivalent amount of potable water. **Mitigation Measure AQ-3** (see Chapter 3.2, Air Quality and Greenhouse Gas Emissions) would require PWD to promote and encourage the use of recycled water as a potable offset to importing water. Implementation of Mitigation Measure AQ-3 would reduce the overall energy requirements associated with proposed project.

With implementation of Mitigation Measures AQ-2 and AQ-3, impacts to local and regional energy supplies would be considered less than significant.

Mitigation Measures

Implementation of **Mitigation Measures AQ-2** and **AQ-3.**

Significance after Mitigation: Less than significant

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CHAPTER 4
Cumulative Impacts

4.1 Introduction

CEQA requires that an EIR assess the cumulative impacts of a project with respect to past, current, and probable future projects within the region. *CEQA Guidelines* (Section 15355) define cumulative effects as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative impact from several projects is the change in environment which results from the incremental impact of the proposed project when added to other closely related and reasonably foreseeable future projects. Pertinent guidance for cumulative impact analysis is given in Section 15130 of the *CEQA Guidelines*:

- An EIR shall discuss cumulative impacts of a project when the project's incremental effect is "cumulatively considerable", (i.e., the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of current projects, and the effects of probable future projects, including those outside the control of the lead agency, if necessary).
- An EIR should not discuss impacts that do not result in part from the project evaluated in the EIR.
- A project's contribution is less than cumulatively considerable, and thus not significant, if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.
- The discussion of impact severity and likelihood of occurrence need not be as detailed as for effects attributable to the project alone.

The analysis of cumulative effects in this Program EIR focuses on the effects of concurrent construction and operation of the proposed project with other spatially and temporally proximate projects as described below. As such, this cumulative analysis relies on a list of related projects that have the potential to contribute to cumulative impacts in the project area.

4.2 Related Projects

Geographic Scope

Cumulative impacts are assessed for related projects within a similar geographic area. This geographic area may vary, depending on the issue area discussed and the geographic extent of the

potential impact. For example, the geographic area associated with construction noise impacts is typically limited to areas directly adjacent to construction sites, whereas, the geographic area that is affected by construction-related air emissions may include the larger air basin. Construction impacts associated with increased noise, dust, erosion and access limitations tend to be localized but could be exacerbated if development of other improvement projects occurs within the same or adjacent locations as the proposed project. **Table 4-1** summarizes the geographic scope of the analyses for cumulative impacts for each environmental resource area discussed in Chapter 3 of this Program EIR.

TABLE 4-1
GEOGRAPHIC SCOPE OF CUMULATIVE IMPACT ANALYSES

Environmental Issue	Geographic Scope of Cumulative Impact Analyses
Aesthetics	Immediate vicinity of view corridors or viewsheds.
Air Quality and Greenhouse Gas Emissions	Antelope Valley region or the airshed for reactive air pollutants and surrounding vicinity for non-reactive or less reactive pollutants.
Biological Resources	Varies depending on species or habitat. Geographic scope can be the entire area that the species or habitat is known to occur or limited to the immediate area of occurrance.
Cultural Resources	Varies depending on type of resource with potential to be impacted. Usually limited to the immediate area of the resources.
Geology, Soils and Seismicity	Limited to the immediate area of the geologic constraint with the exception of some geologic impacts that may be regional, such as earthquake risk.
Hazards and Hazardous Materials	Project area, surrounding communities, and affected roadways from haul routes.
Hydrology and Water Quality	Drainage basin, watershed, or water body, depending on where the potential impact is located and its tributary area.
Land Use, Agricultural Resources and Forestry	Adjacent communities and applicable land use planning areas.
Noise and Vibration	Project area and immediate surroundings, and affected roadways.
Recreation	Extent of area served by parks or other recreational facilities, e.g., State/City/County parks
Traffic and Transportation	Project area, surrounding communities, and affected roadways.
Utilities and Public Services	Extent of area served by public services affected, e.g., the City of Palmdale.

Geographically, the proposed project is located in the Antelope Valley in northern Los Angeles County. For the purposes of this analysis, we considered projects not only in the service area of PWD and but the greater Antelope Valley area, depending on the environmental resource being considered, when evaluating potential cumulative impacts due to construction and operation of the proposed project. These related projects are listed in **Table 4-2**.

TABLE 4-2
ANTELOPE VALLEY RELATED PROJECTS

Project Name	Project Type	Project Sponsor	Project Implementation
Water Supply Projects			
Upper Amargosa Creek Recharge, Flood Control & Habitat Restoration	Groundwater recharge	City of Palmdale	2012-2015
Semitropic Rosamond Water Banking Authority Antelope Valley Water Bank	Groundwater recharge/banking	RCSD	Built / In progress
AVEK WSSP-1 and WSSP-2 Projects	Groundwater recharge	AVEK	Built
Recycled Water Projects			
LWRP 2020 Facilities Plan	Recycled water treatment and application	LACSD No. 14	Built
PWRP 2025 Facilities Plan	Recycled water treatment and application	LACSD No. 20	In progress
City of Lancaster Division Street Recycled Water Project	Recycled water application	City of Lancaster	Built
City of Lancaster Groundwater Recharge Project	Groundwater recharge reuse project (GRRP)	City of Lancaster	2012-2015
Rosamond Recycled Water Project	Recycled water pipeline, Recycled water application	RCSD	2012-2015
North Los Angeles/Kern County Regional Recycled Water Project	Recycled water backbone pipeline, pump stations, storage tanks, and application	LACWWD40	2012-2015
Regional Recycled Water Project Phase 2	Recycled water pipeline and application	LACWWD40	2011–2012
Wastewater Projects			
LWRP 2020 Facilities Plan	Treatment plant expansion	LACSD No. 14	Built
PWRP 2025 Facilities Plan	Treatment plant expansion	LACSD No. 20	In progress
RWWTP Expansion	Treatment plant expansion	RCSD	Built
Roadway Projects			
SR 138 Corridor Improvement Projects	Roadway widening	Caltrans District 7	Present–2012
Roadway Improvement Projects	Roadway improvements	LA County DPW	2008–2015
10 Year Capital Improvement Program	Roadway widening and improvements	City of Lancaster	2008–2015
10 Year Capital Improvement Program	Roadway widening and improvements	City of Palmdale	2008–2015
Flood Control/Drainage Projects			
Stormwater Drainage Projects	Flood control, storm water	LA County DPW	2008–2015
Energy Projects			
Palmdale Hybrid Power Plant	New power plant	City of Palmdale	2011–2013
Tehachapi Renewable Transmission Project	New transmission line	CPUC and US Forest Service	2009–2013

SOURCES: Caltrans, 2011; LACSD, 2004; County of Los Angeles Department of Public Works, 2005, 2008; City of Lancaster, 2007; City of Palmdale, 2010.

Project Timing

In addition to the geographic scope, cumulative impacts also take into consideration the timing of related projects relative to the proposed project. Schedule is particularly relevant to the consideration of cumulative construction-related impacts, since construction impacts tend to be relatively short-term. However for future projects, construction schedules are often broadly estimated and can be subject to change. Although timing of future projects is likely to fluctuate due to schedule changes or other unknown factors, this analysis assumes these projects would be implemented concurrently with construction of the proposed project between 2015 and 2035.

Related Projects

Cumulative effects could result when considering the effects of the proposed project in combination with the effects of other related projects in the area. For this analysis, other past, present, and reasonably-foreseeable future related projects have been identified. Table 4-2 lists the major capital improvement projects and water resources management projects (including groundwater recharge and recycled water projects) in the project vicinity that are included in the analysis of cumulative impacts. In addition, the analysis of cumulative impacts assumes that throughout the Antelope Valley, planned future development projects will be on-going simultaneously with the proposed project, including residential development, small-scale capital improvement projects, and projects that have not yet been identified.

4.3 Impacts and Mitigation Measures

Implementation of the proposed project is expected to occur in phases between 2015 and 2035. For the purposes of this analysis, the related projects identified in Table 4-2 are all presumed to be implemented within the same 2015 to 2035 timeframe. These related projects, which include water resource, capital improvement, and development projects in the Antelope Valley, may contribute to certain types of cumulative impacts to air quality, noise, hydrology and water quality, and traffic and transportation as described below. There would be no cumulative impacts to aesthetics; biological resources; cultural resources; geology, soils and seismicity; hazards and hazardous materials; land use, agriculture and forestry resources; recreation; utilities and public services. Due to the nature of these resources, any SWRP-related impacts would be mitigated to less than significant levels and collectively would not compound to create cumulatively considerable impacts.

GHG emissions are analyzed in Chapter 3.2, Air Quality and Greenhouse Gas Emissions. GHG-related impacts are considered to be exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective. As a result, the cumulative analysis of GHG emissions is not repeated here. As described in Chapter 3.2, the proposed project would not have a cumulatively considerable impact on GHG emissions or conflict with state goals for GHG reductions.

Air Quality

Impact 4-1: Concurrent construction of the proposed project and related projects in the Antelope Valley could result in cumulative short-term impacts to air quality. (Less than Significant with Mitigation)

Construction of the proposed project along with the identified related projects would contribute additional emissions to existing conditions in the Mojave Desert Air Basin. The project area is in non-attainment for ozone and PM10 (see Chapter 3.2, Air Quality and Greenhouse Gas Emissions). The contribution of additional pollutants to an already impaired air basin could be considered a significant impact. As described in Chapter 3.2, unmitigated missions from construction equipment and worker trips could exceed the AVAQMD daily significance thresholds for NOx emissions. Implementation of **Mitigation Measures AQ-1a** through **AQ-1g** would reduce construction-related emissions and require construction of project facilities in non-overlapping phases so as to keep daily emissions of NOx below the AVAQMD thresholds of significance (i.e. 137 lbs/day). With implementation of these mitigation measures, the impacts associated with construction of the proposed project would be less than significant and would not have a significant short-term incremental cumulative effect to air quality.

Mitigation Measures

Implementation of **Mitigation Measures AQ-1a** through **AQ-1g**.

Significance after Mitigation: Less than significant

Noise

Impact 4-2: Concurrent construction of the proposed project and related projects in the Antelope Valley could result in cumulative short-term impacts to noise. (Less than Significant with Mitigation)

Construction of the proposed project, along with the identified related projects in the Antelope Valley could generate noise that would affect temporarily existing ambient noise conditions in the region. Construction noise would be localized, affecting areas in the immediate vicinity of construction sites. Some of the identified related projects could be constructed simultaneously in areas proximate to, or overlapping geographically with, the proposed project. In particular, construction of some capital improvement projects, such as roadway projects and storm drain projects, could occur simultaneously and within the same streets as the proposed project, particularly proposed pipelines since some exact pipeline alignments have yet to be determined. This could result in a cumulative impact to local ambient noise conditions.

As described in Chapter 3.9, Noise, daytime construction noise is exempt from maximum noise thresholds identified in local noise ordinances. Therefore, noise associated with daytime construction activities would not violate noise ordinances. For the proposed project, implementation of **Mitigation Measure NOISE-1** and **NOISE-2** would restrict construction activities to daytime hours, between 6:30 a.m. and 8:00 p.m. Monday through Saturday, and would require other measures to reduce the effects of construction noise on sensitive receptors to less than

significant levels. With implementation of these mitigation measures, the impacts associated with construction of the proposed project would be less than significant and would not have a significant short-term incremental cumulative effect to noise when considered together with other geographically-proximate capital improvement projects.

Operation of new facilities associated with the proposed project would not result in significant noise impacts, as all project facilities would be designed to be in compliance with noise thresholds at the property boundary in accordance with local City and County noise ordinances. Implementation of **Mitigation Measures NOISE-4** would ensure that such noise thresholds are achieved once project facilities are built and operational. The proposed project would not contribute to a cumulatively significant incremental increase in ambient noise conditions.

Mitigation Measures

Implementation of **Mitigation Measure NOISE-1, NOISE-2,** and **NOISE-4**.

Significance after Mitigation: Less than significant

Traffic and Transportation

Impact 4-3: Concurrent construction of the proposed project and related projects in the Antelope Valley could result in cumulative short-term impacts to traffic and transportation. (Less than Significant with Mitigation)

Construction of the proposed project, along with the identified related projects in the Antelope Valley, could affect traffic and circulation in the region. The effects of construction activities on traffic are due to an increase in the number of vehicles on local roadways (due to material delivery and worker commutes) and physical constraints on roadways if lane or street closures are required. Some of the identified related projects could be constructed simultaneously in areas proximate to, or overlapping geographically with the proposed project. As mentioned above with noise impacts, construction of some capital improvement projects, such as roadway projects and storm drain projects, could occur simultaneously and within the same streets as the proposed project, particularly proposed pipelines since many of the pipeline alignments have yet to be determined. This could result in a cumulative impact to traffic, particularly since the proposed pipelines would involve construction activities within roadways and right-of-ways.

As described in Chapter 3.11, Traffic and Transportation, PWD would implement a Traffic Control/Traffic Management Plan (**Mitigation Measure TR-1**) for each project component as necessary to reduce construction-related effects of the proposed project to less than significant levels. The Traffic Control/Traffic Management Plan should also take into consideration the effects other construction activities occurring simultaneously in the same geographic area. **Mitigation Measure CUM-1** would require PWD to coordinate construction of the proposed project with other agencies in the Antelope Valley to ensure cumulative impacts to traffic and circulation are reduced to less than significant levels.

Operation of new facilities associated with the proposed project would not require a substantial number of new employees for operation and maintenance purposes. Operation of project facilities would not add a substantial number of commuter trips to local or regional roadways. There would be no significant contribution to cumulative impacts to traffic and transportation.

Mitigation Measures

Implementation of **Mitigation Measure TR-1**.

CUM-1: PWD shall communicate and coordinate project construction activities with other municipalities (e.g., City of Palmdale, County of Los Angeles) and agencies (e.g., Caltrans, LA County DPW) in the Antelope Valley. Phasing of project construction shall be coordinated to minimize cumulative impacts to traffic and transportation.

Significance after Mitigation: Less than significant

Hydrology and Water Quality

Project Construction

Impact 4-4: Concurrent construction of the proposed project and related projects in the Antelope Valley could result in cumulative short-term impacts to hydrology and water quality. (Less than Significant with Mitigation)

Concurrent construction of the proposed project and the identified related projects could result in temporary impacts to hydrology and water quality in the project area. Concurrent construction activities could result in increased erosion and subsequent sedimentation, with impacts to local drainages and/or storm drain capacity. Additionally, surface water quality could be affected by construction activities that result in the release of fuels or other hazardous materials to stream channels or storm drains, or discharge from excavation dewatering activities.

As described in Chapter 3.7, Hydrology and Water Quality, PWD would develop and implement storm water BMPs to minimize erosion and sedimentation in accordance with **Mitigation Measure HYD-1**. In addition, implementation of **Mitigation Measures HAZ-1** and **HAZ-2** (see Chapter 3.6, Hazards and Hazardous Materials) would minimize impacts to water quality by preventing discharge of contaminated groundwater or spills of hazardous materials during construction. These mitigation measures would minimize the impact of construction of the proposed project to surface water. The contribution of the proposed project to short-term hydrology and water quality impacts would not be cumulatively considerable.

Mitigation Measures

Implementation of **Mitigation Measures HYD-1, HAZ-1,** and **HAZ-2**.

Significance after Mitigation: Less than significant

Groundwater Quality

Impact 4-5: Operation of the proposed groundwater recharge facilities together with other groundwater recharge projects in the Antelope Valley could result in cumulative impacts to groundwater quality. (Less than Significant with Mitigation)

The use of recycled water for groundwater recharge by the proposed project and other groundwater recharge projects could have a cumulative effect on groundwater quality in the Antelope Valley Groundwater Basin (AVGB). Although the recycled water will be subject to Title 22 requirements, the existing groundwater quality could be affected. Implementation of a pilot project, similar to the first phase of the City of Lancaster's Groundwater Recharge Project, that includes monitoring may be a necessary first step to ensure that the proposed project would not result in significant direct water quality impacts. Mitigation measures to reduce impacts to water quality in the groundwater basin could feasibly include blending requirements or advanced treatment processes. Mitigation requirements would be project specific and additional environmental documentation would be required prior to implementation of a groundwater recharge reuse project (GRRP). The recycled water would be required to meet the level of treatment determined by CDPH to sufficiently protect public health. In addition, CDPH would require a certain blend of recycled water and diluent water at a ratio consistent with Title 22 regulations and CDPH criteria. There would be stipulated residence time for recharged recycled water to remain in groundwater storage prior to extraction, in accordance with minimum time periods stipulated in the CDPH Title 22 Water Recycling Criteria. Monitoring wells may be required between the proposed recharge areas and down-gradient drinking water supply wells. With implementation of all CDPH requirements, the proposed project would not have a cumulatively considerable impact on groundwater quality due to recharge of recycled water.

The use of SWP water or treated potable water for groundwater recharge also could affect water quality in the AVGB. As described in Chapter 3.7, Hydrology and Water Quality, recharge via either surface spreading or ASR (injection) wells could introduce water that is higher in certain constituents relative to the existing groundwater, including arsenic, barium, nitrate, aluminum, chloride, TDS, lead, iron, odor, and zinc. It is possible that groundwater recharge activities with raw imported water or treated water could degrade the quality of local groundwater over time. Implementation of **Mitigation Measures HYD-2, HYD-3,** and **HYD-4** (as described in Chapter 3.7, Hydrology and Water Quality) would ensure groundwater recharge activities associated with the proposed project would not have significant impacts to groundwater quality by requiring development and implementation of a Groundwater Quality Monitoring Plan, a Salt and Nutrient Management Plan, and Groundwater Injection Operations Protocol. Other groundwater recharge projects in the Antelope Valley could similarly affect water quality of the AVGB and together with the proposed project could result in cumulative impacts. Other projects would be subject to similar regulations as the proposed project and likely would be required to implement monitoring programs and participate in the AVGB Salt and Nutrient Management Plan as well. With implementation of Mitigation Measures HYD-2, HYD-3, and HYD-4, the proposed project would not have a cumulatively considerable impact on groundwater quality due to recharge of imported or treated water.

Mitigation Measures

Implementation of **Mitigation Measure HYD-2, HYD-3,** and **HYD-4**.

Significance after Mitigation: Less than significant

Groundwater Levels

Impact 4-6: Operation of the proposed groundwater recharge and recovery facilities together with similar projects in the Antelope Valley could result in cumulative impacts to groundwater levels. (Less than Significant with Mitigation)

Operation of the proposed project would result in recharge of up to 105,000 AF of water over a three month period once every three years, or an average annual recharge of up to 35,000 AFY. Recharged water may include imported water from the SWP, treated surface water sources from Lake Palmdale, and recycled water produced by LACSD No. 20. Recharge activities are anticipated to occur in and alongside existing stream channels, as well as several off-stream basins (refer to Figure 2-1). Recharged water is anticipated to be extracted using existing wells, as well as through up to 66 newly constructed wells. The proposed project would involve extraction of as much water as is recharged and therefore is not anticipated to change the overall water balance within the AVGB. When considered together with other groundwater recharge/recovery projects in the Antelope Valley, the proposed project would not affect groundwater levels in a manner that would be cumulatively considerable on a regional, long-term basis. In addition, the intent of the proposed project is to recharge water in excess of extraction in order to correct for existing overdraft conditions in the AVGB. This would be considered a benefit to the basin.

At a localized level, proposed recharge and extraction facilities associated with the Recommended Strategy could be located near similar facilities for other related projects. As a result, when considered together, the projects could have cumulative impacts on groundwater levels, either in the form of groundwater mounding or lowering of the groundwater table due to simultaneous well operation and groundwater extraction. The potential for the proposed project together with related projects to impact local groundwater levels may be evaluated in subsequent CEQA documentation as specific surface spreading facility locations and well locations are identified and operational protocols are developed. Implementation of **Mitigation Measure HYD-5** (as described in Chapter 3.7, Hydrology and Water Quality) would ensure impacts to groundwater levels due to the simultaneous operation of geographically-proximate recharge and/or recovery projects are modeled and evaluated and appropriate mitigation is developed as necessary.

Mitigation Measures

Implementation of **Mitigation Measure HYD-5**.

Significance after Mitigation: Less than significant

References – Cumulative Impacts

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CHAPTER 5
Growth Inducement

5.1 Introduction

The CEQA Guidelines (Section 15126.2(d)) require that an EIR include a discussion regarding the potential for project-related growth inducing impacts. The CEQA Guidelines provide the following guidance for the discussion and consideration of growth-inducing impacts:

> "Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment."

A project can have direct and/or indirect growth inducement potential. An example of direct growth is a project that involves construction of new housing. An indirect growth inducement effect could occur if a project would establish substantial new permanent employment opportunities or if it would involve a large construction effort with substantial short-term employment opportunities and indirectly stimulate the need for additional housing and services to support the new employment demand. Similarly, a project would have an indirect growth inducement effect if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service.

Water supply availability and service is one of the chief, though not the only, public services needed to support development. Implementation of the Recommended Strategy would help provide the facilities and management actions needed to increase supply to meet future demand associated with planned growth, as well as balance the groundwater basins to minimize further overdraft. As such, implementation of the Recommended Strategy would help to remove water supply availability as one obstacle to further development and population growth, in accordance with local planning documents, within the District boundaries. While adequate water supply would play a role in supporting additional growth in the District, it would not be the single impetus to such growth. Other factors, including General Plans and policies, the availability of wastewater disposal capacity, public schools, transportation services, and other important public

infrastructure, also influence business and residential or population growth. Economic factors, in particular, greatly affect development rates and locations.

5.2 Methodology

In accordance with the *CEQA Guidelines*, implementation of the Recommended Strategy would have an indirect growth inducement potential. As indicated in the CEQA definition above, growth inducement itself is not necessarily an adverse impact. It is the potential consequences of growth, the secondary effects of growth, which may result in environmental impacts. Potential secondary effects of growth could include increased demand on other public services; increased traffic and noise; degradation of air quality; loss of plant and animal habitats; and the conversion of agriculture and open space to developed uses. Growth inducement may result in adverse impacts if the growth is not consistent with the land use plans and growth management plans and policies for the area, as "disorderly" growth could indirectly result in additional adverse environmental impacts. Thus, it is important to assess the degree to which the growth accommodated by a project would or would not be consistent with applicable land use plans.

This section analyzes the nature and extent of growth inducement potential for the SWRP, to ascertain whether it would remove an obstacle to additional growth and development. The analysis includes an assessment of existing and projected population levels, and existing and projected water supply and demand, as well as a discussion of conformance with regional and local general plans. The secondary effects of growth are then assessed along with a discussion of responsible agencies and mitigation policies and measures to reduce these impacts.

5.3 Project Area Population Projections

PWD's primary service area covers approximately 46 square miles and includes the central and southern portions of the City of Palmdale and adjacent unincorporated areas of Los Angeles County. The entire District encompasses an area of approximately 140 square miles overlying more than thirty non-contiguous areas scattered throughout the Antelope Valley (PWD, 2005). Since the District's primary service area boundary does not coincide with the City boundary, population estimates provided by the City do not portray an accurate description of the population within the District. An estimated 75 percent of the population of the City of Palmdale resides in the PWD service area. The PWD's SWRP and 2010 Urban Water Management Plan (UWMP) provide population estimates and projections specific to the District's boundaries. The District population increased from 14,400 in 1960 to approximately 29,000 in 1985, and to about 84,546 in 1995 (Carollo Engineers, 2005). As a result of this substantial population growth, within the 20-year period between 1965 and 1985, water production grew from 4,100 AFY to over 8,000 AFY, and more than doubled in the following five years.

Palmdale has had the highest growth rate of any city in California since 1980 (586 percent), and this rapid development of past years was influenced by the favorable economic climate (Palmdale, 1993). Between 2000 and 2008, the total population of the City of Palmdale increased by over 31,000, at a growth rate of 26.8 percent, which is well above the Los Angeles County rate of 8.9 percent (SCAG, 2009). Currently, population growth in PWD's service area would be

considered flat by historical measures. In 2005, population within the District's service area was approximately 109,845, most of who lived in the City of Palmdale (Carollo Engineers, 2005). As of 2010, population within the District had remained unchanged at approximately 109,395 (RMC, 2011). Nonetheless, the population of the City of Palmdale grew from 138,423 in 2005 to 152,622 in 2010, according to the 2010 U.S. Census, and was the third fastest growing city in Los Angeles County between 2009 and 2010, with a 1.2 percent growth rate (Department of Finance, 2010).

The population projections used for the SWRP and the 2010 UWMP were based on the latest available projections from the Southern California Association of Governments (SCAG), which were part of the 2008 Regional Transportation Plan (RTP) (SCAG, 2008). These population projections are shown in **Table 5-1**. Since the SWRP was prepared, SCAG has published new population growth projections for the City of Palmdale that will be the basis for the upcoming 2012 Regional Transportation Plan (RTP). These growth projections for the City are based on a 2008 population estimate of 148,778, with a projection of 179,727 in 2020 and 206,586 in 2035 (SCAG, 2010). These projections reflect a substantial reduction in predicted growth rates in the City of Palmdale since the 2008 RTP. Given the extent of the current economic downturn, it is not clear when the region will see a return to growth. However, indications are strong that, due to relatively low housing prices compared to the rest of Los Angeles County, strong residential growth will resume in the future. Based on review of the updated Draft Land Use Map for the Town and County area of unincorporated Los Angeles County, the unincorporated parts of the county that are within the District are slated for some future growth (County, 2010). Primarily, the area surrounding Lake Palmdale is planned for the highest residential growth in the unincorporated area, with residential designations of one dwelling unit per acre (as compared to the surrounding area which is planned for one dwelling unit for between 10 and 40 acres).

TABLE 5-1
POPULATION AND WATER DEMAND PROJECTIONS

	2010	2015	2020	2025	2030	2035
Population Projection						
City of Palmdale (SCAG 2008 RTP)	182,663	220,121	257,121	293,971	329,321	363,252
Palmdale Water District (2010 UWMP and SWRP)	109,395	164,312	195,404	225,208	253,791	280,206
PWD Water Demand Projections						
2010 SWRP (AFY)	30,000	40,000	50,000	55,000	60,000	67,000
2010 UWMP (AFY)	19,800	35,000	40,000	45,000	55,000	60,000

SOURCE: RMC, 2011; PWD, 2011.

5.4 PWD Demand Projections

The SWRP water demand projections that form the basis of the Recommended Strategy are based on the latest SCAG population growth projections that were available at the time, from the 2008

RTP. The SWRP acknowledges that the document is meant to serve as a guide for future planning and is based on the best available information at the time. The SWRP is not meant to be static but rather updated every five years in conjunction with the UWMP planning process. Since preparation of the SWRP, PWD has prepared its 2010 UWMP, which provides updated demand projections for the PWD service area. The 2010 UWMP acknowledges the flat growth rate in the District between 2005 and 2010, and as a result the demand projections in the short term and long term have been scaled back, as shown in Table 5-1. Through the UWMP process, the District can more accurately predict and respond to growth and the accompanying demand for water.

5.5 Palmdale General Plan Goals and Policies

Given the dramatic historical increase in population and the projected future growth, the City of Palmdale General Plan has recognized the need to identify policies and programs designed to address and manage its future growth.

Palmdale General Plan

The Land Use Element of the Palmdale General Plan addresses the rapid growth and resulting development patterns which have occurred in Palmdale, and establishes a framework for focusing future growth in a logical manner (Palmdale, 1993). In general, PWD serves the eastern half of the City of Palmdale, and adjacent unincorporated areas of Los Angeles.

Goal PS2: Ensure that all development in Palmdale is served by adequate water distribution and sewage facilities.

Objective PS2.1: Require that all development be serviced by water supply systems meeting minimum standards for domestic and emergency supply and quality.

> **Policy PS2.1.4**: Support water suppliers and other jurisdictions within the Antelope Valley in studying the current status and projected needs for water supply and delivery.
>
> "The City is committed to pursuing all available means of providing adequate services and facilities to meet the demands of the community's needs, so as to maintain and enhance the quality of life for its residents" (Palmdale, 1993).

Palmdale Strategic Plan

In addition to the General Plan, the Palmdale Strategic Plan was developed to chart a course and create a vision for the future of the city that will ensure financial viability and standards of living. The Strategic Plan identifies long-term direction, short-term goals, and action steps to manage future population growth.

> **Strategic Goal Water 1**: Comprehensively address all sources of water (State Water Project supplies, groundwater, surface runoff and conservation efforts) to maximize the resources available to both sustain existing development and promote future growth.
>
> **Strategic Goal G1**: Review Zoning Ordinance standards of development with the intent of upgrading; specifically, focus on adding measures to increase the degree to which future development adds to a sustainable community by conserving water and energy and minimizing environmental impacts.

Strategic Goal G2: Review application and impact fees to ensure that new development is not subsidized by existing residents.

5.6 Growth Inducement Potential

Implementation of the SWRP would not have a direct growth inducement effect, as it does not propose development of new housing that would attract additional population. Further implementation of the SWRP would not result in substantial permanent or even short-term construction employment that could indirectly induce population growth by establishing new employment opportunities.

Implementation of the SWRP would have an indirect growth inducement potential, as it would assist in removing water supply availability as a potential obstacle to future population growth in the region. The SWRP identifies a Recommended Strategy that would increase potential water supplies in PWD's service area from approximately 30,000 AFY to up to 67,000 AFY to meet projected demand in 2035. As stated in Chapter 2, the SWRP is meant to serve as a guide to PWD Board and staff as it develops and updates its other planning documents, such as the recently-adopted 2010 UWMP. The SWRP is not intended to be a static document but rather a document that is revisited and updated every five years along with PWD's UWMP. The 2010 UWMP has revised the projected demand in PWD's service area to be 60,000 AFY rather than 67,000 AFY by 2035. The SWRP identifies a means to meet 2035 water demand levels and eliminate that the water balance deficit in the PWD service area, and identifies a Recommended Strategy of projects and actions to accomplish these goals. The SWRP also acknowledges that one of the uncertainties related to projections of water demand is population growth. The SWRP states that PWD will proceed with plans to acquire new water supplies to meet demand while incorporating strategies to delay acquisition if necessary until projected demand reaches needed levels.

If the PWD implements the SWRP in a manner that results in increased capacity beyond the actual projected growth, the proposed project could result in direct growth inducement. However, the Recommended Strategy would delay acquisition of water supplies if necessary, until projected demand reaches needed levels. In particular, the SWRP has a strategic objective to "create and maintain options for future acquisition of imported water *as need arises*" (emphasis added) (PWD, 2010). PWD would work to protect both existing supplies and future opportunities by being proactive and a leader as operation and management of the SWRP continues to evolve.

5.7 Secondary Effects of Growth

The local jurisdictions that govern land use and development in the District include the City of Palmdale and the County of Los Angeles. The adopted General Plan documents guide the type, location, and level of land use and development. Both of these jurisdictions have assessed the growth-related impacts associated with planned land use and growth allowed under their General Plans and the CEQA EIRs they have prepared on those plans. In addition, SCAG, the regional authority charged with providing a framework for coordination of orderly regional growth and development, has prepared the Regional Comprehensive Plan (RCP) (SCAG, 2008), which combines regional planning efforts into a single focused document. The RCP addresses growth management as well as several core elements including housing, transportation, air quality, and

water. The principal objectives of the RCP are to coordinate regional and local decisions with respect to future growth and development and to minimize future environmental impacts. SCAG has also prepared the 2008 RTP and an associated EIR (2008). The RTP acts as a long-term planning and management plan for the regional transportation system, providing mitigation measures to off-set the impacts of growth projected in the RCP. The RTP EIR identifies significant unavoidable impacts in a number of issue areas, but offers management plans and policies for individual local jurisdictions.

It is these growth-related impacts associated with land use and growth planned and approved by the local land use jurisdictions that constitute secondary effects of growth associated with the SWRP. Following is a discussion of key environmental areas where secondary effects of growth are expected to occur. These impacts are addressed in the applicable jurisdiction's planning documents and related CEQA analyses.

Air Quality

Population growth in the PWD service area would result in continued intermittent construction activities for new development scattered throughout the region. These construction activities would result in emission of air pollutants. Increased development in the region would also result in an increase in operational emissions of industrial developments. Additionally, increases in regional population would also increase traffic in the region, resulting in increased emissions from vehicles. With these factors contributing to air quality degradation, growth is generally considered to have a significant unavoidable impact on air quality.

Air quality is primarily regulated at the state and regional levels. The CARB is responsible for establishing and reviewing the state ambient air quality standards, compiling the California State Implementation Plan (SIP) and securing approval of that plan from U.S. EPA. The proposed project is located the western portion of the Mojave Desert Air Basin (MDAB.) The Antelope Valley Air Quality Management District is the local air district with jurisdiction over the project area. The AVAQMD has adopted an Air Quality Management Plan (AQMP) for determination of the significance of a project's contribution to local or regional pollutant concentrations. In addition, the Air Quality Attainment Plan (AQAP) establishes a program of rules and regulations directed at attainment of state and national air quality standards. Accordingly, conformance with the AQAP for development projects is determined by demonstrating compliance with local land use plans. All development projects within the AVAQMD will be required to comply with existing rules as they apply to each specific project.

The AVAQMD has adopted a variety of attainment plans for a variety of nonattainment pollutants. **Table 5-2** summarizes the applicable attainment plans prepared by the AVAQMD. These plans provide measures to reduce pollutant loads in the local air basins by a certain date to comply with federal air quality standards.

TABLE 5-2
AIR QUALITY ATTAINMENT PLANS

Name of Plan	Date of Adoption	Applicable Area	Pollutant(s) Targeted	Attainment Date
AVAQMD 2004 Ozone Attainment Plan (State and Federal)	4/2004	Entire District	NO_x and VOC	2007
AVAQMD Federal 8-Hour Ozone Attainment Plan	5/20/2008	Entire District	NO_x and VOC	2021

SOURCE: AVAQMD, CEQA Guidelines, 2008.

The County and municipalities generally support efforts to minimize air quality degradation with policies that:

- Pledge cooperation between local, regional, and state agencies to establish comparable air quality elements and implementation programs;
- Support and expand public transit to reduce emissions from vehicle trips;
- Provide incentives to reduce work-related vehicle trips (including HOV lanes); and,
- Support legislation to promote cleaner fuels.

Although implementation of these policies and mitigation measures would reduce growth-related impacts on air quality, impacts may remain significant.

Biological Resources

Development associated with growth would remove vegetation and result in the loss of habitat for some biological species. Growth would result in the conversion of open spaces to developed uses, potentially resulting in fragmentation of existing wildlife corridors. Additionally, increased development may result in a loss of riparian and wetland habitats. Existing biological communities in the PWD service area that may be affected are described in more detail in Chapter 3.3, Biological Resources.

Local jurisdictions, including the municipalities and the County, have developed policies and mitigation measures through their general plans and the associated EIRs that help identify and preserve biological communities. Additionally, federal and state agencies, including the USFWS and the CDFG, require permitting and otherwise restrict construction or development activities within areas containing sensitive biological species. The federal Endangered Species Act requires permits for actions that could result in the direct loss of listed species including the desert tortoise. Although implementation of these policies and mitigation measures would reduce growth-related impacts on biological resources, impacts may remain significant.

Hydrology, Water Supply and Water Quality

Population growth in the region would result in increased water demand and wastewater production, which would require improvement and enlargement of utilities in order to meet

demand levels and wastewater treatment requirements. Additionally, an increase in development resulting from population growth would result in increased areas of impermeable surfaces. This may contribute to increases in storm water runoff and water quality degradation. Municipalities and the County address these issues with policies aimed towards:

- Cooperating with federal, state, and local agencies responsible for water basin management to compile water quality and water demand data;
- Limiting development to areas where utilities infrastructure is already in place and where adequate water supply is shown to be available;
- Encouraging the development of water reclamation systems and the use of reclaimed wastewater, where feasible; and,
- Encouraging water conservation.

Water quality issues are also regulated at the regional level by RWQCB. The RWQCB enforces implementation of the NPDES to address both storm water/non-point source pollution and point sources. With respect to water supply for consumptive use, the requirements of California State Senate Bills 610 and 221 recently enacted in the State of California require that new developments of certain size obtain verification of the availability of water to supply the development prior to approval. PWD coordinates with local municipalities to assess that adequate water supplies are available for existing and planned development. Although implementation of these policies and mitigation measures would reduce growth-related impacts on hydrology and water quality, impacts may remain significant.

Land Use, Open Space and Agriculture

Population growth would result in the conversion of existing open space and/or agricultural land uses to developed municipal land uses. The conversion of open space is partially addressed by policies related to biological resources. In addition, local municipalities and the County set forth policies to support the preservation of open space and agricultural land. These agencies can establish zoning and land use designations to encourage the preservation of open space, for example by requiring large lot sizes, clustering developments, designating areas of unique resources (sand dunes, hot springs, etc.). Municipal and County general plans also set forth goals of acquiring and purchasing open space areas for preservation and establishing local and regional trail networks.

Noise

Population growth may result in increased noise levels in developed areas. Construction activities for development projects would contribute to increases in noise levels. Where development would result in a higher density of municipal or urban land uses, noise levels could be expected to increase. Additionally, increased traffic would result in increased noise levels. The municipalities and the County reduce these impacts of noise through policies that:

- Establish interior and exterior noise standards for different land uses and ensure that construction and operation of new developments do not exceed those standards;

- Establish land use compatibility standards to ensure that noise sensitive developments are not impacted by nearby noise-generating land uses; and,
- Require the inclusion of noise buffering measures in the design of new roadways and transportation corridors.

Although implementation of these policies and mitigation measures would reduce growth-related impacts on noise levels, impacts may remain significant.

Traffic

As population in the region grows, the number of vehicles on roadways throughout the region would increase. Accommodating increased traffic volumes would generally require increasing the transportation infrastructure in the region. SCAG's RTP offers long-term planning and management guidelines for the regional transportation system. The RTP EIR provides mitigation measures to off-set the impacts of growth projected in the region. Additionally, municipalities and the County set forth general plan policies to:

- Improve and maintain roadways to accommodate existing and projected traffic volumes;
- Ensure that the roadway system is safe and efficient; and,
- Provide diverse and effective public transit to reduce traffic volumes.

Although implementation of these policies and mitigation measures would reduce growth-related impacts on traffic, impacts may remain significant.

Summary

While it is likely that implementation of the Recommended Strategy (increasing water supplies within PWD) would indirectly induce growth by removing an obstacle to growth, this would occur in a manner that is consistent with that envisioned in the applicable General Plans. There is the potential that this growth could result in significant secondary effects to environmental resources that are evaluated in this EIR. These significant and unavoidable secondary effects have been identified by the local land use planning entities. The importation of water to meet the growing demand actually eliminates the impact to public services that this planned growth creates.

The Recommended Strategy provides water for planned growth. PWD does not have the authority to make land use decisions to halt or alter growth and development patterns or approvals. Nor does it have the authority or jurisdiction to address many of the potentially significant, secondary effects of planned growth. Authority to implement those measures lies with the City of Palmdale and the County of Los Angeles. PWD does have the authority to take actions and implement projects to help mitigate the secondary effects of growth on water resources and water supply services within the service area. Implementation of the Recommended Strategy is, in effect, mitigation for the effects of planned growth on groundwater resources and water supply services.

The SWRP identifies water demands associated with planned potential population growth that is greater than projected in the District's 2010 UWMP and may exceed population projections in the upcoming 2012 RTP. Importing more water than needed to meet actual demands would be considered directly growth inducing. **Mitigation Measure GROWTH-1** would ensure that water supplies do not exceed demands in the future to avoid causing direct growth inducement. Mitigation Measure GROWTH-1 would not mitigate previously-identified significant impacts associated with planned growth, as described above. However, mitigation of such impacts is not within the authority or jurisdiction of PWD. Nonetheless, since the new water supplies would reduce an obstacle to growth, the proposed project would indirectly contribute to secondary effects of that growth. Some of these secondary effects as described above are significant and unavoidable.

Mitigation Measure

GROWTH-1: PWD will update the implementation schedule for the SWRP every five years or as necessary to ensure that water supplies do not out-pace actual demands.

Significance after Mitigation: Significant and unavoidable

References – Growth Inducement

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SCAG. *Final 2008 Regional Comprehensive Plan: Helping Communities Achieve a Sustainable Future.* 2008.

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CHAPTER 6
Alternatives Analysis

An EIR must describe a range of reasonable alternatives to the proposed project or alternative project locations that could feasibly attain most of the basic project objectives and would avoid or substantially lessen any of the significant environmental impacts to the proposed project. The alternatives analysis must also include the "No Project Alternative" as a point of comparison. The No Project Alternative includes existing conditions and reasonably foreseeable future conditions that would exist if the project were not approved (*CEQA Guidelines* Section 15126(d)). The environmental impacts associated with the alternatives are evaluated relative to the impacts associated with the proposed project.

PWD's Recommended Strategy (proposed project) as identified in the SWRP is described in detail in Chapter 2 of this document. Chapters 3, 4, and 5 assess the potential impacts of implementing the proposed project, which includes potential facility siting, facility construction, and operational impacts. This section evaluates alternatives to the proposed Recommended Strategy, including the No Project Alternative.

6.1 Proposed Project Summary

As stated earlier in Chapter 2, the objectives established for the SWRP are to:

- Ensure a water supply capable of meeting overall annual water demand on a year-to-year basis through 2035.
- Improve water reliability by increasing the number of water sources to supplement the system when an individual source (i.e., imported SWP water) becomes restricted or unavailable.
- Increase operational flexibility by creating redundancy within the water conveyance and storage system.
- Implement a water supply strategy that is consistent with the mission, vision, and core values of PWD.

The SWRP identifies a Recommended Strategy that would increase potential water supplies in PWD's service area from approximately 30,000 AFY to up to 67,000 AFY to meet projected demand in 2035.

Summary of Potentially Significant Impacts

Chapters 3, 4, and 5 provide analyses of potentially significant impacts that could result from implementation of the SWRP Recommended Strategy. As summarized below in **Table 6-1** and in

Table ES-1 the only significant and unavoidable impact associated with the proposed project is associated with growth inducement. The proposed project would remove an obstacle to growth within PWD's service area and would contribute to secondary effects of growth that would be significant and unavoidable (see Chapter 5).

TABLE 6-1
SUMMARY OF PROJECT IMPACT ANALYSIS

Issue Area	Significance Determination
Aesthetics	LSM
Air Quality and GHGs	LSM
Biological Resources	LSM
Cultural Resources	LSM
Geology, Soils, and Seismicity	LSM
Hazards and Hazardous Materials	LSM
Hydrology and Water Quality	LSM
Land Use, Agriculture, Forestry	LSM
Noise	LSM
Recreation	LSM
Traffic and Transportation	LSM
Utilities and Public Services	LSM
Cumulative Impacts	LSM
Growth Inducement (Indirect)	SU

LSM = Less than Significant with Mitigation
PS = Potentially Significant
SU = Significant and Unavoidable

SOURCE: ESA 2011.

6.2 Development of Project Alternatives

PWD conducted an alternatives screening analysis that led to the identification of the Recommended Strategy in the SWRP. The Alternatives Analysis Technical Memorandum (TM) (RMC, 2010) presented the alternatives that were developed for the SWRP and identified the evaluation process and criteria used to eliminate certain alternatives. It included three primary steps: (1) identifying a full suite of water supply and demand management options; (2) narrowing and refining options; and (3) evaluation using a system alternative decision tree.

Option Development

Prior to creating individual alternatives comprised of multiple supply and demand management measures, a variety of individual water supply and demand management options were developed. Options were identified for each of six water supply and demand management sources, including imported water, local groundwater, out-of-basin banking/local recharge, recycled water, conservation, and Littlerock Reservoir. The options included a variety of banking and recharge

locations; groundwater pumping options; a suite of options related to different recycled water sources and uses; differing levels of conservation; and dredging options for Littlerock Reservoir.

Refining Options

After evaluating the options for each of the six water supply and demand management strategies, they were then narrowed down and refined for later use in the development of alternatives. Some options were considered universally acceptable and were included in all alternatives.

- Only the highest level of conservation option would be selected, which would offset between 1,300 and 2,600 AFY of demand.
- Only the one-time slurry dredging option for Littlerock Reservoir would be selected to result in 500 AFY of additional supply.
- All alternatives would include non-potable reuse to offset 1,720 AFY of potable demand.
- All alternatives would utilize local groundwater recharge through spreading basins.

Decision Tree

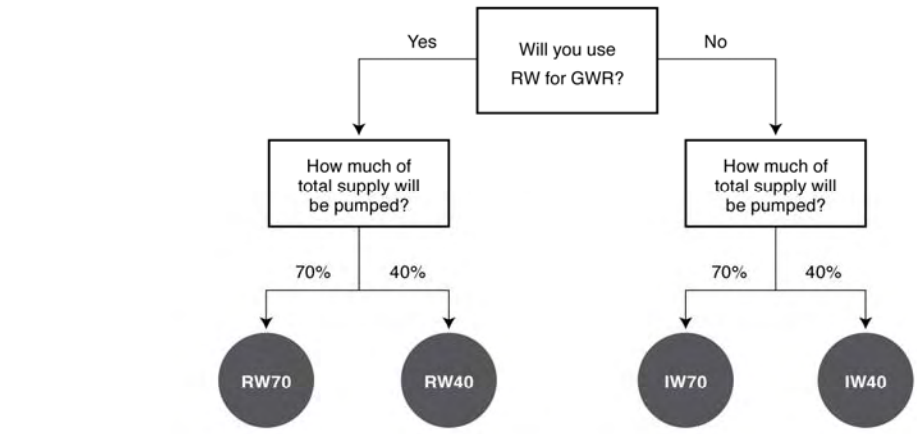
Following the process of narrowing options, the Alternatives Analysis TM then formed the remaining options into a series of supply alternatives using a decision tree system. This decision tree was created to provide a process by which alternatives could be created by answering key questions. The decision tree allowed for the organization of the options in terms of management decisions that would allow PWD to meet demand, the primary objective of the SWRP. Before the decision tree was created, a set of supply and demand management components to be included in every alternative were selected, based on the list of options described above. These foundational components included:

- 1,300 to 2,600 AFY of conservation
- At least 13,000 AFY of new groundwater well capacity (18 new wells)
- At least 13,000 AFY of local groundwater recharge
- 10,000 AFY of non-State Water Project Water (referred to in the Alternatives Analysis TM as Water X)
- 1,720 AFY of recycled water for non-potable use.

The decision tree then used a series of three questions to further refine each of the alternatives, as shown below in **Figure 6-1**.

The decision tree resulted in four project alternatives, which are described in detail below. In addition, as required by CEQA, the No Project Alternative is included for analysis, as well as an alternative that maximizes the use of recycled water and conservation and minimizes imported water.

FIGURE 6-1
SYSTEM ALTERNATIVE DECISION TREE



SOURCE: RMC, 2011.

Palmdale Water District Strategic Water . 210170

Figure 6-1
System Alternative Decision Tree

6.3 No-Project Alternative

Under the No Project Alternative, PWD would not implement the SWRP. The existing supply of water would not be enhanced by increased imported supply, increased groundwater storage, or increased use of recycled water and conservation. Future demands generated by a forecasted increase in population growth would not be met, and current deficiencies in groundwater supply would not be resolved. PWD would not be able to adequately provide water services to its existing or projected customer base. This could result in stalled development and economic growth within the service area, exacerbated overdrafting of the groundwater supply, and reliance on an overall water supply that is undiversified and unreliable. PWD would work with the City to coordinate the future rate of development within the service area with the ability of the water provider to meet its demand.

6.4 Diversified Storage Alternative (IW-40)

This alternative is classified as having a highly diversified storage system for supplies. It would institute a moderate amount of local groundwater recharge and would utilize out-of-basin banking. In this alternative, 40 percent of demand would be met by pumping existing and recharged (with imported supplies) groundwater. A listing of the components of the Diversified Storage Alternative (IW-40) is shown below in **Table 6-2**.

TABLE 6-2
ELEMENTS OF PROPOSED PROJECT AND ALTERNATIVES

Water Supply Elements	Current Volumes (AFY)	Proposed Project (AFY)	IW-40 (AFY)	IW-70 (AFY)	RW-40 (AFY)	RW-70 (AFY)	MAX RW+CON (AFY)
Imported Water	12,000	47,000	62,000	62,000	55,500	48,260	31,000
Recycled Water Master Plan	None	2,800	1,720	1,720	1,720	1,720	2,800
Recycled Water/Groundwater Exchange	None	6,000	0	0	0	0	6,000
Recycled Water Replenishment	None	Optional	0	0	6,500	12,000	15,000
Littlerock Reservoir	4,000	4,500	4,500	4,500	4,500	4,500	4,500
Conservation: Active	250	3,600	1,300	1,300	1,300	1,300	3,600
Conservation: Passive	None	4,100	0	0	0	0	4,100
Native Groundwater Production	12,000	---	---	---	---	---	---
TOTAL WATER SUPPLY	**28,250**	**67,000**	**69,520**	**69,520**	**69,520**	**67,780**	**67,000**
Surface Recharge Facilities	None	35,000	13,000	35,000	13,000	35,000	35,000
Groundwater Production	12,000	47,000	25,000	47,000	25,000	47,000	47,000
New Water Treatment Plant?	None	Optional	Yes	No	Yes	No	No
External Groundwater Banking?	None	Optional	Yes	No	Yes	No	No

SOURCES: RMC, 2010; ESA, 2011.

6.5 Local Storage Alternative (IW-70)

The Local Storage Alternative would rely on a large volume of imported water for groundwater recharge. In this alternative, 70 percent of demand would be met using existing and recharged groundwater, and the alternative depends mainly on groundwater pumping to meet demand (as opposed to surface water treatment). The ratio of local groundwater and surface water delivered to customers is much higher than the Diversified Storage Alternative (IW-40) and eliminates the need for external groundwater banking for storage. A listing of the components of the Local Storage Alternative (IW-70) is shown in **Table 6-2**.

6.6 High Diversification Alternative (RW-40)

The High Diversification Alternative would have a high level of diversified water supply sources to meet demand. In this alternative, advanced treated recycled water would be used to blend with imported water for a moderate amount of local groundwater recharge, a new water treatment plant would be installed, and out-of-basin water banking would be utilized. As with the Diversified Storage Alternative, 40 percent of demand would be met pumping existing and recharged groundwater. Because of the 40 percent of supply limitation, the majority of demand would still be met through treated surface water and some imported supply would be stored in external water banks. Unlike the Diversified Storage Alternative, the available supply would be

comprised of recycled water and imported water, thereby reducing need for imported water. A listing of the components of the High Diversification Alternative (RW-40) is shown in Table 6-2.

6.7 Self Reliance Alternative (RW-70)

The Self Reliance Alternative would have a lower level of reliance on imported water supplies and external agencies. In this alternative, advanced treated recycled water would be used to blend with imported water for a moderate amount of local groundwater recharge, and 70 percent of demand would be met using existing and recharged groundwater. This alternative would not require external groundwater banking, given the high ratio of local pumping and recharge. A listing of the components of the High Diversification Alternative (RW-70) is shown in Table 6-2.

6.8 Maximize Recycled Water + Conservation Alternative (MAX RW+CON)

This alternative would have the highest level of reliance on recycled water, both for direct non-potable applications (e.g., irrigation) or indirect potable applications (i.e. groundwater recharge). Similar to the proposed project, this alternative would include 2,800 afy of potable offset associated with PWD's Recycled Water Master Plan (Implementation Action 2), including an additional 6,000 afy for the recycled water/groundwater exchange program (Implementation Action 3) and conservation program targets of 3,600 AFY (active) and 4,100 AFY (passive) (Implementation Action 5). Unlike the proposed project, this alternative would rely on 15,000 afy of recycled water for groundwater recharge in a local banking program. No external water bank is included. Due to the level of reliance on recycled water, this alternative also includes the lowest amount of imported water, requiring only 31,000 afy of imported water by 2035, or an increase of 19,000 afy.

6.9 Summary of Environmental Impacts of Alternatives

A summary of the alternatives analysis is provided in **Table 6-3**, which provides a comparison of the proposed project to each alternative with respect to project objectives and project impacts.

No Project Alternative

Under the No Project Alternative, PWD would not implement the Recommended Strategy. The impacts associated with the proposed project as described in Chapter 3.0, 4.0 and 5.0 would be avoided under the No Project Alternative. However, none of the project objectives would be met. The existing supply of water would not be enhanced by increased imported supply, increased groundwater storage, or increased use of recycled water and conservation. Future demands generated by a forecasted increase in population growth would not be met, and current deficiencies in groundwater supply would not be resolved. Exacerbated overdrafting of the groundwater basin would likely occur. PWD would not be able to adequately provide water services to its existing or projected customer base. As a result, the No Project Alternative is not a feasible alternative.

TABLE 6-3
SUMMARY OF ALTERNATIVES ANALYSIS
RELATIVE IMPACTS AS COMPARED TO THE PROPOSED PROJECT

Issue Area	Proposed Project	No Project Alternative	IW-40	IW-70	RW-40	RW-70	MAX RW+CON
Meets Project Objectives?	Yes	No	Yes	Yes	Yes	Yes	Yes
Environmental Impacts							
Aesthetics	LSM	-	0	-	0	-	-
Air Quality and GHGs	LSM	-	-/+	-/+	-/+	-	-/-
Biological Resources	LSM	-	-	-	-	-	-
Cultural Resources	LSM	-	-	-	-	-	-
Geology, Soils, and Seismicity	LSM	-	0	0	0	0	0
Hazards/Hazardous Materials	LSM	-	0	-	0	-	-
Hydrology and Water Quality	LSM	+	-/+	-	-/+	-	-
Land Use, Agriculture, Forestry	LSM	-	-	0	-	0	0
Noise	LSM	-	-	-	-	-	-
Recreation	LSM	-	0	0	0	0	0
Traffic and Transportation	LSM	-	-	-	-	-	-
Utilities and Public Services	LSM	-	+	+	+	-	-
Cumulative Impacts	LSM	-	-	-	-	-	-
Growth Inducement (Indirect)	SU	-	0	0	0	0	0

LSM = less than significant with mitigation
PS = potentially significant
SU = significant and unavoidable
+ = more severe/more intense
- = less severe/less intense
0 = no change

SOURCE: ESA 2011.

Facility Siting and Construction Impacts

Each SWRP alternative assumes that individual future projects would be constructed throughout the project area to meet water supply demands. Similar to the proposed project, the exact locations of, and construction schedules for, facilities associated with each alternative is largely unknown with the exception of the proposed treatment plant location and grade control structure. Alternatives IW-40 and RW-40 include less local surface recharge capacity (13,000 afy) and thus would have fewer impacts associated with construction of surface spreading facilities. These alternatives also include less local groundwater production (25,000 afy) than the proposed project and thus would require construction of fewer groundwater extraction facilities.

Alternatives IW-70, RW-70, and MAX RW+CON include the same amount of local surface recharge capacity (35,000 afy) as the proposed project but do not include the option for external groundwater banking, thus eliminating the need for construction of the new water treatment plant and any construction-related impacts.

Overall, relative to the proposed project, any of the five SWRP alternatives described above would decrease impacts generally associated with construction activities, including the following: impacts to air quality due to emissions from construction equipment; impacts to sensitive receptors due to noise associated with construction equipment; impacts to traffic circulation and access due to installation of pipelines within roadway rights-of-way; impacts to agriculture due to potential siting of groundwater wells on Prime Farmland; impacts to water quality due to construction-related pollutants in storm water runoff from construction sites; potential impacts to biological resources due to siting of facilities on or adjacent to special-status species habitat or other jurisdictional or protected resources; impacts to cultural resources due to ground disturbance; and cumulative impacts generally associated with construction of the proposed project together with related future projects. However, although short-tem construction impacts would be reduced under these five alternatives, there are no potentially significant or significant and unavoidable impacts associated with construction of the proposed project that would be avoided by implementing any of the five alternatives.

Operational Impacts

Operational impacts associated with the proposed project and the SWRP alternatives include effects to the Antelope Valley Groundwater Basin resulting from implementation of groundwater recharge and extraction facilities. The IW-70, RW-70, and MAX RW+CON Alternatives would result in a similar amount of local groundwater recharge and extraction from the Basin as the proposed project (35,000 AFY or 105,000 AF every third year). The IW-40 and RW-40 Alternatives would recharge and extract less from the Basin (13,000 AFY or 39,000 AF every third year) and instead rely more on groundwater banking outside of the Basin. Groundwater banking activities outside of the Basin would not provide an opportunity to correct the overdraft conditions within the Basin and thus would forgo a benefit afforded by the IW-70, RW-70, and MAX RW+CON Alternatives.

In addition, due to the inclusion of external groundwater banking, the IW-40 and RW-40 Alternatives include the new water treatment plant, similar to the proposed project. Operation of the new WTP requires a commitment of new energy resources, introduction of the use of hazardous materials onsite, and potential impacts to scenic resources that would be avoided under the IW-70, RW-70, and MAX RW+CON Alternatives.

Relative to the proposed project, Alternatives IW-40, IW-70, RW-40 require more imported water than the proposed project due to a lesser dependence on recycled water for direct non-potable uses (e.g., irrigation) and conservation. Importing water is energy intensive. These alternatives would have greater impacts associated with energy demands and GHG emissions related to the use of electricity to import additional water into PWD service area. Alternative RW-70 would import a similar amount of water to the proposed project but would commit to greater use of recycled water for indirect potable reuse for groundwater recharge instead of direct non-potable uses and higher conservation.

The MAX RW+CON Alternative minimizes the need for imported water by maximizing all other water supply components, including recycled water for direct and indirect potable offset and

conservation. This alternative would reduce the impacts to energy use and GHG emissions associated with the importation of water under the proposed project. The MAX RW+CON Alternative is the only alternative that would reduce the amount of imported water necessary to meet future demand and thus would reduce the impact associated with GHG emissions.

Environmentally Superior Alternative

An EIR must identify the environmentally superior alternative. In addition, the *CEQA Guidelines* (Section 15126.6(e)(2)) require that, if the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

The No Project Alternative would result in the least environmental impacts because there would be no physical changes to the environment as a result of the proposed project. All impacts associated with the proposed project would be avoided but none of the project objectives would be met. In accordance with CEQA, an environmentally superior alternative shall be identified among the other SWRP alternatives.

All remaining alternatives would allow PWD to achieve all of the project objectives, including the primary objective of securing adequate water supplies to meet future demand in 2035. The proposed project would have a significant and unavoidable impact to growth by removing an obstacle to growth and indirectly contributing to secondary environmental effects of growth. By meeting the project objectives, none of the alternatives would avoid this significant and unavoidable impact.

The amount of water imported under the Recommended Strategy would ultimately depend on the amount of recycled water used to offset imported potable water. Under Alternative MAX RW+CON, the use of recycled water would be maximized at up to 23,800 afy for either groundwater recharge (indirect potable use) or other direct non-potable offsets such as landscape or agricultural irrigation. The dedication to maximizing recycled water use, in particular using up to 15,000 afy for groundwater recharge, in addition to maximizing conservation activities would reduce the need for importing water and reduce certain impacts related to importing water, such as to agricultural resources, GHG emissions, and energy. Impacts to these resources due to implementation of the proposed project are not potentially significant, however. Nonetheless, the MAX RW+CON Alternative would reduce impacts on a relative basis and as such would be considered the environmentally superior alternative.

The proposed project includes this potential to maximize the use of recycled water, including using up to 15,000 afy for groundwater recharge and 8,800 afy for other direct non-potable end uses. However, due to potential regulatory constraints and other hurdles associated with implementing a groundwater recharge reuse project, PWD has chosen not to commit to relying on recycled water as a supply source for local groundwater banking. In addition, due to uncertainties regarding the determination of the recycled water purveyor within the City of Palmdale, PWD also is not relying on maximum use of recycled water for direct non-potable end uses within its

service area. As a result, PWD continues to include imported water as a contingency to meet future demand in the event that recycled water use is ultimately restricted.

References – Alternatives Analysis

RMC Water and Environment, *Strategic Water Resources Plan: Alternative Analysis*. Final Technical Memorandum, Prepared for Palmdale Water District, March 1, 2010.

CHAPTER 7
Report Preparers

7.1 Lead Agency/Project Sponsor

Palmdale Water District

2029 East Avenue Q
Palmdale, CA 93550

Dennis D. LaMoreaux – General Manager
Jon M. Pernula – Water and Energy Resource Manager

7.2 EIR Authors and Consultants

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Appendix A
Scoping Report

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213.599.4301 fax

www.esassoc.com

Scoping Report

date December 11, 2010

to Jon Pernula
Palmdale Water District
2029 East Avenue Q
Palmdale, CA 93550

from Jennifer Jacobus

subject Palmdale Water District Strategic Water Resources Plan PEIR Scoping Report

PALMDALE WATER DISTRICT STRATEGIC WATER RESOURCES PLAN PEIR

Scoping Report

Introduction

Palmdale Water District (PWD) is the Lead Agency for the proposed Strategic Water Resources Plan PEIR (proposed project). The proposed project would apply to PWD's 47-square mile water service area, which is located in the Antelope Valley area of Los Angeles County, California. The SWRP assumes the population in the PWD service area will double over the next 25 years or by 2035. The primary goal of the SWRP is to therefore develop and diversify PWD's water supply to ultimately provide supplies capable of matching future overall annual water demand on a year-to-year basis. The secondary purpose of the proposed project is to improve water supply reliability and redundancy in PWD's service area by acquiring new supplies, developing local groundwater storage and recovery (banking), maximizing use of recycled water, expanding conservation efforts, and maintaining Littlerock Reservoir through sediment removal. The proposed project would increase the number of water sources to supplement the system when an individual source of water such as State Water Project (SWP) becomes restricted or unavailable for routine maintenance shutdowns, extended curtailments from the Delta, or unforeseen emergencies.

Notice of Preparation and Notice of Availability

The Notice of Preparation (NOP) was prepared by Environmental Science Associates (ESA) pursuant to the California Environmental Quality Act (CEQA), to notify interested parties that PWD will be preparing a Program Environmental Impact Report (PEIR) to evaluate potential environmental impacts of the Strategic Water Resources Plan (SWRP) (see **Attachment 1**).

The NOP was mailed on October 28, 2010 to approximately 48 interested parties, including local, state, and federal agencies; news publications; and other groups or individuals who had previously expressed interest in the project. A Notice of Completion (NOC) was also prepared by PWD and sent to the State Clearinghouse (see **Attachment 2**). Copies of the NOP were made available for public review at the Palmdale City Library.

Scoping Period

The 30-day project scoping period, which began with the distribution of the NOP on October 28, 2010, remained open through November 26, 2010. During the scoping period, PWD held a scoping meeting on November 17, 2010, 7:00 p.m. at PWD's main board room (2029 East Avenue Q, Palmdale, CA 93550). PWD placed public notices of the scoping meeting in the Antelope Valley Press on November 5, 2010, and the LA Daily News on November 3, 2010 (see **Attachment 3**). At the scoping meeting, PWD staff and ESA gave a presentation on the District's proposed action (see **Attachment 4**).

Due to undeliverable NOPs, some recipients were notified at a later date of the public comment period, and therefore PWD extended the public comment period in order to provide ample opportunity for input during the scoping period for the EIR. The public comment period for the NOP was extended for two-weeks through December 10, 2010. All previously-notified interested parties were notified of the extension with an additional notice (see **Attachment 5)**.

Comments

During the scoping period, the City received comment letters from five public agencies: the Native American Heritage Commission (NAHC), City of Palmdale, Antelope Valley Air Quality Management District (AQMD), Regional Water Quality Control Board (RWQCB) Lahontan Region, and the California Department of Fish and Game. Copies of all comment letters are provided as **Attachment 6**.

Contents of this Report

This Scoping Report contains documents pertinent to the scoping process. The following items are included:

Attachment 1: Notice of Preparation
Attachment 2: Notice of Completion
Attachment 3: Public Notice – Newspaper Ads
Attachment 4: Scoping Meeting Presentation
Attachment 5: NOP Scoping Period Extension Notice
Attachment 6: Comment Letters Received by the City

ATTACHMENT 1

Notice of Preparation

Date October 28, 2010

To: Responsible and Trustee Agencies and Interested Parties

Subject: Notice of Preparation of an Environmental Impact Report for the Palmdale Water District Strategic Water Resources Plan

Lead Agency: Palmdale Water District

Public Review Period: October 28, 2010 through November 26, 2010

This Notice of Preparation (NOP) has been prepared to notify agencies and interested parties that the Palmdale Water District (PWD) is preparing an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA) for its proposed Strategic Water Resources Plan (SWRP or proposed project). PWD is the Lead Agency, the agency with primary responsibility for carrying out and/or approving the SWRP. The proposed project would apply to PWD's 47-square mile water district service area, which is located in the Antelope Valley area of Los Angeles County, California. **Figure 1** provides a regional location map of PWD and **Figure 2** provides a map of the PWD service area.

The SWRP assumes the population in the PWD service area will double over the next 25 years or by 2035. The primary goal of the SWRP is to therefore develop and diversify PWD's water supply to ultimately provide supplies capable of matching future overall annual water demand on a year-to-year basis. A description of the SWRP and a brief analysis of its potential environmental effects are provided as Attachment A. The secondary purpose of the proposed project is to improve water supply reliability and redundancy in PWD's service area by acquiring new supplies, developing local groundwater storage and recovery (banking), maximizing use of recycled water, expanding conservation efforts, and maintaining Littlerock Reservoir through sediment removal. The proposed project would increase the number of water sources to supplement the system when an individual source of water such as State Water Project (SWP) becomes restricted or unavailable for routine maintenance shutdowns, extended curtailments from the Delta, or unforeseen emergencies.

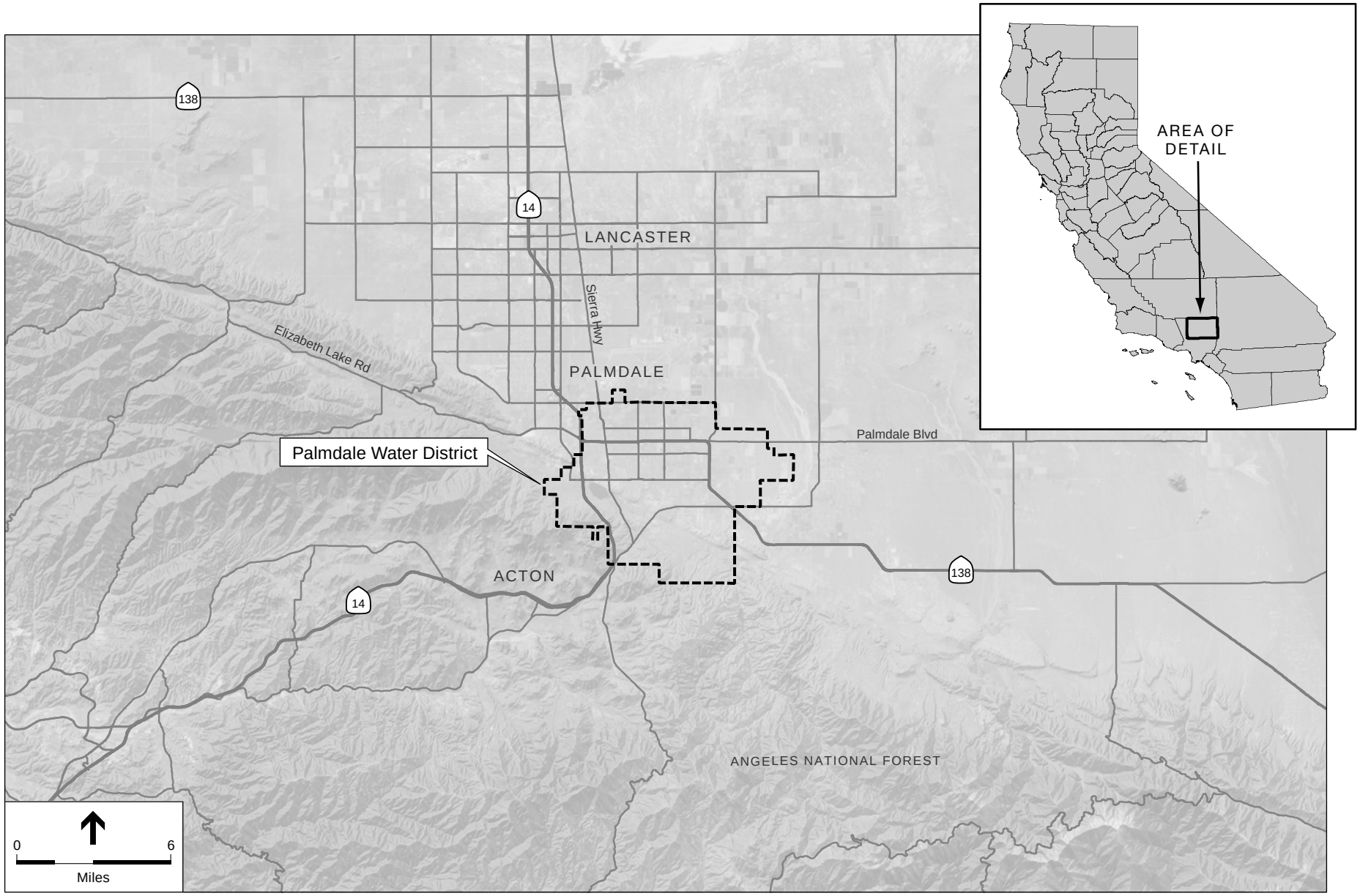
Public Comments: PWD is soliciting the views of interested persons and agencies as to the scope and content of the environmental information to be evaluated in the EIR. In accordance with CEQA, agencies are requested to review the project description provided with this NOP and provide comments on environmental issues related to the statutory responsibilities of the agency. The EIR will be used by PWD when considering approval of the SWRP.

In accordance with the time limits mandated by CEQA, comments on the NOP must be received by PWD no later than 30 days after publication of this notice. We therefore request that comments be received no later than November 26, 2010. Please send your comments to the contact person shown below. Please include a return address and contact name with your comments.

Jon Pernula, Water & Energy Resources Manager
Palmdale Water District, 2029 East Avenue Q, Palmdale, CA 93550
Fax: (661) 947-8604
E-Mail: jpernula@palmdalewater.org

Scoping Meeting: A public scoping meeting will be held to receive public comments regarding the scope and content of the EIR. The public scoping meeting will be held at Palmdale Water District on the date and time shown below:

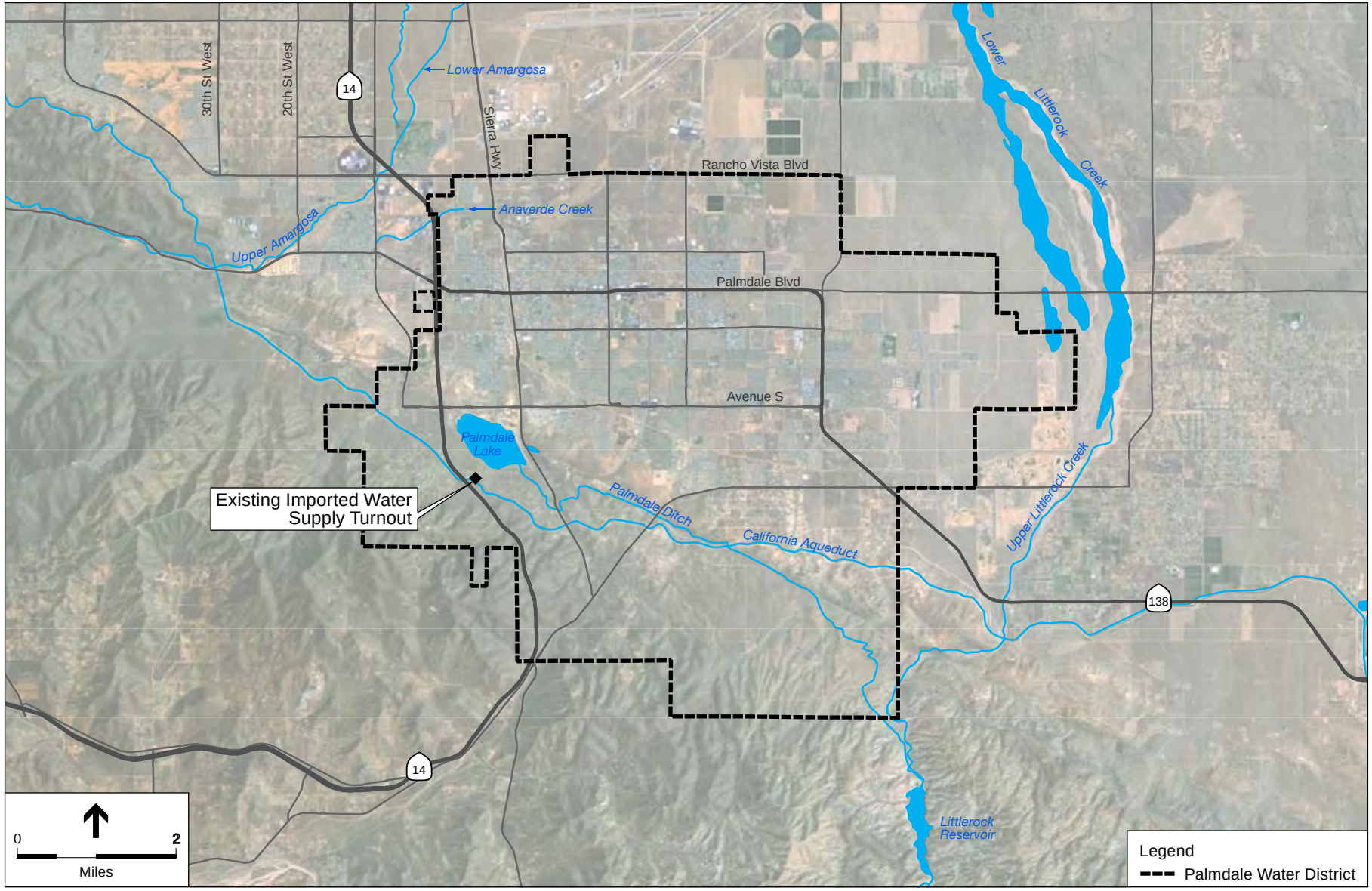
Date:	November 17, 2010
Time:	7:00 p.m.
Location:	Palmdale Water District – Board Room 2029 East Avenue Q, Palmdale, CA 93550



SOURCE: ESA, 2010.

Palmdale Water District Strategic Water NOP . 209170

Figure 1
Regional Location Map



SOURCE: ESA, 2010.

Palmdale Water District Strategic Water NOP . 210170

Figure 2
Project Location Map

Attachment A

Project Description

Introduction

Palmdale Water District (PWD), as the Lead Agency pursuant to the California Environmental Quality Act (CEQA), is proposing to implement a Strategic Water Resources Plan (SWRP or proposed project) that outlines a programmatic plan for developing and diversifying PWD's water supply over the next 25 years through 2035 (RMC, 2010). The SWRP anticipates that during that time, despite the current economic recession, the population within its service area will double. Currently, existing supplies are inadequate to meet the projected demand of a growing population. The SWRP therefore establishes a strategy to match overall annual water demand on a year-to-year basis. The SWRP identifies a Recommended Water Resource Strategy that would provide increased water supply reliability and redundancy by increasing the number of water sources available to supplement the system when an individual source of water is unavailable or restricted. The proposed strategy calls for acquisition of additional imported supplies; new groundwater recharge and recovery facilities; aquifer storage and recovery (ASR) wells; potential use of recycled water for agricultural irrigation, groundwater recharge, and other municipal and industrial end uses; expansion of conservation programs; and recovery of storage capacity in Littlerock Reservoir.

Project Background

PWD was founded as an irrigation district that supplied water mainly to farms for agricultural use. As a result of Palmdale's rapid population growth during the early 1950s, PWD shifted to providing predominantly municipal and industrial services. PWD provides potable water to municipal, industrial and agricultural customers within a 47-square mile service area in the Antelope Valley of Los Angeles County, California (Figure 1). PWD currently serves 25,000 active customer accounts through three sources of water supply: imported water from the State Water Project (SWP), local groundwater, and local surface runoff collected at the Littlerock Reservoir and conveyed to Lake Palmdale through Palmdale Ditch.

PWD receives SWP water through a turnout on the East Branch of the California Aqueduct (Figure 2). PWD has a Table A contracted amount of 21,300 acre-feet per year (AFY) through the SWP, but generally receives between 41 and 77 percent of this contracted amount. PWD expects to receive approximately 12,000 AFY of imported water based on long-term reliability projections.

PWD uses approximately 25 existing wells in its service area for groundwater extraction from the Antelope Valley groundwater basin. PWD currently extracts about 12,000 AFY from the groundwater basin. Litigation has been ongoing since 1999 regarding groundwater adjudication in

the Antelope Valley. Initiated by agricultural interests, the lawsuit is based on a concern that groundwater pumping costs were increasing as a result of increased groundwater withdrawals by municipal users. While an official adoption of a court-ordered adjudication does not appear to be forthcoming, the adjudication process could be completed within the next decade. Other regions of Southern California have adopted groundwater adjudications that allow designated pumpers to increase groundwater withdrawals above their annual pumping allotment by a volume that is equal to what is recharged back to the aquifer on an annual basis. For the proposed local groundwater banking strategy to be successful, it may be necessary that the finalized adjudication judgment allow PWD the capability of increasing groundwater withdrawals over the 2010–2035 timeframe by recharging an equal level of imported or recycled water.

Littlerock Reservoir is located southeast of PWD and is fed by Littlerock Creek and surface runoff. With a storage capacity of 3,500 acre-feet (AF), approximately 30 to 40 AF of storage capacity is lost every year due to sediment build up. PWD extracts on average approximately 4,000 AFY from Littlerock Reservoir. Although Littlerock Creek flows mainly during winter and spring months, water may be stored throughout the year as a buffer against supply fluctuations from the SWP.

Project Objectives

The primary objectives of the proposed SWRP are to:

- Ensure a water supply capable of meeting overall annual water demand on a year-to-year basis to a customer base that is projected to double over the next 25 years.
- Improve water reliability by increasing the number of water sources to supplement the system when an individual source (i.e., imported SWP water) becomes restricted or unavailable.
- Increase operational flexibility by creating redundancy within the water conveyance and storage system.

Recommended Water Resource Strategy

The SWRP identifies a Recommended Water Resource Strategy that would increase potential water supplies in PWD's service area from 30,000 AFY to 65,000 AFY to meet projected demand in 2035. The Recommended Strategy consists of the following implementation actions:

Water Supply Augmentation

- Acquire and/or develop new imported supplies;
- Pursue recycled water exchange program with nearby agriculture in lieu of groundwater pumping;
- Expand conservation programs;
- Use treated recycled water to replenish the groundwater basin; and
- Recover storage capacity in Littlerock Reservoir through sediment removal.

Water Supply Infrastructure

- Create local raw water spreading facilities to percolate SWP water into the local aquifer;
- Create aquifer storage and recovery (ASR) wells to inject and extract potable water into the local aquifer;
- Expand groundwater pumping with new groundwater production wells to achieve a target of delivering 70 percent of demand to customers; and
- Implement a recycled water system for non-potable uses including irrigation and possibly some industrial.

Imported Supplies

Under the Recommended Strategy, PWD would acquire approximately 25,000 AFY of additional imported supplies by 2020 and 35,000 AFY by 2035, by acquiring new surface water rights through permanent transfers, multi-year leases, and short-term transfers. The initial 10,000 AFY of new imported water supply would maximize PWD's current Table A allocation of 21,300 AFY on an annual basis and would make use of PWD's existing remaining capacity in the aqueduct.[1] To achieve an expanded allocation of imported water supplies, additional aqueduct turnout and additional conveyance and storage facilities would be needed. This would include turnouts on the East Branch of the California Aqueduct or Lake Palmdale; pipelines to convey raw SWP water to existing or new storage tanks, surface impoundments, recharge facilities, or surface water treatment facilities; and booster pump stations.

Groundwater Recharge, Recovery, and Banking

The Recommended Strategy includes implementation of a local groundwater banking program to be supported by increased imported supplies. The banking program would require new facilities for recharge and recovery, including new spreading facilities, extraction wells, and ASR wells. Potential areas for spreading facilities have been identified in the vicinity of Upper and Lower Amargosa Creek, Upper and Lower Littlerock Creek, and Anaverde Creek. New spreading facilities would include raw water conveyance pipelines, earthen basins and berms, flow valves and control structures. Potential ASR (or injection-well) locations have been indentified in the vicinity of PWD's existing North and East Well Field areas. Wells for groundwater extraction only would be located generally in the vicinity of Littlerock Creek or Lower Amargosa Creek. Each new well facility would include a well, well pump, wellhead, disinfection facilities, and distribution piping connecting wells to a network that conveys extracted groundwater to storage facilities or end users.

The Recommended Strategy assumes 70 percent of the 2035 water supply would be obtained through groundwater pumping. PWD's target is to achieve 35,000 AFY of additional groundwater recharge and recovery by 2035. The groundwater banking program is required to sustain this level of pumping, with the majority of additional recharge water provided by new

[1] In essence, the first 10,000 AFY of imported supply would make use of PWD's existing remaining capacity in the aqueduct (approximated as the difference between PWD's current Table A allocation of 21,300 AFY and current average PWD withdrawal from the aqueduct of approximately 12,000 AFY).

imported water supplies. In addition, PWD plans to implement additional recharge at a rate that exceeds the volume of additional pumping. The objective of a local groundwater banking program is to provide between 105,000 and 120,000 AF of groundwater storage in the Antelope Valley groundwater basin by 2035.

As an alternative, PWD could participate in groundwater banking programs outside of PWD to meet its groundwater recharge and recovery goals. A new surface water treatment facility would be required to treat groundwater pumped outside of PWD and delivered via the California Aqueduct. The new treatment facility would be located on land already owned by PWD and would have an initial treatment capacity of 10 mgd, with the potential for expansion to 30 mgd.

Conservation Programs

The Recommended Strategy includes an active conservation program target of 3,600 AFY and passive conservation program target of 4,100 AFY. Currently, PWD achieves approximately 250 AFY with its existing active conservation program. PWD's goal is to meet the requirements of California Senate Bill 7, the State-mandated 20 percent per capita reduction in water use. Implementing this goal would require significant investments in conservation measures, such as Evapotranspiration (ET) Controller and Multi-Projection (MP) Nozzles; rebates for high-efficiency (HE) toilets, HE clothes washers, water conserving sprinklers and turf replacement; and incentives for recycled water retrofits for landscape irrigation customers.

Littlerock Reservoir Sediment Removal

The Recommended Strategy includes sediment removal at Littlerock Reservoir in order to increase the annual yield from 4,000 AFY to 4,500 AFY by 2035. This project is currently being evaluated separately at the project level in accordance with CEQA. The Draft EIR/EIS for the project is in progress.

Recycled Water Storage and Use

Potential recycled water users and uses have been identified in the Palmdale region, which include municipal, industrial, and private agricultural end users, and groundwater recharge (RMC, 2009). The Recommended Strategy includes a Recycled Water Master Plan that would deliver tertiary-treated recycled water produced at the Palmdale Water Reclamation Plant (PWRP) to end users such as golf courses, parks, schools and local farmers. The Plan would require a new non-potable distribution system including tanks, distribution piping and pump stations. PWD is targeting 2,800 AFY of potable offset with recycled water by 2035. PWD's Recycled Water Master Plan is currently being evaluated separately at the project level in accordance with CEQA. The Mitigated Negative Declaration (MND) for the Plan was circulated for public review for a 30-day period that ended on March 1, 2010 (SCH No. 2010011089). Certification of the MND is pending a determination of the recycled water purveyor within the limits of the City of Palmdale.

The Recommended Strategy also includes a Water Exchange Program with local farmers, to provide them with recycled water for irrigation in-lieu of groundwater pumping. PWD is targeting 5,000 to 6,000 AFY of additional groundwater supply by 2035 as the result of this in-lieu exchange program. Facilities required for the program may include recycled water storage tanks, pumping and conveyance facilities between the PWRP and end users, and blending reservoirs and piping.

As part of its groundwater banking program, PWD may implement recharge with recycled water in addition to raw imported water. The source of recycled water would be the PWRP. PWD has the potential to recharge up to 15,000 AFY of blended tertiary effluent. This component of the Recommended Strategy is optional; PWD is not relying on it to achieve the target 2035 supply.

Potential Environmental Impacts

The PEIR will assess the physical changes to the environment that would likely result from construction and operation of the proposed project, including direct, indirect and cumulative impacts. Potential impacts of the proposed project are summarized below. The PEIR will identify mitigation measures if necessary to minimize potentially significant impacts of the proposed project. In addition, the PEIR will include an Alternatives Analysis and explain the alternatives screening conducted as a part of development of the SWRP Recommended Strategy (RMC, 2010).

Aesthetics

Views in the project area consist mainly of residential and agricultural land uses, public facilities, open space and distant mountains vistas. Although there are no designated California scenic highways, some roadways may be considered scenic. Implementation of the proposed project would require construction of aboveground facilities such as recharge basins, pump stations, piping, and storage tanks. The PEIR will evaluate the potential for construction and operation of the proposed project to affect aesthetic resources, including potential impacts to scenic vistas and views, impacts to the visual character of sites that would support aboveground facilities, and the potential for new light and glare.

Agriculture and Forestry Resources

The proposed project area is defined by PWD's service area boundary and includes lands that are classified by the Farmland Mapping and Monitoring Program (California Resources Agency) as Urban and Built-up Land and as Prime Farmland. Much of the PWD service area is urbanized; however, there are agricultural lands along the service area perimeter. Implementation of the Recommended Strategy would not be expected to result in the conversion of agricultural land to non-agricultural use; although small localized changes could result. The PEIR will evaluate whether the proposed project would impact Prime Farmland or whether any agricultural or forestry land would be converted to non-agricultural or non-forestry uses.

Air Quality and Greenhouse Gas Emissions

Construction of the facilities needed to implement the Recommended Strategy would generate emissions from construction equipment exhaust, earth movement, construction workers' commute, and material hauling. Operation of new facilities would potentially generate emissions associated with energy use and scheduled maintenance on facilities. The PEIR will evaluate the effects of construction and operational activities on air quality and greenhouse gas emissions in relationship to existing state and federal thresholds for criteria pollutants and potential impacts on sensitive receptors. The PEIR will also develop mitigation measures if necessary to reduce potential impacts.

Biological Resources

Construction of the facilities needed to implement the Recommended Strategy could result in construction in open space areas, as well as in urbanized areas. The PEIR will evaluate the potential for the proposed project to impact biological resources, such as sensitive species and critical habitats, and will also discuss local ordinances and state and federal regulations governing biological resources.

Cultural Resources

Implementation of the Recommended Strategy would require construction of new facilities and excavation below the top soil. As a result, previously unknown archaeological or paleontological resources could be encountered. Historic resources also may exist in the area near proposed infrastructure. The PEIR will assess the potential effects of the proposed project on cultural resources, including archaeological and paleontological resources, and Native American resources. Mitigation measures will be identified if necessary to reduce the level of impact where possible.

Geology, Soils and Seismicity

PWD is located in the Antelope Valley, which is a seismically active region. The construction of new facilities could be subject to potential seismic hazards including ground shaking. In addition, construction activities could expose soils to storm water erosion. The PEIR will evaluate geologic hazards in the region and in PWD's service area, such as the potential for ground shaking, liquefaction, expansive soils and landslides, and will identify mitigation measures if necessary to reduce potential adverse effects to proposed facilities.

Hazards and Hazardous Materials

The specific locations of most SWRP projects have not yet been determined. However, excavation activities during construction of new facilities could uncover contaminated soils or hazardous substances that pose a substantial hazard to human health or the environment. The PEIR will assess the potential for encountering such hazards and identify mitigation measures, if necessary, to ensure that any hazards encountered during construction would be handled in accordance with applicable regulations. Operation of some project components may require transport, use, and disposal of regulated materials, such as those typically used at wellhead

disinfection facilities. The PEIR will assess the potential for the public or the environment to be affected by accidental release of hazardous materials due to project operation and will develop mitigation measures if necessary to minimize potential effects.

Hydrology and Water Quality

Implementation of the Recommended Strategy would change local drainage patterns at various sites, which could affect the volume and quality of surface runoff that in turn could affect local surface water resources. Excavation and construction activities could affect storm water quality if sediment or spills run off the project construction site. The PEIR will identify storm water quality protection measures required during construction activities such as sediment fencing and spill prevention and containment. The PEIR will discuss potential impacts to groundwater resources as a result of implementing the groundwater banking program, including potential impacts to groundwater elevations due to recharge and recovery and potential impacts to existing wells due to operation of proposed wells.

Land Use and Recreation

Implementation of the Recommended Strategy would include new, upgraded, and expanded water supply infrastructure throughout the City of Palmdale and PWD's service area. The PEIR will evaluate the compatibility of the proposed implementation actions and any associated construction activities with existing and planned land uses as identified on the City of Palmdale and County of Los Angeles General Plan Land Use Maps for the area.

Noise and Vibration

The Recommended Strategy would require construction of project components that would potentially generate noise and vibration that could affect nearby residences and other sensitive receptors in the vicinity of the project components. The PEIR will evaluate the proximity of sensitive receptors to project components and recommend mitigation measures to ensure that the SWRP components comply with local policies and ordinances.

Population and Housing / Growth Inducement

Implementation of the proposed project would enhance reliability and redundancy of the water supply for residents currently living within PWD's service area and for projected population growth in the service area. The Recommended Strategy would not build new housing or otherwise have a direct impact on population growth in the project area, nor would it require displacement of existing residents. The proposed project would effectively result in an increase in the reliability of the water supply due to the offset by recycled water use, additional imported supplies, and improved local resource management that would accommodate anticipated population growth. The PEIR will evaluate the potential for the proposed project to indirectly induce growth and result in secondary environmental effects associated with growth. The PEIR will also evaluate current population and employment projections to assess the potential for the population within the PWD service area to double by 2035.

Public Services

Implementation of the Recommended Strategy is unlikely to affect demand for public services, or, by themselves, to require new or expanded facilities for public service providers. The PEIR will, however, assess the potential for the SWRP to affect police and fire protection services, schools, parks and recreational facilities, such that new or expanded buildings or structures may be required that would, in turn, affect the environment.

Traffic and Transportation

Construction of new facilities associated with the Recommended Strategy could affect traffic on local roadways due to the addition of construction-related vehicles on roadways, including material deliveries, haul truck, and construction worker commutes. In addition, some new facilities, such as pipelines, could be implemented within the right-of-way of public roadways and thus directly affect traffic due to lane closures. The PEIR will evaluate the impact of construction activities on traffic and circulation and develop mitigation measures to reduce any potential effects. Operation of the Recommended Strategy could potentially require regular deliveries of regulated materials to wellhead treatment facilities. The PEIR will evaluate the impact of such deliveries on traffic and circulation. The PEIR will identify mitigation measures if necessary to minimize any potential effects.

Utilities and Energy

Implementation of the Recommended Strategy would result in construction of new wellhead treatment facilities and require new entitlements for imported water. The SWRP does not require construction of any wastewater treatment facilities; recycled water would be provided by County Sanitation Districts of Los Angeles County at the PWRP. The PEIR will evaluate the impact of the proposed project on utilities including water systems, storm water systems, and solid waste facilities. In addition, impacts to energy consumption or the need for additional energy capacity will be discussed. The PEIR will identify mitigation measures if necessary to minimize any potential effects.

ATTACHMENT 2

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P. O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # _____

Project Title: Strategic Water Resources Plan Program EIR

Lead Agency: Palmdale Water District — Contact Person: Jon Pernula

Mailing Address: 2029 East Avenue Q — Phone: 661-947-8604

City: Palmdale — Zip: CA — County: Los Angeles

Project Location: County: Los Angeles — City/Nearest Community: Palmdale

Cross Streets: E Ave. S / 30th St. E — Zip Code: 93550

Lat. / Long.: 34° 3′ 29″ N/ 118° 4′ 34″ W — Total Acres: PWD service area

Assessor's Parcel No.: _____ Section: _____ Twp.: _____ Range: _____ Base: _____

Within 2 Miles: State Hwy #: 14; 138 — Waterways: CA Aqueduct; Anaverde Creek; Palmdale Lake

Airports: Palmdale AF Plant NR42 — Railways: Metrolink — Schools: various

Document Type:

CEQA:
- ☒ NOP
- ☐ Early Cons
- ☐ Neg Dec
- ☐ Mit Neg Dec
- ☐ Draft EIR
- ☐ Supplement/Subsequent EIR (Prior SCH No.) _____
- Other _____

NEPA:
- ☐ NOI
- ☐ EA
- ☐ Draft EIS
- ☐ FONSI

Other:
- ☐ Joint Document
- ☐ Final Document
- ☐ Other _____

Local Action Type:

- ☐ General Plan Update
- ☐ General Plan Amendment
- ☐ General Plan Element
- ☐ Community Plan
- ☐ Specific Plan
- ☐ Master Plan
- ☐ Planned Unit Development
- ☐ Site Plan
- ☐ Rezone
- ☐ Prezone
- ☐ Use Permit
- ☐ Land Division (Subdivision, etc.)
- ☐ Annexation
- ☐ Redevelopment
- ☐ Coastal Permit
- ☐ Other _____

Development Type:

- ☐ Residential: Units _____ Acres _____
- ☐ Office: Sq.ft. _____ Acres _____ Employees _____
- ☐ Commercial: Sq.ft. _____ Acres _____ Employees _____
- ☐ Industrial: Sq.ft. _____ Acres _____ Employees _____
- ☐ Educational _____
- ☐ Recreational _____
- ☒ Water Facilities: Type basins/wells/pipes MGD _____
- ☐ Transportation: Type _____
- ☐ Mining: Mineral _____
- ☐ Power: Type _____ MW _____
- ☐ Waste Treatment: Type _____ MGD _____
- ☐ Hazardous Waste: Type _____
- ☐ Other: _____

Project Issues Discussed in Document:

- ☒ Aesthetic/Visual
- ☒ Agricultural Land
- ☒ Air Quality
- ☒ Archeological/Historical
- ☒ Biological Resources
- ☐ Coastal Zone
- ☒ Drainage/Absorption
- ☐ Economic/Jobs
- ☐ Fiscal
- ☒ Flood Plain/Flooding
- ☒ Forest Land/Fire Hazard
- ☒ Geologic/Seismic
- ☐ Minerals
- ☒ Noise
- ☒ Population/Housing Balance
- ☒ Public Services/Facilities
- ☒ Recreation/Parks
- ☒ Schools/Universities
- ☐ Septic Systems
- ☐ Sewer Capacity
- ☒ Soil Erosion/Compaction/Grading
- ☐ Solid Waste
- ☒ Toxic/Hazardous
- ☒ Traffic/Circulation
- ☒ Vegetation
- ☒ Water Quality
- ☒ Water Supply/Groundwater
- ☒ Wetland/Riparian
- ☐ Wildlife
- ☒ Growth Inducing
- ☒ Land Use
- ☒ Cumulative Effects
- ☐ Other _____

Present Land Use/Zoning/General Plan Designation:

LA County: Urban and Built-up Land Use Designation; City of Palmdale: Urban and Scattered/Rural Development

Project Description: *(please use a separate page if necessary)*

Palmdale Water District (PWD) is preparing an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA) for its proposed Strategic Water Resources Plan (SWRP or proposed project). PWD is the Lead Agency, the agency with primary responsibility for carrying out and/or approving the SWRP. The proposed project would apply to PWD's 47-square mile water district service area, which is located in the Antelope Valley area of Los Angeles County, California. Under the Recommended Strategy, PWD would acquire

Note: The state Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

approximately 25,000 acre-feet per year (AFY) of additional imported supplies by 2020 and 35,000 AFY by 2035, by acquiring new surface water rights through permanent transfers, multi-year leases, and short-term transfers. The Recommended Strategy includes implementation of a local groundwater banking program to be supported by increased imported supplies. The banking program would require new facilities for recharge and recovery, including new spreading facilities, extraction wells, and ASR wells.

The primary objectives of the proposed SWRP are to:

- Ensure a water supply capable of meeting overall annual water demand on a year-to-year basis to a customer base that is projected to double over the next 25 years.
- Improve water reliability by increasing the number of water sources to supplement the system when an individual source (i.e., imported SWP water) becomes restricted or unavailable.
- Increase operational flexibility by creating redundancy within the water conveyance and storage system.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

_____	Air Resources Board	_____	Office of Emergency Services
_____	Boating & Waterways, Department of	x	Office of Historic Preservation
_____	California Highway Patrol	_____	Office of Public School Construction
_____	CalFire	x	Parks & Recreation
x	Caltrans District # 7	_____	Pesticide Regulation, Department of
_____	Caltrans Division of Aeronautics	_____	Public Utilities Commission
_____	Caltrans Planning (Headquarters)	x	Regional WQCB # 6
_____	Central Valley Flood Protection Board	x	Resources Agency
_____	Coachella Valley Mountains Conservancy	_____	S.F. Bay Conservation & Development Commission
_____	Coastal Commission	_____	San Gabriel & Lower L.A. Rivers and Mtns Conservancy
_____	Colorado River Board	_____	San Joaquin River Conservancy
x	Conservation, Department of	_____	Santa Monica Mountains Conservancy
_____	Corrections, Department of	x	State Lands Commission
_____	Delta Protection Commission	_____	SWRCB: Clean Water Grants
_____	Education, Department of	x	SWRCB: Water Quality
_____	Energy Commission	x	SWRCB: Water Rights
x	Fish & Game Region # 5	_____	Tahoe Regional Planning Agency
_____	Food & Agriculture, Department of	x	Toxic Substances Control, Department of
_____	General Services, Department of	x	Water Resources, Department of
x	Health Services, Department of		
_____	Housing & Community Development	_____	Other _____
x	Integrated Waste Management Board	_____	Other _____
x	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date October 28, 2010 Ending Date November 26, 2010

Lead Agency (Complete if applicable):

Consulting Firm: Environmental Science Associates
Address: 626 Wilshire Blvd., Suite 1100
City/State/Zip: 90017
Contact: Jennifer Jacobus
Phone: (213) 599-4300

Applicant: _____
Address: _____
City/State/Zip: _____
Phone: _____

Signature of Lead Agency Representative: _____ **Date:** _____

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

ATTACHMENT 3

Antelope Valley Press
ESTABLISHED 1915
Mailing Address: P. O. Box 4050, Palmdale, CA 93590-4050

November 5, 2010

VICTORIA L. ZALAMEDA
ESA I WATER
626 WILSHIRE BLVD., STE 1100
LOS ANGELES CA 90071

RE: Proof of Publication

Dear VICTORIA L. ZALAMEDA;

Enclosed please find your receipt and the Proof of Publication for the NOTICE OF PREPARATION (NOP) OF AN ENVIRONMENTAL IMPACT REPORT published on November 5, 2010.

If you need further assistance, please do not hesitate to contact me at (661) 267-4112.

Sincerely,

Valley Press
Alison Adams
Legal Advertising Coordinator

Enclosure

44939 10th Street West, Lancaster, California 93534-2313 • (661) 273-2700 • Fax (661) 949-3593
37404 Sierra Highway, Palmdale, California 93550-9343 • (661) 273-2700 • (661) 947-4870

PROOF OF PUBLICATION

(2015.5 C.C.P.)

The space above for filing stamp only

STATE OF CALIFORNIA } ss

County of Los Angeles

NOP-EIR
NOTICE OF PREPARATION (NOP) OF AN ENVIRONMENTAL IMPACT REPORT

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the principal clerk of the printer of the **Antelope Valley Press**, a newspaper of general circulation, printed and published **daily** in the **City of Palmdale**, County of Los Angeles, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Los Angeles, State of California, under date of October 24, 1931, Case Number 328601; Modified Case Number 657770 April 11, 1956; also operating as the Ledger-Gazette, adjudicated a legal newspaper June 15, 1927, by Superior Court decree No. 224545; also operating as the Desert Mailer News, formerly known as the South Antelope Valley Foothill News, adjudicated a newspaper of general circulation by the Superior Court of the County of Los Angeles, State of California on May 29, 1967, Case Number NOC564 and adjudicated a newspaper of general circulation for the **City of Lancaster,** State of California on January 26, 1990, Case Number NOC10714, Modified October 22, 1990; that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

November 5, 2010

I certify (or declare) under penalty of perjury that the fore-going is true and correct.

Signature

Dated: November 5, 2010
Executed at Palmdale, California

Notice of Preparation (NOP) of an Environmental Impact Report

Palmdale Water District (PWD) as the Lead Agency is preparing a Program Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA) for its proposed Strategic Water Resources Plan (SWRP or proposed project). PWD is the Lead Agency, the agency with primary responsibility for carrying out and/or approving the SWRP. The proposed project would apply to PWD's 47-square mile water district service area, which is located in the Antelope Valley area of Los Angeles County, California. The primary goal of the SWRP is to develop and diversify PWD's water supply to ultimately provide supplies capable of matching future overall annual water demand on a year-to-year basis through 2035.

PWD is soliciting the views of interested persons and agencies as to the scope and content of the environmental information to be evaluated in the EIR, which will be used by PWD when considering approval of the SWRP. The NOP is available for review at the Palmdale City Library, 700 E. Palmdale Blvd, Palmdale CA 93550.

Comments on the NOP must be received by PWD no later than November 26, 2010. Please send comments to Jon Pernula, Water & Energy Resources Manager, Palmdale Water District, 2029 East Avenue Q, Palmdale, CA 93550. Comments may also be faxed to (661) 947-8604, or emailed to jpernula@palmdalewater.org . Please include a return address and contact name with your comments.

A public scoping meeting will be held to receive public comments regarding the scope and content of the EIR on November 17, 2010 at Palmdale Water District, Board Room, 2029 East Avenue Q, Palmdale, CA 93550, at 7:00 p.m.
Publish: 11/5/10

Valley Press
37404 SIERRA HWY., PALMDALE CA 93550
Telephone (661)267-4112/Fax (661)947-4870

PROOF OF PUBLICATION AFFIDAVIT
(2015.5 C.C.P.)

STATE OF CALIFORNIA,
County of Los Angeles,

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of the

Daily News

a newspaper of general circulation published 7 times weekly in the County of Los Angeles, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Los Angeles, State of California, under the date of May 26, 1983, Case Number Adjudication #C349217; that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil) has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, towit: November 3,

all in the year 20 10

I certify (or declare) under penalty of perjury that the forgoing is true and correct.

Dated at Woodland Hills,

California, this 3rd **day of** Nov., **20**10

Signature

Proof of Publication of

(NOP) of An Environmental Impact Report

(DAILY NEWS)

NOTICE OF PREPARATION (NOP) OF AN ENVIRONMENTAL IMPACT REPORT

Palmdale Water District (PWD) as the Lead Agency is preparing a Program Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA) for its proposed Strategic Water Resources Plan (SWRP or proposed project). PWD is the Lead Agency, the agency with primary responsibility for carrying out and/or approving the SWRP. The proposed project would apply to PWD's 47-square mile water district service area, which is located in the Antelope Valley area of Los Angeles County, California. The primary goal of the SWRP is to develop and diversify PWD's water supply to ultimately provide supplies capable of matching future overall annual water demand on a year-to-year basis through 2035.

PWD is soliciting the views of interested persons and agencies as to the scope and content of the environmental information to be evaluated in the EIR, which will be used by PWD when considering approval of the SWRP. The NOP is available for review at the Palmdale City Library, 700 E. Palmdale Blvd, Palmdale CA 93550.

Comments on the NOP must be received by PWD no later than November 26, 2010. Please send comments to Jon Pernula, Water & Energy Resources Manager, Palmdale Water District, 2029 East Avenue Q, Palmdale, CA 93550. Comments may also be faxed to (661) 947-8604, or emailed to **jpernula@palmdalewater.org**. Please include a return address and contact name with your comments.

A public scoping meeting will be held to receive public comments regarding the scope and content of the EIR on November 17, 2010 at Palmdale Water District, Board Room, 2029 East Avenue Q, Palmdale, CA 93550, at 7:00 p.m.

Publish November 3, 2010

ATTACHMENT 4

PALMDALE WATER DISTRICT
STRATEGIC WATER RESOURCES PLAN
Program Environmental Impact Report

PUBLIC SCOPING MEETING PRESENTATION
November 17, 2010

ESA is where solutions and service meet.

Agenda

- California Environmental Quality Act (CEQA) Overview and Process
- Palmdale Water District (PWD) Overview
- SWRP Goals and Objectives
- SWRP Description
- Issues Analyzed in the EIR
- CEQA Schedule for Project
- Comments

California Environmental Quality Act (CEQA)

- Identifies potential impacts to the environment
- Informs the public and decision makers about potential environmental impacts
- Identifies ways to avoid or reduce potential impacts

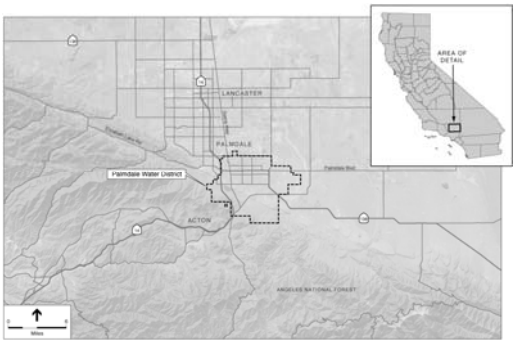
CEQA Process for an EIR

- Notice of Preparation
  - 30-day public review and comment period (ends Nov 26th)
  - Public scoping meeting (Nov 17, 2010, 7:00 pm)
- Draft Environmental Impact Report (EIR)
  - Notice of Availability of EIR
  - 45-day public review and comment period
  - Public meeting
- Response to Comments/Final EIR
- Certify EIR

Palmdale Water District Overview

- Palmdale Water District (PWD)
  - provides potable water to municipal, industrial and agricultural customers (~25,000 active customers)
- Service Area:
  - 47-square mile service area in the Antelope Valley of Los Angeles County, California, including City of Palmdale
- Water Supply:
  - Current demand approximately 28,250 AFY
  - 57% groundwater and local surface water
  - 43% imported water from State Water Project

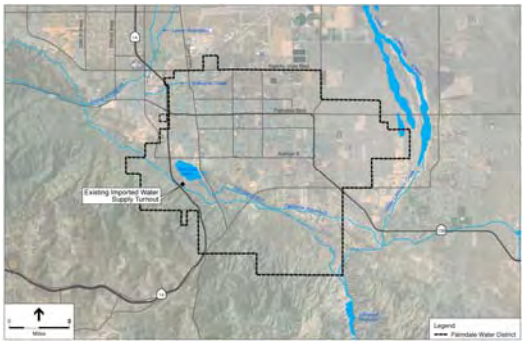
Regional Location Map



Palmdale Water District Overview

- Existing Facilities
  - Turnout on California Aqueduct East Branch
  - Palmdale Lake storage reservoir
  - Potable water treatment plant and distribution system
  - 25 groundwater wells
  - Littlerock Reservoir
  - Palmdale Ditch

Project Location Map



SWRP Goals and Objectives

- Primary Goal:
  - To develop and diversify PWD's water supply over the next 25 years through 2035
- Primary Objectives
  - Meet overall annual water demand for a customer base that is projected to double over the next 25 years.
  - Improve water reliability by increasing the number of water sources to supplement the system when an individual source becomes restricted or unavailable.
  - Increase operational flexibility by creating redundancy within the water conveyance and storage system.

SWRP Recommended Strategy

- The SWRP identifies a Recommended Water Resource Strategy that would increase potential water supplies in PWD's service area from 30,000 AFY to 65,000 AFY to meet projected demand in 2035.
- The Recommended Strategy includes Nine Implementation Actions

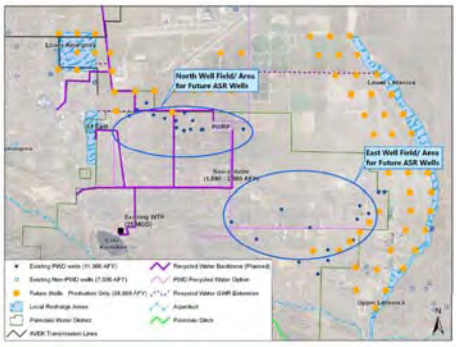
SWRP Implementation Actions

Imported Water Supplies

- Acquire and/or develop new imported supplies

Groundwater Recharge, Recovery, and Banking

- Create local raw water spreading facilities to percolate SWP water into the local aquifer
- Create aquifer storage and recovery (ASR) wells to inject and extract potable water into the local aquifer
- Create new groundwater production wells to expand groundwater pumping to achieve a target of delivering 70 percent of demand to customers



RMC

SWRP Implementation Actions

Recycled Water Storage and Use

- Implement a recycled water system for non-potable uses including irrigation and possibly some industrial
- Pursue recycled water exchange program with nearby agriculture in lieu of groundwater pumping
- Use recycled water to replenish the groundwater basin

Other Actions

- Expand conservation programs
- Implement Littlerock Reservoir Sediment Removal Project to recover storage capacity

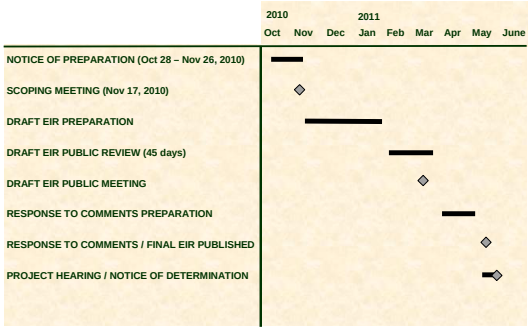
Issues to be Analyzed in the EIR

- Aesthetics
- Agriculture & Forestry Resources
- Air Quality and Greenhouse Gas Emissions
- Biological Resources
- Cultural Resources
- Geology, Soils and Seismicity
- Hazards & Hazardous Materials
- Hydrology & Water Quality
- Land Use & Recreation
- Noise & Vibration
- Public Services
- Traffic and Transportation

Other CEQA Requirements

- Alternative Analysis
- Cumulative Impact Analysis
- Growth Inducement Analysis

EIR Project Schedule Estimate



NOP Comment Period

- Comment period ends November 26, 2010
- NOP Availability:
  - Palmdale City Library, 700 E. Palmdale Blvd, Palmdale
- Submit comments tonight or mail comments to:

Jon Pernula, Water & Energy Resources Manager
Palmdale Water District, 2029 East Avenue Q,
Palmdale, CA 93550
Fax: (661) 947-8604
E-Mail: jpernula@palmdalewater.org

ATTACHMENT 5

Notice of Preparation – Public Review Extension

Date	November 24, 2010
To:	**Previously-Notified** Responsible and Trustee Agencies and Interested Parties
Subject:	Notice of Preparation of an Environmental Impact Report for the Palmdale Water District Strategic Water Resources Plan
Lead Agency:	Palmdale Water District
Public Review Period:	October 28, 2010 to November 26, 2010, **now extended through December 10, 2010**

This letter is to inform all **previously-notified interested parties** that Palmdale Water District (PWD) is extending the public comment period for the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for its proposed Strategic Water Resources Plan (SWRP or proposed project).

Due to an undeliverable NOP, some recipients were notified at a later date of the public comment period, and therefore PWD is extending the public comment period in order to provide ample opportunity for input during the initial scoping period for the EIR. The initial public comment period was from October 28, 2010 to November 26, 2010. **The public comment period for the NOP will now be extended for two-weeks through December 10, 2010.**

PWD is soliciting the views of interested persons and agencies as to the scope and content of the environmental information to be evaluated in the EIR. In accordance with CEQA, agencies are requested to review the project description that was **previously provided with the original NOP** and provide comments on environmental issues related to the statutory responsibilities of the agency. The EIR will be used by PWD when considering approval of the SWRP. Please continue to direct all comments to the contact person shown below. Please include a return address and contact name with your comments.

Jon Pernula, Water & Energy Resources Manager
Palmdale Water District, 2029 East Avenue Q, Palmdale, CA 93550
Fax: (661) 947-8604
E-Mail: jpernula@palmdalewater.org

The SWRP assumes the population in the PWD service area will double over the next 25 years or by 2035. The primary goal of the SWRP is to therefore develop and diversify PWD's water supply to ultimately provide supplies capable of matching future overall annual water demand on a year-to-year basis. A description of the SWRP and a brief analysis of its potential environmental effects were **previously provided as Attachment A to the NOP**. The secondary purpose of the proposed project is to improve water supply reliability and redundancy in PWD's service area by acquiring new supplies, developing local groundwater storage and recovery (banking), maximizing use of recycled water, expanding conservation efforts, and maintaining Littlerock Reservoir through sediment removal. The proposed project would increase the number of water sources to supplement the system when an individual source of water such as State Water Project (SWP) becomes restricted or unavailable for routine maintenance shutdowns, extended curtailments from the Delta, or unforeseen emergencies.

ATTACHMENT 6

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
e-mail: ds_nahc@pacbell.net

RECEIVED NOV 2010

November 1, 2010

Mr. Jon Pemula
Palmdale Water District
2029 East Avenue Q
Palmdale, CA 93550

Re: SCH#2010101091 CEQA Notice of Completion; draft Environmental Impact Report (DEIR) for the **Strategic Water Resources Plan Program**; located in the Palmdale Water District area; City of Palmdale; Los Angeles County, California

Dear Mr. Pemula:

The Native American Heritage Commission (NAHC) is the state 'trustee agency' pursuant to Public Resources Code §21070 for the protection and preservation of California's Native American Cultural Resources. (Also see *Environmental Protection Information Center v. Johnson (1985) 170 Cal App. 3rd 604).* The California Environmental Quality Act (CEQA - CA Public Resources Code §21000-21177, amendment effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the California Code of Regulations §15064.5(b)(c)(f) CEQA guidelines). Section 15382 of the CEQA Guidelines defines a significant impact on the environment as "a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance. The lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE), and if so, to mitigate that effect. State law also addresses Native American Religious Expression in Public Resources Code §5097.9.

It is important to do early consultation with Native American tribes in your area as the best way to avoid unanticipated discoveries once a project is underway and to learn of any sensitive cultural areas. Enclosed are the names of the culturally affiliated tribes and interested Native American individuals that the NAHC recommends as 'consulting parties,' for this purpose, that may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g. APE). A Native American Tribe or Tribal Elder may be the only source of information about a cultural resource.. Also, the NAHC recommends that a Native American Monitor or Native American culturally knowledgeable person be employed whenever a professional archaeologist is employed during the 'Initial Study' and in other phases of the environmental planning processes.

Furthermore the NAHC recommends that you contact the California Historic Resources Information System (CHRIS) of the Office of Historic Preservation (OHP), for information on recorded archaeological data. This information is available at the OHP Office in Sacramento (916) 445-7000.

Consultation with tribes and interested Native American tribes and interested Native American individuals, as consulting parties, on the NAHC list ,should be conducted in

compliance with the requirements of federal NEPA (42 U.S.C. 4321-43351) and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 [f]*et seq.),* 36 CFR Part 800.3, the President's Council on Environmental Quality (CSQ; 42 U.S.C. 4371 *et seq.*) and NAGPRA (25 U.S.C. 3001-3013), as appropriate. The 1992 *Secretary of the Interior's Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including *cultural landscapes.* Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e).

Lead agencies should consider avoidance, as defined in Section 15370 of the California Environmental Quality Act (CEQA) when significant cultural resources could be affected by a project. Also, Public Resources Code Section 5097.98 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery. Discussion of these should be included in your environmental documents, as appropriate.

The authority for the SLF record search of the NAHC Sacred Lands Inventory, established by the California Legislature, is California Public Resources Code §5097.94(a) and is exempt from the CA Public Records Act (c.f. California Government Code §6254.10). The results of the SLF search are confidential. However, Native Americans on the attached contact list are not prohibited from and may wish to reveal the nature of identified cultural resources/historic properties. Confidentiality of "historic properties of religious and cultural significance' may also be protected the under Section 304 of the NHPA or at the Secretary of the Interior' discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C, 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibly threatened by proposed project activity.

CEQA Guidelines, Section 15064.5(d) requires the lead agency to work with the Native Americans identified by this Commission if the initial Study identifies the presence or likely presence of Native American human remains within the APE. CEQA Guidelines provide for agreements with Native American, identified by the NAHC, to assure the appropriate and dignified treatment of Native American human remains and any associated grave liens. Although tribal consultation under the California Environmental Quality Act (CEQA; CA Public Resources Code Section 21000 – 21177) is 'advisory' rather than mandated, the NAHC does request 'lead agencies' to work with tribes and interested Native American individuals as 'consulting parties,' on the list provided by the NAHC in order that cultural resources will be protected. However, the 2006 SB 1059 the state enabling legislation to the Federal Energy Policy Act of 2005, does <u>mandate tribal consultation</u> for the 'electric transmission corridors. This is codified in the California Public Resources Code, Chapter 4.3, and §25330 to Division 15, requires consultation with California Native American tribes, and identifies both federally recognized and non-federally recognized on a list maintained by the NAHC

Health and Safety Code §7050.5, Public Resources Code §5097.98 and Sec. §15064.5 (d) of the California Code of Regulations (CEQA Guidelines) mandate procedures to be followed, including that construction or excavation be stopped in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery until the county coroner or medical examiner can determine whether the remains are those of a Native American. . Note

that §7052 of the Health & Safety Code states that disturbance of Native American cemeteries is a felony.

Please feel free to contact me at (916) 653-6251 if you have any questions.

Sincerely,

Dave Singleton
Program Analyst

Attachment: List of Culturally Affiliated Native American Contacts

Cc: State Clearinghouse

Native American Contacts
Los Angeles County
November 1, 2010

Charles Cooke
32835 Santiago Road
Acton , CA 93510
suscol@intox.net

(661) 733-1812 - cell
suscol@intox.net

Chumash
Fernandeno
Tataviam
Kitanemuk

LA City/County Native American Indian Comm
Ron Andrade, Director
3175 West 6th Street, Rm.
Los Angeles , CA 90020
randrade@css.lacounty.gov
(213) 351-5324
(213) 386-3995 FAX

Beverly Salazar Folkes
1931 Shadybrook Drive
Thousand Oaks, CA 91362
folkes@msn.com
805 492-7255
(805) 558-1154 - cell
folkes9@msn.com

Chumash
Tataviam
Ferrnandeño

Ron Wermuth
P.O. Box 168
Kernville , CA 93238
warmoose@earthlink.net
(760) 376-4240 - Home
(916) 717-1176 - Cell

Tubatulabal
Kawaiisu
Koso
Yokuts

San Manuel Band of Mission Indians
James Ramos, Chairperson
26569 Community Center Drive
Highland , CA 92346
(909) 864-8933
(909) 864-3724 - FAX
(909) 864-3370 Fax

Serrano

Kitanemuk & Yowlumne Tejon Indians
Delia Dominguez
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Covina , CA 91722
(626) 339-6785

Yowlumne
Kitanemuk

Fernandeno Tataviam Band of Mission Indians
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601 South Brand Boulevard, Suite 102
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(818) 837-0794 Office

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Fernandeno
Tataviam

San Fernando Band of Mission Indians
John Valenzuela, Chairperson
P.O. Box 221838
Newhall , CA 91322
tsen2u@hotmail.com
(661) 753-9833 Office
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(760) 949-1604 Fax

Fernandeño
Tataviam
Serrano
Vanyume
Kitanemuk

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This list is only applicable for contacting local Native Americans for consultation purposes with regard to cultural resources impact by the proposed SCH#2010101091; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the Strategic Water Resources Plan Program; located in the Palmdale Water District area of northeast Los Angeles County, California.

Native American Contacts
Los Angeles County
November 1, 2010

Randy Guzman - Folkes
655 Los Angeles Avenue, Unit E
Moorpark , CA 93021
ndnRandy@yahoo.com
(805) 905-1675 - cell

Chumash
Fernandeño
Tataviam
Shoshone Paiute
Yaqui

San Manuel Band of Mission Indians
Ann Brierty, Policy/Cultural Resources Departmen
26569 Community Center. Drive
Highland , CA 92346
(909) 864-8933, Ext 3250
abrierty@sanmanuel-nsn.gov
(909) 862-5152 Fax

Serrano

Kern Valley Indian Council
Robert Robinson, Historic Preservtion Officer
P.O. Box 401
Weldon , CA 93283
brobinson@iwvisp.com
(760) 378-4575 (Home)
(760) 549-2131 (Work)

Tubatulabal
Kawaiisu
Koso
Yokuts

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This list is only applicable for contacting local Native Americans for consultation purposes with regard to cultural resources impact by the proposed SCH#2010101091; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the Strategic Water Resources Plan Program; located in the Palmdale Water District area of northeast Los Angeles County, California.

City of Palmdale
Office of the
City Attorney

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THANK YOU

38300 Sierra Highway
Palmdale, CA 93550
(661) 267-5108
Fax: (661) 267-5178

FAX TRANSMISSION COVER SHEET

DATE: *November 23, 2010*

TO: *Mr. Jon Pernula, Water & Energy Resource Manager*
Palmdale Water District

FAX: (661) 947-8604

RE: Notice of Preparation of an Environmental Impact Report

SENDER: Vivian Wood, Administrative Technician
On Behalf of: *Wm. Matthew Ditzhazy, City Attorney*

YOU SHOULD RECEIVE ___3___PAGES, INCLUDING THIS COVER SHEET.
IF YOU DO NOT RECEIVE ALL THE PAGES, PLEASE CALL
(661) 267-5108

PALMDALE

a place to call home

OFFICE OF THE CITY ATTORNEY

JAMES C. LEDFORD, JR.
Mayor

TOM LACKEY
Mayor Pro Tem

LAURA BETTENCOURT
Councilmember

MIKE DISPENZA
Councilmember

STEVEN D. HOFBAUER
Councilmember

38300 Sierra Highway

Palmdale, CA 93550-4798

Tel: 661/267-5100

Fax: 661/267-5122

TDD: 661/267-5167

November 23, 2010

VIA FACSIMILE AND FEDERAL EXPRESS
Mr. Jon Pernula,
Water & Energy Resources Manager
Palmdale Water District
2029 East Avenue Q
Palmdale, CA 93550

Re: Comments on the Notice of Preparation of an Environmental Impact Report for the Palmdale Water District Strategic Water Resources Plan

Dear Mr. Pernula,

The City of Palmdale provides this comment on the scope of the proposed Environmental Impact Report (EIR) described above and the proposed Project and Strategy. The City of Palmdale is the recycled water retailer and recycled water supplier for that portion of the Palmdale Water District within the City of Palmdale. The court upheld the City's right to be the recycled water retailer and supplier for this area.

Palmdale Water District may not provide recycled water service within the City's boundaries and has made no arrangements to purchase recycled water from the City of Palmdale for use outside the City's boundaries. These facts need to be adequately taken into consideration.

In addition, the EIR shall address the basis for the assumption that the population within the Palmdale Water District service area will double over the next 25 years. Based upon the Southern California Association of Governments (SCAG) Local Input / General Plan Growth Forecast for the 2012 Regional Transportation Plan (RTP), the population within the City of Palmdale is expected to increase from the 2008 base year population of

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148,778 to 206,586 by 2035. This is a 39% increase in the overall City population and not just within the Palmdale Water District service area.

Further, the City of Palmdale does not anticipate any significant changes to the General Plan Land Use designations or map that would result in any significant change in the housing densities or number of service connections. With regards to the unincorporated areas of north Los Angeles County within the District's service area, the draft Los Angeles County Town and Country Plan proposes a reduction in residential densities in order to maintain the current rural lifestyle in these areas. This information and data should be considered when preparing the EIR document.

Should you have any questions concerning the comments provided, please feel free to contact me at (661) 267-5108.

Sincerely,

Wm. Matthew Ditzhazy
City Attorney

cc: Mayor and Members of the Palmdale City Council
Palmdale Water District Chair and Board Members
Stephen H. Williams, City Manager
Laurie Lile, Assistant City Manager
Richard Kite, Planning Manager

Antelope Valley Air Quality Management District
43301 Division St., Suite 206
Lancaster, CA 93535-4649

661.723.8070
Fax 661.723.3450

Eldon Heaston, Executive Director

November 10, 2010

Jon Pernula, Water & Energy Resources Manager
Palmdale Water District
2029 East Avenue Q
Palmdale, CA 93550

Re: Notice of Preparation of an Environmental Impact Report for the Palmdale Water District Strategic Water Resources Plan

Dear Mr. Pernula,

The Antelope Valley Air Quality Management District (AVAQMD) has reviewed the Notice of Preparation for an Environmental Impact Report pertaining to a proposed Strategic Water Resources Plan to increase potential water supplies in PWD's service area from 30,000 AFY to 65,000 AFY to meet projected demand in 2035. The proposed project would apply to PWD's 47-square mile water district service area, which is located in the Antelope Valley area of Los Angeles County, California.

The District has no special comments or information that would be necessary to the environmental review process. District attainment plans are located at http://www.avaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=2106 for your information and review.

Thank you for the opportunity to review this notice of preparation. If you have any questions regarding this letter, please contact me at (661) 723-8070 or Julie McKeehan at ext. 8.

Sincerely,

for/ **Bret Banks**
Operations Manager

BB/jm

Palmdale Water District NOP of EIR.doc

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Clean Cities
Antelope Valley

California Regional Water Quality Control Board

Lahontan Region

Linda S. Adams
Secretary for Environmental Protection

Victorville Office
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(760) 241-6583 • Fax (760) 241-7308
http://www.waterboards.ca.gov/lahontan

Arnold Schwarzenegger
Governor

FAX TRANSMITTAL PAGE

TO: Palmdale Water District **DATE:** November 24, 2010

ORGANIZATION:

PHONE NO: 661-947-4111 **FAX NO:** 661 947-8604

FROM: Mike Coony **PHONE NO.** 760 241-7353

SUBJECT: COMMENTS ON NOTICE OF PREPARATION FOR THE STRATEGIC WATER RESOURCES PLAN PROGRAM PROJECT, PALMDALE WATER DISTRICT

No. of pages, including cover sheet: _____

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COMMENTS: SCH # 2010101091

rp: Forms/ FAX FRM

California Regional Water Quality Control Board
Lahontan Region

Linda S. Adams
Secretary for Environmental Protection

Victorville Office
14440 Civic Drive, Suite 200, Victorville, California 92392
(760) 241-6583 • Fax (760) 241-7308
http://www.waterboards.ca.gov/lahontan

Arnold Schwarzenegger
Governor

November 24, 2010

File: Environmental Doc Review, LA County
Palmdale Aquifer Storage and Recovery

Jon Pemula
Palmdale Water District
2029 East Avenue Q
Palmdale, CA 93550

COMMENTS ON NOTICE OF PREPARATION FOR THE STRATEGIC WATER RESOURCES PLAN PROGRAM PROJECT, PALMDALE WATER DISTRICT, LOS ANGELES COUNTY, STATE CLEARINGHOUSE NO. 2010101091

The California Regional Water Quality Control Board, Lahontan Region (Water Board) staff has reviewed the Notice of Preparation, received on November 1, 2010, for the above-referenced project. As we understand it, the Palmdale Water District, as lead agency, proposes to develop an aquifer storage and recovery system to manage projected increases in imported water. According to the project description, the discharge into the aquifer will consist of spreading basins, injection wells, or combinations of spreading basins and injection wells. The project will occur within the Palmdale Water District (District) service area of 47 square miles. Please refer to the items checked below for staff comments on the above-referenced project:

[ ] The site plan for this project does not specifically identify features for the post-construction period that will control stormwater on-site or prevent pollutants from non-point sources from entering and degrading surface or ground waters. The foremost method of reducing impacts to watersheds from urban development is "Low Impact Development" (LID), the goals of which are maintaining a landscape functionally equivalent to predevelopment hydrologic conditions and minimal generation of nonpoint source pollutants. LID results in less surface runoff and less pollution routed receiving waters. Principles of LID include:

- Maintaining natural drainage paths and landscape features to slow and filter runoff and maximize groundwater recharge,
- Reducing the impervious cover created by development and the associated transportation network, and
- Managing runoff as close to the source as possible.

We understand that LID development practices that would maintain aquatic values could also reduce local infrastructure requirements and could benefit energy conservation, air quality, open space, and habitat. Many planning tools exist to implement the above principles, and a number of recent reports and manuals provide specific guidance regarding LID.

We request you require these principles to be incorporated into the proposed project design. We request natural drainage patterns be maintained to the extent feasible.

Future development plans should consider the following items:

[X] If the project involves land disturbance of more than one acre in area or is part of a larger plan of common development, then the project may require development of a Storm Water Pollution Prevention Plan (SWPPP) and

- a National Pollutant Discharge Elimination System (NPDES) General Construction Storm Water Permit, and/or
- a NPDES General Industrial Storm Water Permit.

These permits can be accessed through the State Water Resources Control Board's web site at http://www.waterboards.ca.gov/water_issues/programs/stormwater/.

Best Management Practices (BMPs) are used to reduce pollutants in runoff to waters of the State. The environmental document must specifically describe BMPs and their role in mitigation of project impacts.

[X] If the project involves disturbance to surface waters, the project may require either a Federal Clean Water Act Section 401 Water Quality Certification or Waste Discharge Requirements for dredge and fill, both obtained from the Water Board. Application forms can be downloaded from the Water Board's web site at http://www.waterboards.ca.gov/lahontan/water_issues/programs/clean_water_act_401/index.shtml.

[X] The environmental document must provide specific information on how impacts to surface waters of the State and/or waters of the U.S. will be mitigated. These surface waters include, but are not limited to, drainages, streams, washes, ponds, pools, or wetlands. Waters of the State or waters of the U.S. may be permanent or intermittent. Waters of the State may include waters determined to be isolated or otherwise non-jurisdictional by the Army Corps of Engineers. The environmental document needs to quantify these impacts and discuss purpose of project, need for surface water disturbance, and alternatives (avoidance, minimize disturbances, and mitigation). Mitigation must be identified in the environmental document including timing of construction.

Mitigation must protect functions and values of wetlands lost. For more information see the Water Quality Control Plan for the Lahontan Region (Basin Plan), which can be accessed via the Water Board's web site at http://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/index.shtml

[X] Other

- Please include both pre-construction and post-construction storm water management and BMPs as part of the planning process.

- Please consider designs that minimize impervious surfaces, such as permeable surface parking areas, directing runoff onto vegetated areas using curb cuts and rock swales, etc., and infiltrating runoff as close to the source as possible to avoid forming erosion channels. Design features should be incorporated to ensure that runoff is not concentrated by the proposed project. The project must incorporate measures to ensure that storm water generated by the project is managed on-site both pre- and post-construction. Please show on plan drawings the on-site storm water control measures.

- If the proposed project is located in an area that contains drainages, wetlands, waters of the State, waters of the U.S. or blue-line stream, we request that measures be incorporated into the project to avoid these areas and provide buffer zones where possible. The project proponent must consult with the Army Corps of Engineers, the Department of Fish and Game, and the Water Board prior to issuing a grading permit.

- Please consider development features that span drainage channels or allow for broad crossings. Design features of future development should be incorporated to ensure that runoff is not concentrated by the proposed project, thereby causing downstream erosion.

- If the proposed project impacts and alters drainages, then we request that the project be designed such that it would maintain existing drainage features and patterns to the extend feasible. The project proponent must consult with the Army Corps of Engineers, the Department of Fish and Game, and the Water Board prior to issuing a grading permit.

[X] Project specific comments

1. Please describe the proposed discharge locations, including spreading basins and injection wells. Please provide surface area and proposed locations for spreading basins. Please identify existing wells that will be used for injection and existing wells that will be used for monitoring. Please identify locations for new wells. For existing wells, please include function (e.g. injection), latitude, longitude, datum, well top elevation, well depth, and screened intervals.

2. Please provide projected annual discharge and annual extraction quantities for each 5 year period or shorter interval.

3. Please provide a complete characterization of the discharged water. Please include the following contaminants and constituents: pH, standard minerals, metals, volatile compounds, semi-volatile compounds, and disinfection byproducts. Disinfection byproducts are trihalomethanes, haloacetic acids, and N-nitrosodimethylamine. Please numerically compare the results to the State drinking water standards in *CCR*, title 22, Tables 64431-A, 64444-A, 64449-A, 64449-B, and 64533-A. Please describe treatment of water, including train of treatment unit processes, prior to discharge. Please state the origin of each imported water source.

4. Please describe the geology and subsurface conditions affected by the proposed project.

5. Please provide groundwater hydrology, including occurrence and movement of groundwater, affected by the project.

6. For the above items, please provide mitigation measures to reduce or eliminate water quality degradation.

7. Please consider, as a minimum, the following water quality based alternatives for your project:

   » Discharge alternative of spreading basins

   » Discharge alternative of injection wells

   » Discharge alternative with a combination of spreading basins and injection wells

   » No project alternative

8. Please evaluate the following water quality effects of each alternative:

   » Different water pre-treatment disinfection methods, including chloramines, ozone, ultra violet disinfection, and granular activated carbon.

   » The occurrence and movement of contaminants and other waste constituents in groundwater over time. These include TDS, nitrate, trihalomethanes, haloacetic acids, and N-nitrosodimethylamine. For spreading basin alternatives, please describe the effect of the contaminants and constituents as they move through the soil and rocks above the groundwater.

   » Capital costs, operation costs, and total costs; and their incremental cost to District's users.

   » An alternative analysis that considers both costs and water quality degradation.

   » Mitigation measures to reduce water quality degradation.

The objective of the alternative analysis is to demonstrate that the proposed project is consistent with the State's non degradation policy. This policy states that any project that degrades water quality must meet best practicable treatment or control, resulting in the highest water quality consistent with the maximum benefit to the State.

9. Please describe the CEQA process for authorizing the construction of each specific project activity, such as each injection well installation, each monitoring well installation, reconfiguring of existing supply wells for injection, and any project distribution pipeline.

Please note that obtaining a permit and conducting monitoring does not constitute adequate mitigation. Development and implementation of acceptable mitigation is required. The environmental document must specifically describe the BMPs and other measures used to mitigate project impacts.

If you have any questions, please do not hesitate to contact me at 760-241-7353 (mcoony@waterboards.ca.gov) or Cindi Mitton, Senior Engineer, at 760-241-7413 (cmitton@waterboards.ca.gov).

Sincerely,

Mike Coony

Mike Coony, PE
Water Resources Control Engineer.

cc: State Clearinghouse, PO Box 3044, Sacramento CA 95812-3044

MC/rp/Francis\Final\40504LtrCeqaPalmdaleAsr.doc

California Regional Water Quality Control Board
Lahontan Region

Linda s. Adams
Secretary for Environmental Protection

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Arnold Schwarzenegger
Governor

FAX TRANSMITTAL PAGE

DATE: _Dec 2, 2010__

TO: Jon Pemula

ORGANIZATION: Palmdale Water District

PHONE NO: 661-947-4111

FAX NO: 661-947-8604

FROM: Mike Coony Mike Coony PHONE: 760-241-7353

SUBJECT: SCH 2010101091 NOP for Strategic Water Resources Plan Program

No. of pages, including cover sheet:

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_____ FILE
_____ ORIGINAL TO FOLLOW

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COMMENTS Lahontan Water Board has one additional comment to our CEQA comment letter of November 24, 2010. For your project, please analyze/evaluate the effects of emerging chemicals in recycled water. For additional information, see:

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/CECpanel/CECMonitoringInCARecycledWater_FinalReport.pdf

x: Forms/ FAX FRM

Jennifer Jacobus

From: Jon Pernula [jpernula@palmdalewater.org]
Sent: Wednesday, November 24, 2010 2:41 PM
To: Jennifer Jacobus
Subject: FW: Strategic Water Resources Plan Project
Attachments: CEQA NOP Attachment 1 final 1109.PDF; NOP Attachment 2 revised.PDF; Header; Header; Header

Jennifer,
Forwarded herewith is the Dept of Fish and Games form letter in response to the NOP from Scott P. Harris Environmental Scientist CA Dept. of Fish and Game Habitat Conservation Branch
Happy Thanksgiving And Cheers!

Jon M Pernula
Water and Energy Resource Director
Palmdale Water District
Palmdale Ca. 93550
(661) 947-4111 x 105
jpernula@palmdalewater.org

-----Original Message-----
From: Scott P. Harris [mailto:SPHARRIS@dfg.ca.gov]
Sent: Wednesday, November 24, 2010 11:19 AM
To: Jon Pernula
Subject: Fwd: Strategic Water Resources Plan Project

Mr. Pernula:

The Department of Fish and Game (Department) has received the Notice of Preparation for the proposed Palmdale Water District's (PWD) Strategic Water Resources Plan Project to be implemented within PWD's 47 square-mile service area in the Antelope Valley of Los Angeles County.

The proposed Project includes the acquisition of additional surface water rights and imported water supplies and implementation of local groundwater banking including new facilities for recharge and recovery and new spreading facilities, extraction wells and ASR wells.

The Department is California's trustee agency for fish and wildlife resources, holding these resources in trust for the People of State pursuant to various provisions of the California Fish and Game Code.
(Fish & G. Code, §§ 711.7, subd. (a), 1802.) The Department submits these comments in that capacity under the California Environmental Quality Act (CEQA). (See generally Pub. Resources Code, §§ 21070;
21080.4.) Given its related permitting authority under the California Endangered Species Act (CESA) and Fish and Game Code section 1600 et seq., the Department also submits these comments likely as a responsible agency for the Project under CEQA. (Id., § 21069.)

The California Wildlife Action Plan, a recent Department guidance document, identified the following stressors affecting wildlife and habitats within the project area: 1) growth and development; 2) water management conflicts and degradation of aquatic ecosystems; 3) invasive species; 4) altered fire regimes; and 5) recreational pressures. The Department looks forward to working with the Lead Agency to minimize impacts to fish and wildlife resources with a focus on these stressors.

Please let Department staff know if you would like a copy of the plan to review.

To enable Department staff to adequately review and comment on the proposed project we recommend the following information, where applicable, be included in the draft Environmental Impact Report:

1. A complete, recent assessment of flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and locally unique species and sensitive habitats (Attachment 1, Plant Survey Protocol).

a. A thorough recent assessment of rare plants and rare natural communities, following the Department's Guidelines for Assessing Impacts to Rare Plants and Rare Natural Communities.

b. A complete, recent assessment of sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use within the project area should also be addressed. Recent, focused, species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and U.S. Fish and Wildlife Service.

c. Endangered, rare, and threatened species to address should include all those species which meet the related definition under the CEQA Guidelines. (See Cal. Code Regs., tit. 14, § 15380.)

d. The Department's Biogeographic Data Branch in Sacramento should be contacted at (916) 322-2493 (www.dfg.ca.gov/biogeodata) to obtain current information on any previously reported sensitive species and habitats, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code. Also, any Significant Ecological Areas (SEAs) or Environmentally Sensitive Habitats (ESHs) or any areas that are considered sensitive by the local jurisdiction that are located in or adjacent to the project area must be addressed.

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts. This discussion should focus on maximizing avoidance, and minimizing impacts.

a. CEQA Guidelines, Section 15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.

b. Project impacts should also be analyzed relative to their effects on off-site habitats and populations. Specifically, this should include nearby public lands, open space, adjacent natural habitats, and riparian ecosystems. Impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitat in adjacent areas are of concern to the Department and should be fully evaluated and provided. The analysis should also include a discussion of the potential for impacts resulting from such effects as increased vehicle traffic, outdoor artificial lighting, noise and vibration.

c. A cumulative effects analysis should be developed as described under CEQA Guidelines, Section 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

d. Impacts to migratory wildlife affected by the project should be fully evaluated including proposals to remove/disturb native and ornamental landscaping and other nesting habitat for native birds.
Impact evaluation may also include such elements as migratory butterfly roost sites and neo-tropical bird and waterfowl stop-over and staging sites. All migratory nongame native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA)
of 1918 (50 C.F.R. Section 10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibit take of birds and their active nests, including raptors and other migratory nongame birds as listed under the MBTA.

e. Impacts to all habitats from City or County required Fuel Modification Zones (FMZ). Areas slated as mitigation for loss of habitat shall not occur within the FMZ.

f. Proposed project activities (including disturbances to vegetation) should take place outside of the breeding bird season (February 1- September 1) to avoid take (including disturbances which would cause abandonment of active nests containing eggs and/or young).

If project activities cannot avoid the breeding bird season, nest surveys should be conducted and active nests should be avoided and provided with a minimum buffer as determined by a biological monitor (the Department recommends a minimum 500-foot buffer for all active raptor nests).

3. A range of alternatives should be analyzed to ensure that alternatives to the proposed project are fully considered and evaluated.
A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resources including wetlands/riparian habitats, alluvial scrub, coastal sage scrub, should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts.
Compensation for unavoidable impacts through acquisition and protection of high quality habitat elsewhere should be addressed with off-site mitigation locations clearly identified.

b. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts (Attachment 2).

c. The Department generally does not support the use of relocation,
salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.

4. An Incidental Take Permit from the Department may be required if
the Project, Project construction, or any Project-related activity during the life of the Project will result in “take” as defined by the Fish and Game Code of any species protected by CESA. (Fish & G.
Code, §§86, 2080, 2081, subd. (b), (c).) Early consultation with Department regarding potential permitting obligations under CESA with respect to the Project is encouraged. (Cal. Code Regs., tit. 14, § 783.2, subd. (b).) It is imperative with these potential permitting obligations that the draft environmental impact report prepared by the PWD in the present

case includes a thorough and robust analysis of the potentially significant impacts to endangered, rare, and threatened species, and their habitat, that may occur as a result of the proposed Project. For any such potentially significant impacts the PWD should also analyze and describe specific, potentially feasible mitigation measures to avoid or substantially lessen any such impacts as required by CEQA and, if an ITP is necessary, as required by the relevant permitting criteria prescribed by Fish and Game Code section 2081, subdivisions (b) and (c). The failure to include this analysis in the Project environmental impact report could preclude the Department from relying on the PWD's analysis to issue an ITP without the Department first conducting its own, separate lead agency subsequent or supplemental analysis for the Project. (See, e.g., Cal. Code Regs., tit. 14, § 15096, subd. (f); Pub. Resources Code, § 21166.) For these reasons, the following information is requested:

a. Biological mitigation monitoring and reporting proposals should be of sufficient detail and resolution to satisfy the requirements for a CESA Permit.

b. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act.

5. The Department opposes the elimination of watercourses (including concrete channels, blue line streams and other watercourses not designated as bloodline streams on USGS maps) and/or the canalization of natural and manmade drainages or conversion to subsurface drains. All wetlands and watercourses, whether intermittent, ephemeral, or perennial, must be retained and provided with substantial setbacks which preserve the riparian and aquatic habitat values and maintain their value to on-site and off-site wildlife populations.
The
Department recommends a minimum natural buffer of 100 feet from the outside edge of the riparian zone on each side of drainage.

a. The Department also has regulatory authority with regard to activities occurring in streams and/or lakes that could adversely affect any fish or wildlife resource. For any activity that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) or a river or stream or use material from a streambed, the project applicant (or "entity") must provide written notification to the Department pursuant to Section
1602
of the Fish and Game Code. Based on this notification and other information, the Department then determines whether a Lake and Streambed Alteration (LSA) Agreement is required. The Department's issuance of an LSA is a project subject to CEQA. To facilitate issuance of an Agreement, if necessary, the environmental impact report should fully identify the potential impacts to the lake, stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for issuance of the Agreement. Early consultation is recommended, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources. Again, the failure to include this analysis in the Project environmental impact report could preclude the Department from relying on the PWD's analysis to issue an Agreement without the Department first conducting its own, separate lead agency subsequent or supplemental analysis for the Project.

Thank you for this opportunity to provide comments.

Sincerely,

Attachment

Scott P. Harris
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Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities

State of California
CALIFORNIA NATURAL RESOURCES AGENCY
Department of Fish and Game
November 24, 2009[1]

INTRODUCTION AND PURPOSE

The conservation of special status native plants and their habitats, as well as natural communities, is integral to maintaining biological diversity. The purpose of these protocols is to facilitate a consistent and systematic approach to the survey and assessment of special status native plants and natural communities so that reliable information is produced and the potential of locating a special status plant species or natural community is maximized. They may also help those who prepare and review environmental documents determine when a botanical survey is needed, how field surveys may be conducted, what information to include in a survey report, and what qualifications to consider for surveyors. The protocols may help avoid delays caused when inadequate biological information is provided during the environmental review process; assist lead, trustee and responsible reviewing agencies to make an informed decision regarding the direct, indirect, and cumulative effects of a proposed development, activity, or action on special status native plants and natural communities; meet California Environmental Quality Act (CEQA)[2] requirements for adequate disclosure of potential impacts; and conserve public trust resources.

DEPARTMENT OF FISH AND GAME TRUSTEE AND RESPONSIBLE AGENCY MISSION

The mission of the Department of Fish and Game (DFG) is to manage California's diverse wildlife and native plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. DFG has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (Fish and Game Code §1802). DFG, as trustee agency under CEQA §15386, provides expertise in reviewing and commenting on environmental documents and makes protocols regarding potential negative impacts to those resources held in trust for the people of California.

Certain species are in danger of extinction because their habitats have been severely reduced in acreage, are threatened with destruction or adverse modification, or because of a combination of these and other factors. The California Endangered Species Act (CESA) provides additional protections for such species, including take prohibitions (Fish and Game Code §2050 *et seq.*). As a responsible agency, DFG has the authority to issue permits for the take of species listed under CESA if the take is incidental to an otherwise lawful activity; DFG has determined that the impacts of the take have been minimized and fully mitigated; and, the take would not jeopardize the continued existence of the species (Fish and Game Code §2081). Surveys are one of the preliminary steps to detect a listed or special status plant species or natural community that may be impacted significantly by a project.

DEFINITIONS

Botanical surveys provide information used to determine the potential environmental effects of proposed projects on all special status plants and natural communities as required by law (i.e., CEQA, CESA, and Federal Endangered Species Act (ESA)). Some key terms in this document appear in **bold font** for assistance in use of the document.

For the purposes of this document, **special status plants** include all plant species that meet one or more of the following criteria[3]:

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1 This document replaces the DFG document entitled "Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities."

2 http://ceres.ca.gov/ceqa/

3 Adapted from the East Alameda County Conservation Strategy available at

- Listed or proposed for listing as threatened or endangered under ESA or candidates for possible future listing as threatened or endangered under the ESA (50 CFR §17.12).

- Listed[4] or candidates for listing by the State of California as threatened or endangered under CESA (Fish and Game Code §2050 *et seq.*). A species, subspecies, or variety of plant is **endangered** when the prospects of its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, disease, or other factors (Fish and Game Code §2062). A plant is **threatened** when it is likely to become endangered in the foreseeable future in the absence of special protection and management measures (Fish and Game Code §2067).

- Listed as rare under the California Native Plant Protection Act (Fish and Game Code §1900 *et seq*.). A plant is **rare** when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901).

- Meet the definition of rare or endangered under CEQA §15380(b) and (d). Species that may meet the definition of rare or endangered include the following:

  - Species considered by the California Native Plant Society (CNPS) to be "rare, threatened or endangered in California" (Lists 1A, 1B and 2);

  - Species that may warrant consideration on the basis of local significance or recent biological information[5];

  - Some species included on the California Natural Diversity Database's (CNDDB) *Special Plants, Bryophytes, and Lichens List* (California Department of Fish and Game 2008)[6].

- Considered a **locally significant species,** that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.

Special status natural communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special status species or their habitat. The most current version of the Department's *List of California Terrestrial Natural Communities*[7] indicates which natural communities are of special status given the current state of the California classification.

Most types of wetlands and riparian communities are considered special status natural communities due to their limited distribution in California. These natural communities often contain special status plants such as those described above. These protocols may be used in conjunction with protocols formulated by other agencies, for example, those developed by the U.S. Army Corps of Engineers to delineate jurisdictional wetlands[8] or by the U.S. Fish and Wildlife Service to survey for the presence of special status plants[9].

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http://www.fws.gov/sacramento/EACCS/Documents/080228_Species_Evaluation_EACCS.pdf

4 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

5 In general, CNPS List 3 plants (plants about which more information is needed) and List 4 plants (plants of limited distribution) may not warrant consideration under CEQA §15380. These plants may be included on special status plant lists such as those developed by counties where they would be addressed under CEQA §15380. List 3 plants may be analyzed under CEQA §15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a List 4 plant are significant even if individual project impacts are not. List 3 and 4 plants are also included in the California Natural Diversity Database's (CNDDB) *Special Plants, Bryophytes, and Lichens List.* [Refer to the current online published list available at: http://www.dfg.ca.gov/biogeodata.] Data on Lists 3 and 4 plants should be submitted to CNDDB. Such data aids in determining or revising priority ranking.

6 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

7 http://www.dfg.ca.gov/biogeodata/vegcamp/pdfs/natcomlist.pdf. The rare natural communities are asterisked on this list.

8 http://www.wetlands.com/regs/tlpge02e.htm

9 U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/sacramento/es/protocol.htm

BOTANICAL SURVEYS

Conduct botanical surveys prior to the commencement of any activities that may modify vegetation, such as clearing, mowing, or ground-breaking activities. It is appropriate to conduct a botanical field survey when:

- Natural (or naturalized) vegetation occurs on the site, and it is unknown if special status plant species or natural communities occur on the site, and the project has the potential for direct or indirect effects on vegetation; or
- Special status plants or natural communities have historically been identified on the project site; or
- Special status plants or natural communities occur on sites with similar physical and biological properties as the project site.

SURVEY OBJECTIVES

Conduct field surveys in a manner which maximizes the likelihood of locating special status plant species or special status natural communities that may be present. Surveys should be **floristic in nature**, meaning that every plant taxon that occurs on site is identified to the taxonomic level necessary to determine rarity and listing status. "Focused surveys" that are limited to habitats known to support special status species or are restricted to lists of likely potential species are not considered floristic in nature and are not adequate to identify all plant taxa on site to the level necessary to determine rarity and listing status. Include a list of plants and natural communities detected on the site for each botanical survey conducted. More than one field visit may be necessary to adequately capture the floristic diversity of a site. An indication of the prevalence (estimated total numbers, percent cover, density, etc.) of the species and communities on the site is also useful to assess the significance of a particular population.

SURVEY PREPARATION

Before field surveys are conducted, compile relevant botanical information in the general project area to provide a regional context for the investigators. Consult the CNDDB[10] and BIOS[11] for known occurrences of special status plants and natural communities in the project area prior to field surveys. Generally, identify vegetation and habitat types potentially occurring in the project area based on biological and physical properties of the site and surrounding ecoregion[12], unless a larger assessment area is appropriate. Then, develop a list of special status plants with the potential to occur within these vegetation types. This list can serve as a tool for the investigators and facilitate the use of reference sites; however, special status plants on site might not be limited to those on the list. Field surveys and subsequent reporting should be comprehensive and floristic in nature and not restricted to or focused only on this list. Include in the survey report the list of potential special status species and natural communities, and the list of references used to compile the background botanical information for the site.

SURVEY EXTENT

Surveys should be comprehensive over the entire site, including areas that will be directly or indirectly impacted by the project. Adjoining properties should also be surveyed where direct or indirect project effects, such as those from fuel modification or herbicide application, could potentially extend offsite. Pre-project surveys restricted to known CNDDB rare plant locations may not identify all special status plants and communities present and do not provide a sufficient level of information to determine potential impacts.

FIELD SURVEY METHOD

Conduct surveys using **systematic field techniques** in all habitats of the site to ensure thorough coverage of potential impact areas. The level of effort required per given area and habitat is dependent upon the vegetation and its overall diversity and structural complexity, which determines the distance at which plants can be identified. Conduct surveys by walking over the entire site to ensure thorough coverage, noting all plant taxa observed. The level of effort should be sufficient to provide comprehensive reporting. For example, one person-hour per eight acres

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10 Available at http://www.dfg.ca.gov/biogeodata/cnddb

11 http://www.bios.dfg.ca.gov/

12 Ecological Subregions of California, available at http://www.fs.fed.us/r5/projects/ecoregions/toc.htm

per survey date is needed for a comprehensive field survey in grassland with medium diversity and moderate terrain[13], with additional time allocated for species identification.

TIMING AND NUMBER OF VISITS

Conduct surveys in the field at the time of year when species are both evident and identifiable. Usually this is during flowering or fruiting. Space visits throughout the growing season to accurately determine what plants exist on site. Many times this may involve multiple visits to the same site (e.g. in early, mid, and late-season for flowering plants) to capture the floristic diversity at a level necessary to determine if special status plants are present[14]. The timing and number of visits are determined by geographic location, the natural communities present, and the weather patterns of the year(s) in which the surveys are conducted.

REFERENCE SITES

When special status plants are known to occur in the type(s) of habitat present in the project area, observe reference sites (nearby accessible occurrences of the plants) to determine whether those species are identifiable at the time of the survey and to obtain a visual image of the target species, associated habitat, and associated natural community.

USE OF EXISTING SURVEYS

For some sites, floristic inventories or special status plant surveys may already exist. Additional surveys may be necessary for the following reasons:

- Surveys are not current[15]; or
- Surveys were conducted in natural systems that commonly experience year to year fluctuations such as periods of drought or flooding (e.g. vernal pool habitats or riverine systems); or
- Surveys are not comprehensive in nature; or fire history, land use, physical conditions of the site, or climatic conditions have changed since the last survey was conducted[16]; or
- Surveys were conducted in natural systems where special status plants may not be observed if an annual above ground phase is not visible (e.g. flowers from a bulb); or
- Changes in vegetation or species distribution may have occurred since the last survey was conducted, due to habitat alteration, fluctuations in species abundance and/or seed bank dynamics.

NEGATIVE SURVEYS

Adverse conditions may prevent investigators from determining the presence of, or accurately identifying, some species in potential habitat of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any given year. Discuss such conditions in the report.

The failure to locate a known special status plant occurrence during one field season does not constitute evidence that this plant occurrence no longer exists at this location, particularly if adverse conditions are present. For example, surveys over a number of years may be necessary if the species is an annual plant having a persistent, long-lived seed bank and is known not to germinate every year. Visits to the site in more than one year increase the likelihood of detection of a special status plant especially if conditions change. To further substantiate negative findings for a known occurrence, a visit to a nearby reference site may ensure that the timing of the survey was appropriate.

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13 Adapted from U.S. Fish and Wildlife Service kit fox survey guidelines available at www.fws.gov/sacramento/es/documents/kitfox_no_protocol.pdf

14 U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/sacramento/es/protocol.htm

15 Habitats, such as grasslands or desert plant communities that have annual and short-lived perennial plants as major floristic components may require yearly surveys to accurately document baseline conditions for purposes of impact assessment. In forested areas, however, surveys at intervals of five years may adequately represent current conditions. For forested areas, refer to "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at https://r1.dfg.ca.gov/portal/Portals/12/THPBotanicalGuidelinesJuly2005.pdf

16 U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/botanicalinventories.pdf

REPORTING AND DATA COLLECTION

Adequate information about special status plants and natural communities present in a project area will enable reviewing agencies and the public to effectively assess potential impacts to special status plants or natural communities[17] and will guide the development of minimization and mitigation measures. The next section describes necessary information to assess impacts. For comprehensive, systematic surveys where no special status species or natural communities were found, reporting and data collection responsibilities for investigators remain as described below, excluding specific occurrence information.

SPECIAL STATUS PLANT OR NATURAL COMMUNITY OBSERVATIONS

Record the following information for locations of each special status plant or natural community detected during a field survey of a project site.

- A detailed map (1:24,000 or larger) showing locations and boundaries of each special status species occurrence or natural community found as related to the proposed project. Mark occurrences and boundaries as accurately as possible. Locations documented by use of global positioning system (GPS) coordinates must include the datum[18] in which they were collected;
- The site-specific characteristics of occurrences, such as associated species, habitat and microhabitat, structure of vegetation, topographic features, soil type, texture, and soil parent material. If the species is associated with a wetland, provide a description of the direction of flow and integrity of surface or subsurface hydrology and adjacent off-site hydrological influences as appropriate;
- The number of individuals in each special status plant population as counted (if population is small) or estimated (if population is large);
- If applicable, information about the percentage of individuals in each life stage such as seedlings vs. reproductive individuals;
- The number of individuals of the species per unit area, identifying areas of relatively high, medium and low density of the species over the project site; and
- Digital images of the target species and representative habitats to support information and descriptions.

FIELD SURVEY FORMS

When a special status plant or natural community is located, complete and submit to the CNDDB a California Native Species (or Community) Field Survey Form[19] or equivalent written report, accompanied by a copy of the relevant portion of a 7.5 minute topographic map with the occurrence mapped. Present locations documented by use of GPS coordinates in map and digital form. Data submitted in digital form must include the datum[20] in which it was collected. If a potentially undescribed special status natural community is found on the site, document it with a Rapid Assessment or Relevé form[21] and submit it with the CNDDB form.

VOUCHER COLLECTION

Voucher specimens provide verifiable documentation of species presence and identification as well as a public record of conditions. This information is vital to all conservation efforts. Collection of voucher specimens should be conducted in a manner that is consistent with conservation ethics, and is in accordance with applicable state and federal permit requirements (e.g. incidental take permit, scientific collection permit). Voucher collections of special status species (or suspected special status species) should be made only when such actions would not jeopardize the continued existence of the population or species.

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17 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata. For Timber Harvest Plans (THPs) please refer to the "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at https://r1.dfg.ca.gov/portal/Portals/12/THPBotanicalGuidelinesJuly2005.pdf

18 NAD83, NAD27 or WGS84

19 http://www.dfg.ca.gov/biogeodata

20 NAD83, NAD27 or WGS84

21 http://www.dfg.ca.gov/biogeodata/vegcamp/veg_publications_protocols.asp

Deposit voucher specimens with an indexed regional herbarium[22] no later than 60 days after the collections have been made. Digital imagery can be used to supplement plant identification and document habitat. Record all relevant permittee names and permit numbers on specimen labels. A collecting permit is required prior to the collection of State-listed plant species[23].

BOTANICAL SURVEY REPORTS

Include reports of botanical field surveys containing the following information with project environmental documents:

- **Project and site description**
  - A description of the proposed project;
  - A detailed map of the project location and study area that identifies topographic and landscape features and includes a north arrow and bar scale; and,
  - A written description of the biological setting, including vegetation[24] and structure of the vegetation; geological and hydrological characteristics; and land use or management history.
- **Detailed description of survey methodology and results**
  - Dates of field surveys (indicating which areas were surveyed on which dates), name of field investigator(s), and total person-hours spent on field surveys;
  - A discussion of how the timing of the surveys affects the comprehensiveness of the survey;
  - A list of potential special status species or natural communities;
  - A description of the area surveyed relative to the project area;
  - References cited, persons contacted, and herbaria visited;
  - Description of reference site(s), if visited, and phenological development of special status plant(s);
  - A list of all taxa occurring on the project site. Identify plants to the taxonomic level necessary to determine whether or not they are a special status species;
  - Any use of existing surveys and a discussion of applicability to this project;
  - A discussion of the potential for a false negative survey;
  - Provide detailed data and maps for all special plants detected. Information specified above under the headings “Special Status Plant or Natural Community Observations,” and “Field Survey Forms,” should be provided for locations of each special status plant detected;
  - Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms should be sent to the CNDDB and included in the environmental document as an Appendix. It is not necessary to submit entire environmental documents to the CNDDB; and,
  - The location of voucher specimens, if collected.
- **Assessment of potential impacts**
  - A discussion of the significance of special status plant populations in the project area considering nearby populations and total species distribution;
  - A discussion of the significance of special status natural communities in the project area considering nearby occurrences and natural community distribution;

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22 For a complete list of indexed herbaria, see: Holmgren, P., N. Holmgren and L. Barnett. 1990. Index Herbariorum, Part 1: Herbaria of the World. New York Botanic Garden, Bronx, New York. 693 pp. Or: http://www.nybg.org/bsci/ih/ih.html

23 Refer to current online published lists available at: http://www.dfg.ca.gov/biogeodata.

24 A vegetation map that uses the National Vegetation Classification System (http://biology.usgs.gov/npsveg/nvcs.html), for example *A Manual of California Vegetation*, and highlights any special status natural communities. If another vegetation classification system is used, the report should reference the system, provide the reason for its use, and provide a crosswalk to the National Vegetation Classification System.

- A discussion of direct, indirect, and cumulative impacts to the plants and natural communities;
- A discussion of threats, including those from invasive species, to the plants and natural communities;
- A discussion of the degree of impact, if any, of the proposed project on unoccupied, potential habitat of the species;
- A discussion of the immediacy of potential impacts; and,
- Recommended measures to avoid, minimize, or mitigate impacts.

QUALIFICATIONS

Botanical consultants should possess the following qualifications:

- Knowledge of plant taxonomy and natural community ecology;
- Familiarity with the plants of the area, including special status species;
- Familiarity with natural communities of the area, including special status natural communities;
- Experience conducting floristic field surveys or experience with floristic surveys conducted under the direction of an experienced surveyor;
- Familiarity with the appropriate state and federal statutes related to plants and plant collecting; and,
- Experience with analyzing impacts of development on native plant species and natural communities.

SUGGESTED REFERENCES

Barbour, M., T. Keeler-Wolf, and A. A. Schoenherr (eds.). 2007. Terrestrial vegetation of California (3rd Edition). University of California Press.

Bonham, C.D. 1988. Measurements for terrestrial vegetation. John Wiley and Sons, Inc., New York, NY.

California Native Plant Society. Most recent version. Inventory of rare and endangered plants (online edition). California Native Plant Society, Sacramento, CA. Online URL http://www.cnps.org/inventory.

California Natural Diversity Database. Most recent version. Special vascular plants, bryophytes and lichens list. Updated quarterly. Available at www.dfg.ca.gov.

Elzinga, C.L., D.W. Salzer, and J. Willoughby. 1998. Measuring and monitoring plant populations. BLM Technical Reference 1730-1. U.S. Dept. of the Interior, Bureau of Land Management, Denver, Colorado.

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Mueller-Dombois, D. and H. Ellenberg. 1974. Aims and methods of vegetation ecology. John Wiley and Sons, Inc., New York, NY.

U.S. Fish and Wildlife Service. 1996. Guidelines for conducting and reporting botanical inventories for federally listed plants on the Santa Rosa Plain. Sacramento, CA.

U.S. Fish and Wildlife Service. 1996. Guidelines for conducting and reporting botanical inventories for federally listed, proposed and candidate plants. Sacramento, CA.

Van der Maarel, E. 2005. Vegetation Ecology. Blackwell Science Ltd., Malden, MA.

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Sensitivity of Top Priority Rare Natural Communities in Southern California

Sensitivity rankings are determined by the Department of Fish and Game, California Natural Diversity Data Base and based on either number of known occurrences (locations) and/or amount of habitat remaining (acreage). The three rankings used for these top priority rare natural communities are as follows:

S1.# Fewer than 6 known locations and/or on fewer than 2,000 acres of habitat remaining.

S2.# Occurs in 6-20 known locations and/or 2,000-10,000 acres of habitat remaining.

S3.# Occurs in 21-100-known locations and/or 10,000-50,000 acres of habitat remaining.

The number to the right of the decimal point after the ranking refers to the degree of threat posed to that natural community regardless of the ranking. For example:

S1.1 = very threatened
S2.2 = threatened
S3.3 = no current threats known

Sensitivity Rankings (February 1992)

Rank	Community Name
S1.1	Mojave Riparian Forest
	Sonoran Cottonwood Willow Riparian
	Mesquite Bosque
	Elephant Tree Woodland
	Crucifixion Thorn Woodland
	Allthorn Woodland
	Arizonan Woodland
	Southern California Walnut Forest
	Mainland Cherry Forest
	Southern Bishop Pine Forest
	Torrey Pine Forest
	Desert Mountain White Fir Forest
	Southern Dune Scrub
	Southern Coastal Bluff Scrub
	Maritime Succulent Scrub
	Riversidean Alluvial Fan Sage Scrub
	Southern Maritime Chaparral
	Valley Needlegrass Grassland
	Great Basin Grassland
	Mojave Desert Grassland
	Pebble Plains
	Southern Sedge Bog
	Cismontane Alkali Marsh

S1.2	Southern Foredunes Mono Pumice Flat Southern Interior Basalt Flow Vernal Pool
S2.1	Venturan Coastal Sage Scrub Diegan Coastal Sage Scrub Riversidean Upland Coastal Sage Scrub Riversidean Desert Sage Scrub Sagebrush Steppe Desert Sink Scrub Mafic Southern Mixed Chaparral San Diego Mesa Hardpan Vernal Pool San Diego Mesa Claypan Vernal Pool Alkali Meadow Southern Coastal Salt Marsh Coastal Brackish Marsh Transmontane Alkali Marsh Coastal and Valley Freshwater Marsh Southern Arroyo Willow Riparian Forest Southern Willow Scrub Modoc-Great Basin Cottonwood Willow Riparian Modoc-Great Basin Riparian Scrub Mojave Desert Wash Scrub Engelmann Oak Woodland Open Engelmann Oak Woodland Closed Engelmann Oak Woodland Island Oak Woodland California Walnut Woodland Island Ironwood Forest Island Cherry Forest Southern Interior Cypress Forest Bigcone Spruce-Canyon Oak Forest
S2.2	Active Coastal Dunes Active Desert Dunes Stabilized and Partially Stabilized Desert Dunes Stabilized and Partially Stabilized Desert Sandfield Mojave Mixed Steppe Transmontane Freshwater Marsh Coulter Pine Forest Southern California Fellfield White Mountains Fellfield
S2.3	Bristlecone Pine Forest Limber Pine Forest
S3.2	Joshua tree woodland Mojave mixed woody scrub

Appendix B
Air Quality Data

ESA

Air Quality Appendix

Air Quality Calculations

Appendix Contents

Pipeline Summary Report for Summer Emissions – 1 page
Pipeline Detail Report for Summer Construction Unmitigated Emissions – 1 page
Pipeline Summary Report for Annual Emissions – 1 page
Basins Summary Report for Summer Emissions – 1 page
Basins Detail Report for Summer Construction Unmitigated Emissions – 2 pages
Basins Summary Report for Annual Emissions – 1 page
Wells Summary Report for Summer Emissions – 1 page
Wells Detail Report for Summer Construction Unmitigated Emissions – 1 pages
Wells Summary Report for Annual Emissions – 1 page
Pump Stations Summary Report for Summer Emissions – 1 page
Pump Stations Detail Report for Summer Construction Unmitigated Emissions – 1 pages
Pump Stations Summary Report for Annual Emissions – 1 page
Tanks Summary Report for Summer Emissions – 1 page
Tanks Detail Report for Summer Construction Unmitigated Emissions – 2 pages
Tanks Summary Report for Annual Emissions – 1 page
Treatment Plant Summary Report for Summer Emissions – 1 page
Treatment Plant Detail Report for Summer Construction Unmitigated – 2 pages
Treatment Plant Summary Report for Annual Emissions – 1 page
Indirect Electricity Greenhouse Gas Calculations – 3 pages

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Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale pipeline.urb924

Project Name: palmdale pipeline

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	E
2012 TOTALS (lbs/day unmitigated)	4.21	35.83	18.66	0.00	0.01	1.70	1.72	0.01	

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale pipeline.urb924

Project Name: palmdale pipeline

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM
Time Slice 1/2/2012-12/31/2012 Active Days: 261	**4.21**	**35.83**	**18.66**	**0.00**	**0.01**	**1.70**	**1.72**	**0.01**	
Trenching 01/01/2012-12/31/2012	4.21	35.83	18.66	0.00	0.01	1.70	1.72	0.01	
Trenching Off Road Diesel	4.14	35.70	16.29	0.00	0.00	1.69	1.69	0.00	
Trenching Worker Trips	0.07	0.14	2.36	0.00	0.01	0.01	0.02	0.01	

Phase Assumptions

Phase: Trenching 1/1/2012 - 12/31/2012 - Default Trenching

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Plate Compactors (8 hp) operating at a 0.43 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1/24/2011 12:01:24 PM

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale pipeline.urb924

Project Name: palmdale pipeline

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust
2012 TOTALS (tons/year unmitigated)	0.55	4.68	2.43	0.00	0.00	0.22	0.22	0.00

1/24/2011 12:08:54 PM

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale basins.urb924

Project Name: palmdale basins

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	E
2012 TOTALS (lbs/day unmitigated)	4.95	40.23	23.00	0.00	10.01	2.01	12.02	2.09	

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale basins.urb924

Project Name: palmdale basins

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM
Time Slice 1/2/2012-12/31/2012 Active Days: 261	**4.95**	**40.23**	**23.00**	**0.00**	10.01	**2.01**	12.02	2.09	
Mass Grading 01/01/2012-12/31/2012	4.95	40.23	23.00	0.00	10.01	2.01	12.02	2.09	
Mass Grading Dust	0.00	0.00	0.00	0.00	10.00	0.00	10.00	2.09	
Mass Grading Off Road Diesel	4.89	40.11	20.87	0.00	0.00	2.00	2.00	0.00	
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Mass Grading Worker Trips	0.06	0.12	2.13	0.00	0.01	0.01	0.02	0.00	

Phase Assumptions

Phase: Mass Grading 1/1/2012 - 12/31/2012 - Default Mass Site Grading/Excavation

Total Acres Disturbed: 640

Maximum Daily Acreage Disturbed: 0.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 8 hours per day

1 Plate Compactors (8 hp) operating at a 0.43 load factor for 8 hours per day

1/24/2011 12:09:18 PM

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale basins.urb924

Project Name: palmdale basins

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	E
2012 TOTALS (tons/year unmitigated)	0.65	5.25	3.00	0.00	1.31	0.26	1.57	0.27	

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Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale wells.urb924

Project Name: palmdale wells

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	E
2012 TOTALS (lbs/day unmitigated)	6.09	60.52	23.55	0.00	0.00	2.17	2.17	0.00	

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale wells.urb924

Project Name: palmdale wells

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM
Time Slice 1/2/2012-3/30/2012 Active Days: 65	**6.09**	**60.52**	**23.55**	**0.00**	**0.00**	**2.17**	**2.17**	**0.00**	
Building 01/01/2012-03/31/2012	6.09	60.52	23.55	0.00	0.00	2.17	2.17	0.00	
Building Off Road Diesel	6.08	60.50	23.39	0.00	0.00	2.17	2.17	0.00	
Building Vendor Trips	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	
Building Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	

Phase Assumptions

Phase: Building Construction 1/1/2012 - 3/31/2012 - Default Building Construction

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 24 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (549 hp) operating at a 0.74 load factor for 8 hours per day

1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale wells.urb924

Project Name: palmdale wells

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	E
2012 TOTALS (tons/year unmitigated)	0.20	1.97	0.77	0.00	0.00	0.07	0.07	0.00	

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Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale pump stations.urb924

Project Name: palmdale pump stations

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	E
2012 TOTALS (lbs/day unmitigated)	4.59	36.93	18.57	0.00	0.01	1.67	1.68	0.00	

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale pump stations.urb924

Project Name: palmdale pump stations

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM
Time Slice 1/2/2012-12/31/2012 Active Days: 261	**4.59**	**36.93**	**18.57**	**0.00**	**0.01**	**1.67**	**1.68**	**0.00**	
Building 01/01/2012-12/31/2012	4.59	36.93	18.57	0.00	0.01	1.67	1.68	0.00	
Building Off Road Diesel	4.51	36.56	16.52	0.00	0.00	1.65	1.65	0.00	
Building Vendor Trips	0.03	0.27	0.24	0.00	0.00	0.01	0.01	0.00	
Building Worker Trips	0.06	0.10	1.81	0.00	0.01	0.01	0.02	0.00	

Phase Assumptions

Phase: Building Construction 1/1/2012 - 12/31/2012 - Default Building Construction

Off-Road Equipment:

1 Aerial Lifts (60 hp) operating at a 0.46 load factor for 8 hours per day

1 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

2 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

1 Plate Compactors (8 hp) operating at a 0.43 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale pump stations.urb924

Project Name: palmdale pump stations

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	E
2012 TOTALS (tons/year unmitigated)	0.60	4.82	2.42	0.00	0.00	0.22	0.22	0.00	

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Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale tanks.urb924

Project Name: palmdale storage tanks

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	E
2012 TOTALS (lbs/day unmitigated)	5.80	44.51	25.44	0.00	1.22	2.13	3.35	0.26	

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale tanks.urb924

Project Name: palmdale storage tanks

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM
Time Slice 1/2/2012-12/31/2012 Active Days: 261	**5.80**	**44.51**	**25.44**	**0.00**	**1.22**	**2.13**	**3.35**	**0.26**	
Mass Grading 01/01/2012-12/31/2012	5.80	44.51	25.44	0.00	1.22	2.13	3.35	0.26	
Mass Grading Dust	0.00	0.00	0.00	0.00	1.20	0.00	1.20	0.25	
Mass Grading Off Road Diesel	5.72	44.36	22.84	0.00	0.00	2.12	2.12	0.00	
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Mass Grading Worker Trips	0.08	0.15	2.60	0.00	0.02	0.01	0.03	0.01	

Phase Assumptions

Phase: Mass Grading 1/1/2012 - 12/31/2012 - Default Mass Site Grading/Excavation

Total Acres Disturbed: 0.23

Maximum Daily Acreage Disturbed: 0.06

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Aerial Lifts (60 hp) operating at a 0.46 load factor for 8 hours per day

1 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 8 hours per day

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

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1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

1 Plate Compactors (8 hp) operating at a 0.43 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

1/24/2011 2:21:24 PM

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale tanks.urb924

Project Name: palmdale storage tanks

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	E
2012 TOTALS (tons/year unmitigated)	0.76	5.81	3.32	0.00	0.16	0.28	0.44	0.03	

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Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale treatment plant.urb924

Project Name: Palmdale treatment plant

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	E
2012 TOTALS (lbs/day unmitigated)	10.72	77.41	87.48	0.12	2.49	3.98	6.47	0.59	

1/24/2011 11:54:11 AM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale treatment plant.urb924

Project Name: Palmdale treatment plant

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM
Time Slice 1/2/2012-12/31/2012 Active Days: 261	**10.72**	**77.41**	**87.48**	**0.12**	2.49	**3.98**	6.47	0.59	
Building 01/01/2012-12/31/2012	7.51	52.35	72.15	0.12	0.48	2.65	3.13	0.17	
Building Off Road Diesel	3.17	15.05	10.71	0.00	0.00	1.05	1.05	0.00	
Building Vendor Trips	3.28	35.31	26.86	0.07	0.26	1.48	1.74	0.09	
Building Worker Trips	1.05	1.99	34.59	0.05	0.21	0.12	0.34	0.08	
Mass Grading 01/01/2012-12/31/2012	3.21	25.05	15.33	0.00	2.01	1.33	3.34	0.42	
Mass Grading Dust	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.42	
Mass Grading Off Road Diesel	3.16	24.96	13.67	0.00	0.00	1.32	1.32	0.00	
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Mass Grading Worker Trips	0.05	0.10	1.65	0.00	0.01	0.01	0.02	0.00	

Phase Assumptions

Phase: Mass Grading 1/1/2012 - 12/31/2012 - Default Mass Site Grading/Excavation

Total Acres Disturbed: 20

Maximum Daily Acreage Disturbed: 0.1

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Plate Compactors (8 hp) operating at a 0.43 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 1/1/2012 - 12/31/2012 - Default Building Construction
Off-Road Equipment:
1 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 8 hours per day
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\dsa\Application Data\Urbemis\Version9a\Projects\palmdale treatment plant.urb924

Project Name: Palmdale treatment plant

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust
2012 TOTALS (tons/year unmitigated)	1.40	10.10	11.42	0.02	0.32	0.52	0.84	0.08

Greenhouse Gas (GHG) Emissions Calculations

Project Name: Palmdale Water District SWRP PEIR

Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Est Project Annual Electrical Use (Treatment Plant):	25,000,000	kWh (kilowatt hours)/year
Est Project Annual Electrical Use (Pumps, wells):	28,500	kWh (kilowatt hours)/year
	25,028,500	kWh (kilowatt hours)/year
	25,029	mWh (megawatt hours)/year

Indirect GHG gases	Emission Factor lb/mWh	Annual Project Electricity mWh	Annual GHGs metric tons	CO2 Equivalent Factor	Annual CO2 Equivalent Emissions (metric tons)
Carbon Dioxide (CO2)	650	25,029	7,379	1	7379
Nitrous Oxide (N2O)	0.0037	25,029	0.0	296	12
Methane (CH4)	0.0067	25,029	0.1	23	2
Total Indirect GHG Emissions from Project Electricity Use (Imported Water)=					**7,393**

Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

Vehicles	**5**	0.1%
Electrical Use	**7393**	99.9%
Total=	**7,398**	100.0%

Notes and References:

Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Regiustry Report Protocol
Reporting Entity-wide Greenhouse Gas Emissions 2008
Pg. 33 (CCARRP) gives Equations

Pg. 36 (CCARRP - April 2008 update) gives CO2 output emission rate (lbs/mWh)
878.71 (lbs/mWh)

Pg. 36 (CCARRP) gives CO2 equivalency factors

Pg. 36 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

Southern California Edison gives CO2 output emission rate (lbs/mWh)
650 lbs/mWh

Percentage of 25,000	29.6%
Percentage of 427 Million	0.0017%

URBEMIS Calcs:	Tons/Year Unmitigated	Metric Tons
Pipelines	693	
Spreading Basins	582	
Wells	324	
Pump Stations	657	
Storage Tanks	697	
Treatment Plant	2161	
Construction CO2	5114	4639

Air Quality Analysis for Mobile Emissions Year 2035

grams/mile

YEAR	ROG	CO	NOx	CO2	PM10
2035	0.029	0.807	0.196	435.71	0.019

Paved Roa lbs/VMT Entrained PM10	Paved Road lbs/VMT Entrained PM2.5
0.003112	0.000177

Assumed average speed of vehicles type to be 35 mph to and from the project site.
Assumed average distance for is 35 miles roundtrip.

EMISSIONS CALCULATION FOR ON-ROAD VEHICLES DURING OPERATIONAL ACTIVITIES

Emissions = Vehicle Type x Emission Factor x Miles/Trip x Trips/Day

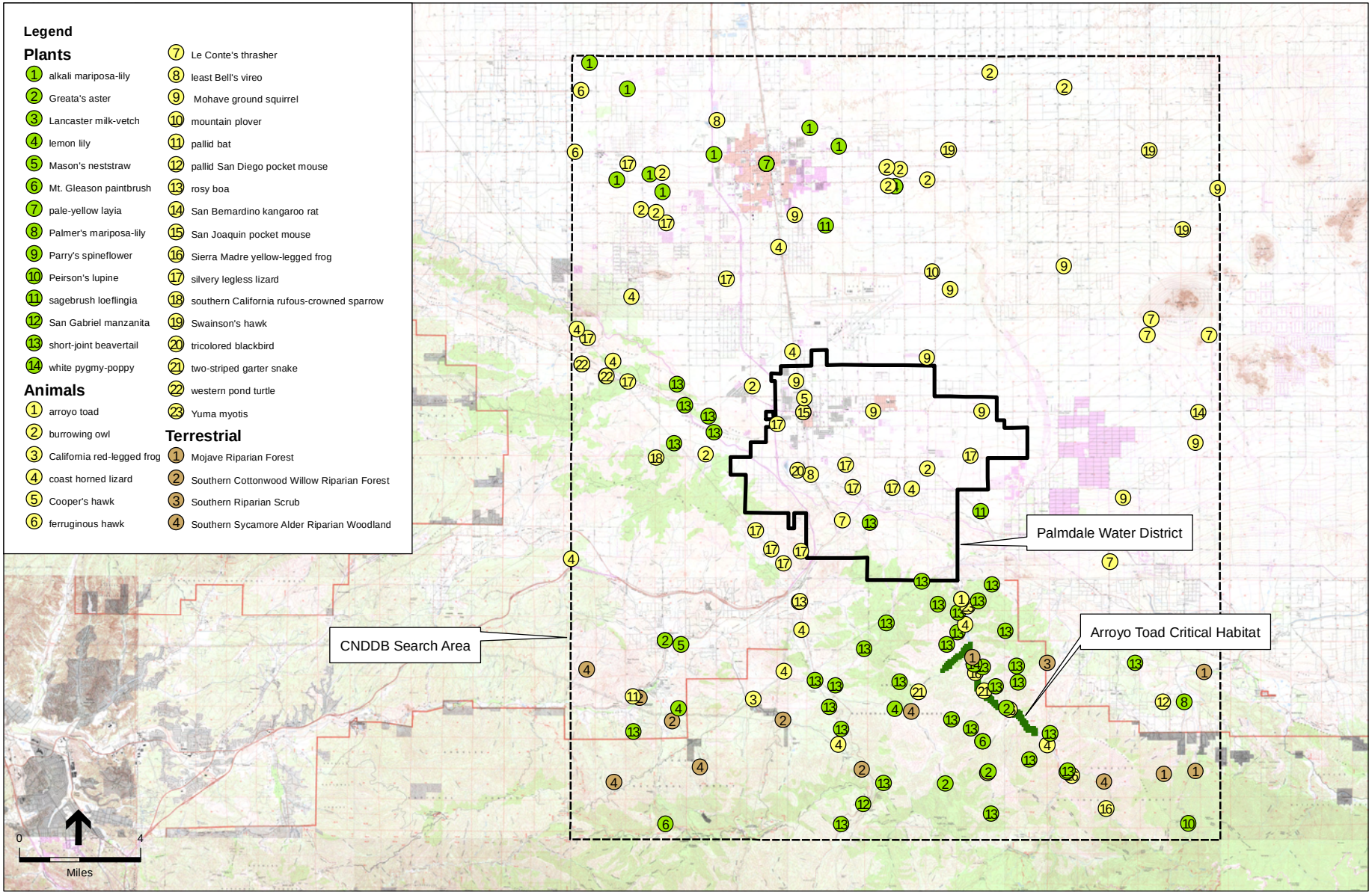
Note: Trip length takes into account round trips. 3 trips per week, 6 round trips per week, 0.89 trips per day.
Mobile Emissions Associated with Worker trips in 2025

			Emission Factors							
			ROG	CO	Nox	CO2	PM10		lbs/mile dust	lbs/mile dust
2035 emissions (grams/mile)			0.029	0.807	0.196	435.71	0.019			
2035 emissions (pounds/mile)			6.39E-05	1.78E-03	4.32E-04	9.61E-01	4.19E-05		3.11E-03	1.77E-04
Miles/Trip	Trips/day	Miles/day	Mobile Source Emissions (lbs/day)						lbs/day	lbs/day
35	0.85	29.75	0.00	0.05	0.01	28.58	0.00		0.09	0.01

	2011 -	On-road Vehicle Exhaust per day					Fugitive	Dust	
	ROG	CO	Nox	CO2	PM10	PM2.5	PM10	PM2.5	
lbs/day	0.00	0.05	0.01	29	0.001	0.001	0.09	0.01	lbs/day
tons/year	0.000	0.010	0.002	5	0.0002	0.0002	0.02	0.001	tons/year

Appendix C
CNDDB and Critical Habitat

ESA



SOURCE: ESA, 2011.

Palmdale Water District SWRP . 210170

Appendix C

CNDDB and Critical Habitat

Appendix D

EnviroStar and GeoTracker Site Outputs

ESA

EnviroStor Outputs for Palmdale Water District Strategic Water Resources Plan EIR
January 11, 2011

ENVIROSTOR ID	SITE / FACILITY NAME	SITE / FACILITY TYPE	CLEANUP STATUS	STATUS DATE	ADDRESS DESCRIPTION	CITY	ZIP	COUNTY	SITE CODE	LATITUDE	LONGITUDE
19970004	AIR FORCE PLANT #42, PALMDALE	STATE RESPONSE	ACTIVE	7/1/1994	5832 ACRES; BETWN PALMDALE AND LANCASTER	PALMDALE	93550	LOS ANGELES	300002	34.62961285	-118.0916972
71003066	BOEING NORTH AMERICAN, INC., PALMDALE	TIERED PERMIT			2825 E. AVENUE P	PALMDALE	93550	LOS ANGELES		34.612727	-118.075605
71004107	LOCKHEED MARTIN SKUNK WORKS	TIERED PERMIT			1011 LOCKHEED WAY	PALMDALE	93599	LOS ANGELES		34.6121952	-118.0933285
60001064	MOUNTAIN VALLEY RANCH	VOLUNTARY CLEANUP	NO FURTHER ACTION	4/23/2009	47TH STREET EAST & FORT TEJON ROAD (STATE ROUTE 138)	PALMDALE	93552	LOS ANGELES	301406	34.55375	-118.04499
CAD075305888	NORTHROP CORPORATION AIRCRAFT DIV	HAZ WASTE - NON-OPERATING			2503 E AVENUE P	PALMDALE	902500000	LOS ANGELES		34.602276	-118.085316
71003592	ROCKWELL INTERNATIONAL, NO. AMER AIRCRAFT PLANT 42/3	TIERED PERMIT			3000 E. AVENUE M	PALMDALE	93550	LOS ANGELES		34.64973	-118.072101
80001498	SR TECHNICS AMERICA INC	CORRECTIVE ACTION	* INACTIVE	1/1/2008	2825 E AVENUE P	PALMDALE	935502107	LOS ANGELES		35.157949	-117.897168
CAD982479206	SR TECHNICS AMERICA INC	HAZ WASTE - NON-OPERATING			2825 E AVENUE P	PALMDALE	935502107	LOS ANGELES		35.157949	-117.897168

GeoTracker Outputs for Palmdale Water District Strategic Water Resources Plan Program EIR
Janaury 11, 2011

GEOTRACKER ID	SITE NAME	CLEANUP STATUS	ADDRESS	CITY	LATITUDE	LONGITUDE
SLT6V0073834	LOCKHEED MARTIN-RELATED WORK	COMPLETED - CASE CLOSED	1101 LOCKHEED WAY	PALMDALE	34.58484685	-118.1037033
T0603700236	SOUTHERN PACIFIC - PALMDALE	COMPLETED - CASE CLOSED	38021 SIERRA HWY	PALMDALE	34.5728231	-118.1155067
T0603700251	PALMDALE HIGH SCHOOL	COMPLETED - CASE CLOSED	2137 AVE R E	PALMDALE	34.5727291	-118.0930363
T0603700260	A V READY MIX	COMPLETED - CASE CLOSED	37815 6TH ST E	PALMDALE	34.569044	-118.117562
T0603700266	PETRO-LOCK INC	OPEN - SITE ASSESSMENT	38206 SIERRA HWY N	PALMDALE	34.575581	-118.1156967
T0603700267	JACOBS OIL CO	COMPLETED - CASE CLOSED	1518 PALMDALE BLVD E	PALMDALE	34.5796081	-118.1023999
T0603700274	ANTELOPE VALLEY REFRIGERATING	COMPLETED - CASE CLOSED	602 AVE R E	PALMDALE	34.5725569	-118.1170434
T0603700296	PALMDALE WATER DISTRICT	COMPLETED - CASE CLOSED	2005 AVE Q E	PALMDALE	34.5874792	-118.0941364
T0603700305	ANTELOPE VALLEY TRUCKING	COMPLETED - CASE CLOSED	37900 6TH ST E	PALMDALE	34.5715342	-118.1176778
T0603700318	LADPW MD-5	COMPLETED - CASE CLOSED	38126 SIERRA HWY	PALMDALE	34.575409	-118.1158027
T0603700325	WESTON BUILDERS SUPPLY CO	COMPLETED - CASE CLOSED	37822 N 6TH ST E	PALMDALE	34.568941	-118.116397
T0603700358	HDOC #055	COMPLETED - CASE CLOSED	38627 SIERRA HWY N	PALMDALE	34.5871658	-118.1178223
T0603700364	GAS CO - HIGH DESERT STA #055	COMPLETED - CASE CLOSED	38627 SIERRA HWY N	PALMDALE	34.5838607	-118.1173188
T0603700380	LA CO FIRE STATION #037	COMPLETED - CASE CLOSED	38318 9TH ST E	PALMDALE	34.578128	-118.11389
T0603700381	WILSON AMBULANCE SERVICE	COMPLETED - CASE CLOSED	38241 6TH ST E	PALMDALE	34.576137	-118.11846
T0603700392	76 PRODUCT FACILITY #1016	COMPLETED - CASE CLOSED	38405 SIERRA HWY N	PALMDALE	34.5796309	-118.1167388
T0603700397	CHEVRON USA SS # 094189	COMPLETED - CASE CLOSED	103 PALMDALE BLVD W	PALMDALE	34.5791398	-118.1293652
T0603704814	MINUTE SERVE DAIRY	OPEN - SITE ASSESSMENT	41940 50TH ST WEST N	PALMDALE	34.5682864	-118.0961131
T0603705457	CIRCLE K STORES #5608	COMPLETED - CASE CLOSED	38405 SIERRA HWY N	PALMDALE	34.5796652	-118.1166238
T0603709494	ANTELOPE VALLEY AUTO MALL/CARWASH	OPEN - SITE ASSESSMENT	38935 5TH ST W	PALMDALE	34.590245	-118.13955
T0603726285	VALLARTA STATION	COMPLETED - CASE CLOSED	470 EAST PALMDALE BLVD	PALMDALE	34.579397	-118.12102
T0603735589	NORTHRIDGE EQUIPMENT RENTALS	COMPLETED - CASE CLOSED	38860 N SIERRA HWY	PALMDALE	34.588383	-118.117948
T0603783297	SHELL SERVICE STATION	OPEN - VERIFICATION MONITORING	1853 PALMDALE BOULEVARD, EAST	PALMDALE	34.580046	-118.094547
T0603784358	CITY OF PALMDALE COMMUNITY REDEVELOPMENT	COMPLETED - CASE CLOSED	38405 N SIERRA HWY	PALMDALE	34.579976	-118.116677
T0603789329	PALMDALE CAR WASH	COMPLETED - CASE CLOSED	1520 E. PALMDALE BLVD	PALMDALE	34.579131	-118.102166
T0603794772	PIERCE PROPERTY	COMPLETED - CASE CLOSED	932 EAST AVENUE Q-10	PALMDALE	34.5774933	-118.1134328
T0603799268	US GAS & MINI MART	OPEN - SITE ASSESSMENT	105 E PALMDALE BLVD	PALMDALE	34.580037	-118.128879
T10000002527	MASSARAI PROPERTIES	COMPLETED - CASE CLOSED	39500 SIERRA HIGHWAY	PALMDALE	34.5945813	-118.1204439

Appendix E

California Agricultural Land Evaluation and Site Assessment Model

ESA

CALIFORNIA AGRICULTURAL

LAND EVALUATION AND SITE ASSESSMENT MODEL

Instruction Manual

For further information, please contact:

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CALIFORNIA AGRICULTURAL

LAND EVALUATION AND SITE ASSESSMENT MODEL

Instruction Manual
1997

Department of Conservation
Office of Land Conservation

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EXECUTIVE SUMMARY

Land Evaluation and Site Assessment (LESA) is a term used to define an approach for rating the relative quality of land resources based upon specific measurable features. The formulation of a California Agricultural LESA Model is the result of Senate Bill 850 (Chapter 812 /1993), which charges the Resources Agency, in consultation with the Governor's Office of Planning and Research, with developing an amendment to Appendix G of the California Environmental Quality Act (CEQA) Guidelines concerning agricultural lands. Such an amendment is intended "to provide lead agencies with an optional methodology to ensure that significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process" (Public Resources Code Section 21095).

The California Agricultural LESA Model is composed of six different factors. Two Land Evaluation factors are based upon measures of soil resource quality. Four Site Assessment factors provide measures of a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, each of these factors is separately rated on a 100 point scale. The factors are then weighted relative to one another and combined, resulting in a single numeric score for a given project, with a maximum attainable score of 100 points. It is this project score that becomes the basis for making a determination of a project's potential significance, based upon a range of established scoring thresholds. This Manual provides detailed instructions on how to utilize the California LESA Model, and includes worksheets for applying the Model to specific projects.

INTRODUCTION

Defining the LESA System

The Land Evaluation and Site Assessment (LESA) system is a point-based approach that is generally used for rating the relative value of agricultural land resources. In basic terms, a given LESA model is created by defining and measuring two separate sets of factors. The first set, Land Evaluation, includes factors that measure the inherent soil-based qualities of land as they relate to agricultural suitability. The second set, Site Assessment, includes factors that are intended to measure social, economic, and geographic attributes that also contribute to the overall value of agricultural land. While this dual rating approach is common to all LESA models, the individual land evaluation and site assessment factors that are ultimately utilized and measured can vary considerably, and can be selected to meet the local or regional needs and conditions for which a LESA model is being designed to address. In short, the LESA methodology lends itself well to adaptation and customization in individual states and localities. Considerable additional information on LESA may be found in *A Decade with LESA - the Evolution of Land Evaluation and Site Assessment* (8).

Background on LESA Nationwide

In 1981, the federal Natural Resources Conservation Service (NRCS), known then as the Soil Conservation Service, released a new system that was designed to provide objective ratings of the agricultural suitability of land compared to demands for nonagricultural uses of lands. The system became known as Land Evaluation and Site Assessment, or LESA. Soon after it was designed, LESA was adopted as a procedural tool at the federal level for identifying and addressing the potential adverse effects of federal programs (e.g., funding of highway construction) on farmland protection. The Farmland Protection Policy Act of 1981 (5) spells out requirements to ensure that federal programs, to the extent practical, are compatible with state, local, and private programs and policies to protect farmland, and calls for the use of LESA to aid in this analysis. Typically, staff of the NRCS is involved in performing LESA scoring analyses of individual projects that involve other agencies of the federal government.

Since its inception, the LESA approach has received substantial attention from state and local governments as well. Nationwide, over two hundred jurisdictions have developed local LESA methodologies (7). One of the attractive features of the LESA approach is that it is well suited to being modified to reflect regional and local conditions. Typical local applications of LESA include assisting in decision making concerning the sitting of projects, changes in zoning, and spheres of influence determinations. LESA is

also increasingly being utilized for farmland protection programs, such as the identification of priority areas to concentrate conservation easement acquisition efforts.

Because of the inherent flexibility in LESA model design, there is a broad array of factors that a given LESA model can utilize. Some LESA models require the measurement of as many as twenty different factors. Over the past 15 years, the body of knowledge concerning LESA model development and application has begun to indicate that LESA models utilizing only several basic factors can capture much of the variability associated with the determination of the relative value of agricultural lands. In fact, LESA models with many factors are increasingly viewed as having redundancies, with different factors essentially measuring the same features, or being highly correlated with one another. Additional information on the evolution and development of the LESA approach is provided in, A *Decade with LESA -The Evolution of Land Evaluation and Site Assessment* (8).

Development of the California Agricultural LESA Model

In 1990 the Department of Conservation commissioned a study to investigate land use decisions that affect the conversion of agricultural lands in California. The study, conducted by Jones and Stokes Associates, Inc., was prepared in response to concerns about agricultural land conversion identified in the *California Soil Conservation Plan* (1) (developed by the ad hoc Soil Conservation Advisory Committee serving the Department of Conservation in 1987). Among these concerns was the belief that there was inadequate information available concerning the socioeconomic and environmental implications of farmland conversions, and that the adequacy of current farmland conversion impact analysis under the California Environmental Quality Act (CEQA) was not fully known. The findings of this study are included in the publication, *The Impacts of Farmland Conversion in California* (2).

Currently, neither CEQA nor the State CEQA Guidelines contains procedures or specific guidance concerning how agencies should address farmland conversion impacts of projects. The only specific mention of agricultural issues is contained in Appendix G of the State CEQA Guidelines, which states that a project will normally have a significant effect on the environment if it will “convert prime agricultural land to non-agricultural use or impair the agricultural productivity of prime agricultural land”.

Among the conclusions contained in *The Impacts of Farmland Conversion in California* study was that the lack of guidance in how lead agencies should address the significance of farmland conversion impacts resulted in many instances of no impact analysis at all. A survey of environmental documents sent to the Governor's Office of Planning and Research (OPR) between 1986 and 1988 was performed. The survey

showed that among projects that affected at least 100 acres of land and for which agriculture was a project issue, nearly 30 percent received Negative Declarations, and therefore did not did not receive the environmental impact analysis that would be provided by an Environmental Impact Report (EIR).

Of those projects involving the conversion of agricultural lands and being the subject of an EIR, the study found a broad range of approaches and levels of detail in describing the environmental setting, performing an impact analysis, and providing alternative mitigation measures. The only agricultural impacts found to be significant in the EIRs were those involving the direct removal of prime agricultural lands from production by the project itself. The focus on prime farmland conversion in the projects surveyed was deemed to be related to the narrow direction provided in Appendix G of the State CEQA Guidelines.

The formulation of a California LESA Model is the result of Senate Bill 850 (Chapter 812 /1993), which charges the Resources Agency, in consultation with the Governor's Office of Planning and Research, to develop an amendment to Appendix G of the California Environmental Quality Act (CEQA) Guidelines. Such an amendment is intended "to provide lead agencies with an optional methodology to ensure that significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process" (Public Resources Code Section 21095). This legislation authorizes the Department of Conservation to develop a California LESA Model, which can in turn be adopted as the required amendment to Appendix G of the CEQA Guidelines.

Presentation of the California LESA Model

The California LESA Model is presented in this Manual in the following sections:

Section I. provides a listing of the information and tools that will typically be needed to develop LESA scores for individual projects.

Section II. provides step-by-step instructions for scoring each of the six Land Evaluation and Site Assessment factors that are utilized in the Model, with an explanation of the rationale for the use of each factor.

Section III. defines the assignment of weights to each of the factors relative to one another, and the creation of a final LESA score for a given project.

Section IV. assigns scoring thresholds to final LESA scores for the purpose of determining the significance of a given project under CEQA where the conversion of agricultural lands is a project issue.

Additionally:

Appendix A. provides an abridged set of step-by-step LESA scoring instructions that can be used and reproduced for scoring individual projects.

Appendix B. demonstrates the application of the California LESA Model to the scoring of a hypothetical project.

The California Agricultural LESA Model

Section I. Required Resources and Information

The California Land Evaluation and Site Assessment (LESA) Model requires the use and interpretation of basic land resource information concerning a given project. A series of measurements and calculations is also necessary to obtain a LESA score. Listed below are the materials and tools that will generally be needed to make these determinations.

Land Evaluation and Site Assessment calculations will require:

1. A calculator or other means of tabulating numbers

2. An accurately scaled map of the project area, such as a parcel map

3. A means for making acreage determinations of irregularly shaped map units. Options include, from least to most technical:

    - A transparent grid-square or dot-planimeter method of aerial measurement

    - A hand operated electronic planimeter

    - The automatic planimetry capabilities of a Geographic Information System (GIS)

4. A modern soil survey, generally produced by the USDA Natural Resources Conservation Service, which delineates the soil-mapping units for a given project. [Note: If modern soil survey information is not available for a given area of study, it may be necessary to draw upon the services of a professional soil scientist to perform a specific project survey].

5. Maps that depict land uses for parcels including and surrounding the project site, such as the Department of Conservation's Important Farmland Map series, the Department of Water Resources Land Use map series, or other appropriate information.

6. Maps or information that indicate the location of parcels including and surrounding the project site that are within agricultural preserves, are under public ownership, have conservation easements, or have other forms of long term commitments that are considered compatible with the agricultural use of a given project site.

Section II. Defining and Scoring the California Land Evaluation and Site Assessment Model Factors

This section provides detailed step-by-step instructions for the measurement and scoring of each of the Land Evaluation and Site Assessment factors that are utilized in the California Agricultural LESA Model, and is intended to serve as an introduction to the process of utilizing the Model. Once users are familiar with the Model, a more streamlined set of instructions and scoring sheets is available in Appendix A. In addition, the scoring of a hypothetical project is presented using these scoring sheets in Appendix B.

Scoring of Land Evaluation Factors

The California LESA Model includes two Land Evaluation factors that are separately rated:

1. The Land Capability Classification Rating
2. The Storie Index Rating

The information needed to make these ratings is typically available from soil surveys that have been conducted by the federal Natural Resources Conservation Service (formerly known as the Soil Conservation Service). Consultation should be made with NRCS staff (field offices exist in most counties) to assure that valid and current soil resource information is available for the project site. Copies of soil surveys are available at local field offices of the NRCS, and may also be available through libraries, city and county planning departments, the Cooperative Extension, and other sources. In addition, a Certified Professional Soil Scientist (CPSS) may also be consulted to obtain appropriate soil resource information for the project site. A directory of CPSS registered soil consultants is available through the Professional Soil Scientists Association of California, P.O. Box 3213, Yuba City, CA 95992-3213; phone: (916) 671-4276.

1) The USDA Land Capability Classification (LCC) - The LCC indicates the suitability of soils for most kinds of crops. Groupings are made according to the limitations of the soils when used to grow crops, and the risk of damage to soils when they are used in agriculture. Soils are rated from Class I to Class VIII, with soils having the fewest limitations receive the highest rating (Class I). Specific subclasses are also utilized to further characterize soils. An expanded explanation of the LCC is included in most soil surveys.

2) The Storie Index - The Storie Index provides a numeric rating (based upon a 100 point scale) of the relative degree of suitability or value of a given soil for intensive agriculture. The rating is based upon soil characteristics only. Four factors that represent the inherent characteristics and qualities of the soil are

considered in the index rating. The factors are: profile characteristics, texture of the surface layer, slope, and other factors (e.g., drainage, salinity).

In some situations, only the USDA Land Capability Classification information may be currently available from a given published soil survey. However, Storie Index ratings can readily be calculated from information contained in soil surveys by qualified soil scientists. Users are encouraged to seek assistance from NRCS staff or Certified Professional Soil Scientists to derive Storie Index information for the soils as well. If, however, limitations of time or resources restrict the derivation of Storie Index ratings for the soils within a region, it may be possible to adapt the Land Evaluation by relying solely upon the LCC rating. Under this scenario the LCC rating would account for 50 percent of the overall LESA factor weighting.

Identifying a Project's Soils

In order to rate the Land Capability Classification and Storie Index factors, the evaluator must identify the soils that exist on a given project site and determine their relative proportions. A **Land Evaluation Worksheet** (Table 1A.) is used to tabulate these figures, based upon the following:

Step 1.
Locate the project on the appropriate map sheet in the Soil Survey.

Step 2.
Photocopy the map sheet and clearly delineate the project boundaries on the map, paying close attention to the map scale.

Step 3.
Identify all of the soil mapping units existing in the project site (each mapping unit will have a different map unit symbol) and enter the each mapping unit symbol in **Column A** of the **Land Evaluation Worksheet** (Table 1A).

Step 4.
Calculate the acreage of each soil mapping unit present within the project site using any of the means identified in **Section 1**, **Required Resources and Information**, and enter this information in **Column B**.

Step 5.

Divide the acres of each soil mapping unit by the total project acreage to determine the proportion of each unit that comprises the project, and enter this information in Column C.

1. Land Evaluation - The Land Capability Classification Rating

Step 1.
In the Guide to Mapping Units typically found within soil surveys, identify the Land Capability Classification (LCC) designation (e.g., IV-e) for each mapping unit that has been identified in the project and enter these designations in **Column D** of the **Land Evaluation Worksheet** (Table 1A.).

Step 2.
From Table 2., **The Numeric Conversion of Land Capability Classification Units**, obtain a numeric score for each mapping unit, and enter these scores in **Column E**.

Step 3.
Multiply the proportion of each soil mapping unit (**Column C**) by the LCC points for each mapping unit (**Column E**) and enter the resulting scores in **Column F**.

Step 4.
Sum the LCC scores in **Column F** to obtain a single LCC Score for the project. Enter this LCC Score in **Line 1** of the **Final LESA Worksheet** (Table 8)

Table 2. Numeric Conversion of Land Capability Classification Units

Land Capability Classification	LCC Point Rating
I	100
IIe	90
IIs,w	80
IIIe	70
IIIs,w	60
IVe	50
IVs,w	40
V	30
VI	20
VII	10
VIII	0

Table 1A.
Land Evaluation Worksheet

Land Capability Classification (LCC) and Storie Index Scores

A	B	C	D	E	F	G	H
Soil Map Unit	Project Acres	Proportion of Project Area	LCC	LCC Rating	LCC Score	Storie Index	Storie Index Score
Totals		(Must Sum to 1.0)		***LCC Total***		***Storie Index Total***	

Table 1B.
Site Assessment Worksheet 1.

Project Size Score

	I	J	K
	LCC Class I - II	LCC Class III	LCC Class IV - VIII
Total Acres			
Project Size Scores			

Highest Project Size Score

2. Land Evaluation - The Storie Index Rating Score

Step 1.
From the appropriate soil survey or other sources of information identified in Appendix C, determine the Storie Index Rating (the Storie Index Rating is already based upon a 100 point scale) for each mapping unit and enter these values in **Column G** of the **Land Evaluation Worksheet** (Table 1A.).

Step 2.
Multiply the proportion of each soil mapping unit found within the project (**Column C**) by the Storie Index Rating (**Column G**), and enter these scores in **Column H**.

Step 3.
Sum the Storie Index Rating scores in **Column H** to obtain a single Storie Index Rating score for the project. Enter this Storie Index Rating Score in **Line 2** of the **Final LESA Worksheet** (Table 8)

Scoring of Site Assessment Factors

The California LESA Model includes four Site Assessment factors that are separately rated:

1. **The Project Size Rating**
2. **The Water Resources Availability Rating**
3. **The Surrounding Agricultural Land Rating**
4. **The Surrounding Protected Resource Land Rating**

1. Site Assessment - The Project Size Rating

The Project Size Rating relies upon acreage figures that were tabulated under the Land Capability Classification Rating in Table 1A. The Project Size rating is based upon identifying acreage figures for three separate groupings of soil classes within the project site, and then determining which grouping generates the highest Project Size Score.

Step 1.
Using information tabulated in **Columns B** and **D** of the **Land Evaluation Worksheet** (Table 1A), enter acreage figures in **Site Assessment Worksheet 1. - Project Size** (Table 1B) using either **Column I, J,** or **K** for each of the soil mapping units in a given project.

Step 2.
Sum the entries in **Column I** to determine the total acreage of Class I and II soils on the project site.

Sum the entries in **Column J** to determine the total acreage of Class III soils on the project site.

Sum the entries in **Column K** to determine the total acreage of Class IV and lower rated soils on the project site.

Step 3.
For each of the three columns, apply the appropriate scoring plan provided in Table 3, **Project Size Scoring**, and enter the **Project Size Score** for each grouping in the **Site Assessment Worksheet 1. - Project Size** (Table 1B). Determine which column generates the highest score. The highest score becomes the overall **Project Size Score**. Enter this number in **Line 3** of the **Final LESA Scoresheet** (Table 8).

Table 3. Project Size Scoring

LCC Class I or II soils		LCC Class III soils		LCC Class IV or lower	
Acres	***Score***	***Acres***	***Score***	***Acres***	***Score***
80 or above	100	160 or above	100	320 or above	100
60-79	90	120-159	90	240-319	80
40-59	80	80-119	80	160-239	60
20-39	50	60-79	70	100-159	40
10-19	30	40-59	60	40-99	20
fewer than 10	0	20-39	30	fewer than 40	0
		10-19	10		
		fewer than 10	0		

Explanation of the Project Size Factor

The Project Size factor in the California Agricultural LESA Model was developed in cooperation with Nichols-Berman, a consulting firm under contract with the Department of Conservation. A thorough discussion of the development of this rating is presented by Nichols-Berman in a report to the Department entitled, *Statewide LESA Methodologies Report - Project Size and Water Resource Availability Factors* (3).

The inclusion of the measure of a project's size in the California Agricultural LESA Models is a recognition of the role that farm size plays in the viability of commercial agricultural operations. In general, larger farming operations can provide greater flexibility in farm management and marketing decisions. Certain economies of scale for equipment and infrastructure can also be more favorable for larger operations. In addition, larger operations tend to have greater impacts upon the local economy through direct employment, as well as impacts upon support industries (e.g., fertilizers, farm equipment, and shipping) and food processing industries.

While the size of a given farming operation may in many cases serve as a direct indicator of the overall economic viability of the operation, The California Agricultural LESA Model does not specifically consider the issue of economic viability. The variables of economic viability for a specific farm include such factors as the financial management and farming skills of the operator, as well as the debt load and interest rates being paid by an individual operator, which are issues that cannot readily be included in a statewide LESA model.

In terms of agricultural productivity, the size of a farming operation can be considered not just from its total acreage, but the acreage of different quality lands that comprise the operation. Lands with higher quality soils lend themselves to greater management and cropping flexibility and have the potential to provide a greater economic return per unit acre. For a given project, instead of relying upon a single acreage figure in the Project Size rating, the project is divided into three acreage groupings based upon the Land Capability Classification ratings that were previously determined in the Land Evaluation analysis. Under the Project Size rating, relatively fewer acres of high quality soils are required to achieve a maximum Project Size score. Alternatively, a maximum score on lesser quality soils could also be derived, provided there is a sufficiently large acreage present. Acreage figures utilized in scoring are the synthesis of interviews that were conducted statewide for growers of a broad range of crops. In the interviews growers were queried as to what acreage they felt would be necessary in order for a given parcel to be considered attractive for them to farm.

The USDA LCC continues to be the most widely available source of information on land quality. Project Size under this definition is readily measurable, and utilizes much of the same information needed to score a given project under the Land Evaluation component of the methodology. This approach also complements the LE determination, which, while addressing soil quality, does not account for the total acreage of soils of given qualities within a project.

This approach allows for an accounting of the significance of high quality agricultural land as well as lesser quality agricultural lands, which by virtue of their large area can be considered significant agricultural resources. In this way, no single acreage figure for a specific class of soils (e.g., soils defined as “prime”) is necessary.

2. Site Assessment - The Water Resources Availability Rating

The Water Resources Availability Rating is based upon identifying the various water sources that may supply a given property, and then determining whether different restrictions in supply are likely to take place in years that are characterized as being periods of drought and non-drought. **Site Assessment Worksheet 2. - Water Resources Availability Worksheet** (Table 4) is used to tabulate the score.

Step 1.
Identify the different water resource types that are used to supply the proposed project site (for example, irrigation district water, ground water, and riparian water are considered to be three different types of water resources). Where there is only one water source identified for the proposed project, skip to Step 4.

Step 2.
Divide the proposed project site into portions, with the boundaries of each portion being defined by the irrigation water source(s) supplying it. A site that is fully served by a single source of water will have a single portion, encompassing the entire site. A site that is fully served by two or more sources that are consistently merged together to serve a crop's needs would also have a single portion. (e.g., a portion of the proposed project may receive both irrigation district and groundwater). If the project site includes land that has no irrigation supply, consider this acreage as a separate portion as well. Enter the water resource portions of the project in **Column B** of Table 4, **Site Assessment Worksheet 2. - Water Resources Availability**.

[As an example, a hypothetical project site is determined to have four separate water supply portions:

Portion 1 is served by irrigation district water only;
Portion 2 is served by ground water only;
Portion 3 is served by *both* irrigation district water and ground water;
Portion 4 is not irrigated at all.**]**

Step 3.
Calculate the proportion of the total project area that is represented by each water resource portion, and enter these figures in **Column C** of **Site Assessment Worksheet 2. - Water Resources Availability**, verifying that the sum of the proportions equals 1.0.

Table 4. Site Assessment Worksheet 2. - Water Resources Availability

A	B	C	D	E
Project Portion	Water Source	Proportion of Project Area	Water Availability Score	Weighted Availability Score (C x D)
1				
2				
3				
4				
5				
6				
		(Must Sum to 1.0)	***Total Water Resource Score***	

Step 4.

For each water resource supply portion of the project site, determine whether irrigated and dryland agriculture is *feasible*, and if any *physical* or *economic restrictions* exist, during both *drought* and *non-drought* years. These italicized terms are defined below:

- A *physical restriction* is an occasional or regular interruption or reduction in a water supply, or a shortened irrigation season, that forces a change in agricultural practices -- such as planting a crop that uses less water, or leaving land fallow. (This could be from cutbacks in supply by irrigation and water districts, or by ground or surface water becoming depleted or unusable. Poor water quality can also result in a physical restriction -- for example by requiring the planting of salt-tolerant plants, or by effectively reducing the amount of available water.)

- An *economic restriction* is a rise in the cost of water to a level that forces a reduction in consumption. (This could be from surcharge increases from water suppliers as they pass along the cost of finding new water supplies, the extra cost of pumping more ground water to make up for losses in surface water supplies, or the extra energy costs of pumping the same amount of ground water from deeper within an aquifer.)

- Irrigated agricultural production is *feasible* when:

  1) There is an existing irrigation system on the project site that can serve the portion of the project identified in Step 2;

  2) *Physical* and/or *economic restrictions* are not severe enough to halt production; and

  3) It is possible to achieve a viable economic return on crops though irrigated production.

(A major question that should be considered is, if there is an irrigated crop that can be grown within the region, can it actually be grown on the project site? Depending upon the jurisdiction, some typical crops that have a large water demand may not be feasible to grow on the project site, while others that require less water are feasible. Information to aid in making this determination can be obtained from county agricultural commissioners, the UC Cooperative Extension, irrigation districts, and other sources.)

- *Dryland production* is *feasible* when rainfall is adequate to allow an economically viable return on a nonirrigated crop.

- A *drought year* is a year that lies within a defined drought period, as defined by the Department of Water Resources or by a local water agency. Many regions of the state are by their arid nature dependent upon imports of water to support irrigated agriculture. These regions shall not be considered under periods of drought unless a condition of drought is declared for the regions that typically would be providing water exports.

Step 5.
Each of the project's water resource supply portions identified in **Step 2** is scored separately. Water Resources Availability scoring is performed by identifying the appropriate condition that applies to each portion of the project, as identified in Table 5., **Water Resource Availability Scoring**. Using Table 5, identify the option that best describes the water resource availability for that portion and its corresponding water resource score. Option 1 defines the condition of no restrictions on water resource availability and is followed progressively with increasing restrictions to Option 14, the most severe condition, where neither irrigated nor dryland production is considered feasible. Enter each score into **Column D** of Table 4.

Step 6.
For each portion of the project site, determine the section's weighted score by multiplying the portion's score (**Column D**), by its proportion of the project area (**Column C**), and enter these scores in **Column E**, the weighted Water Availability Score. Sum the **Column E** scores to obtain the total Water Resource Availability Score, and enter this figure in **Line 4** of the **Final LESA Score Sheet** (Table 8).

Table 5. Water Resource Availability Scoring

Option	Non-Drought Years			Drought Years			WATER RESOURCE SCORE
	RESTRICTIONS			RESTRICTIONS			
	Irrigated Production Feasible?	Physical Restrictions ?	Economic Restrictions ?	Irrigated Production Feasible?	Physical Restrictions ?	Economic Restrictions ?	
1	YES	NO	NO	YES	NO	NO	100
2	YES	NO	NO	YES	NO	YES	95
3	YES	NO	YES	YES	NO	YES	90
4	YES	NO	NO	YES	YES	NO	85
5	YES	NO	NO	YES	YES	YES	80
6	YES	YES	NO	YES	YES	NO	75
7	YES	YES	YES	YES	YES	YES	65
8	YES	NO	NO	NO	-- --	-- --	50
9	YES	NO	YES	NO	-- --	-- --	45
10	YES	YES	NO	NO	-- --	-- --	35
11	YES	YES	YES	NO	-- --	-- --	30
12	Irrigated production not feasible, but rainfall adequate for dryland production in both drought and non-drought years						25
13	Irrigated production not feasible, but rainfall adequate for dryland production in non-drought years (but not in drought years)						20
14	Neither irrigated nor dryland production feasible						0

Explanation of the Water Resource Availability Rating

The Water Resource Availability factor in the California Agricultural LESA Model was developed in cooperation with Nichols-Berman, a consulting firm under contract with the Department of Conservation. A thorough discussion of the development of this rating is presented by Nichols-Berman in a report to the Department entitled, *Statewide LESA Methodologies Report - Project Size and Water Resource Availability Factors* (3). During the development of this factor it became apparent that certain conditions unique to California would need to be represented in this system.

First, it was decided to classify water reliability based upon the *effects* on agricultural production (such as being forced to change to lower-value crops, putting in groundwater pumps, or cutting back on the acreage farmed) rather than the actual *type* of limitation (such as a limitation on the quantity, frequency, or duration of water delivery). LESA systems have traditionally focused on the latter. However, it was found that the many types of limitations are too varied in California to adequately represent in the LESA system. In the Statewide LESA system, these effects are referred to as *restrictions*.

Second, the factor had to include an interrelation with cost. The historical shortages and unreliability of California water use has led to the establishment of various interconnected and dual systems. Probably more than any other state, reliability is related with cost -- a more reliable water supply can sometimes be obtained, but at a greater cost. Therefore, *restrictions* were classified into two major categories -- *physical* and *economic*. These are separated because, generally, a physical restriction is more severe than an economic restriction and this should be reflected in the LESA system.

Third, the factor had to include the effects of the drought cycle in California. During the drought of 1987 to 1992, many agricultural areas of the state experienced water shortages. The impact of these shortages resulted in a number of different actions. Some areas were able to avoid the worst effects of the drought simply by implementing water conservation measures. Other areas were able to obtain additional water supplies, such as by securing water transfers or simply pumping more groundwater, but at an increase in the overall price of water. Other options included shifting crops, replanting to higher value crops to offset the increase in water prices, or leaving land fallow. A project site that experiences restrictions during a drought year should not be scored as high as a similar project site that does not.

The easiest way to make determinations of irrigation feasibility and the potential restrictions of water sources is to investigate the cropping history of the project site. For instance, was the water supply to the project site reduced by the local irrigation district during the last drought? If the site has a ground water supply, do area ground water levels sometimes drop to levels that force markedly higher energy costs to pump the water?

If the history of the project site is unavailable (including when the site has recently installed an irrigation system), look at the history of the general area. However, remember that the project site may have different conditions than the rest of the region. For instance, the project site could have an older water right than others in the region. Although certain areas of the state had severe restrictions on water deliveries during the last drought, some parcels within these areas had very secure deliveries due to more senior water rights. If this was the case in the region of the project site, check the date of water right and compare it with parcels that received their total allotment during the last drought. The local irrigation district should have information on water deliveries.

The scoring of water resource availability for a project site should not just reflect the adequacies of water supply in the past -- it should be a *prediction* of how the water system will perform in the future. For instance, a local jurisdiction might find that the allocation of flows to stream and river systems has been recently increased for environmental reasons, which will decrease the future available surface water supply. In this case, the past history of the site is not an adequate representation of future water supply and water system performance.

3. Site Assessment - The Surrounding Agricultural Land Rating

Determination of the surrounding agricultural land use rating is based upon the identification of a project's "Zone of Influence" (ZOI), which is defined as that land near a given project, both directly adjoining and within a defined distance away, that is likely to influence, and be influenced by, the agricultural land use of the subject project site. The determination of the ZOI is described below, and is illustrated with an example in Figure 1.

Defining a Project's "Zone of Influence"

Step 1.
Locate the proposed project on an appropriate map and outline the area and dimensions of the proposed project site.

Step 2.
Determine the smallest rectangle that will completely contain the project site (Rectangle A).

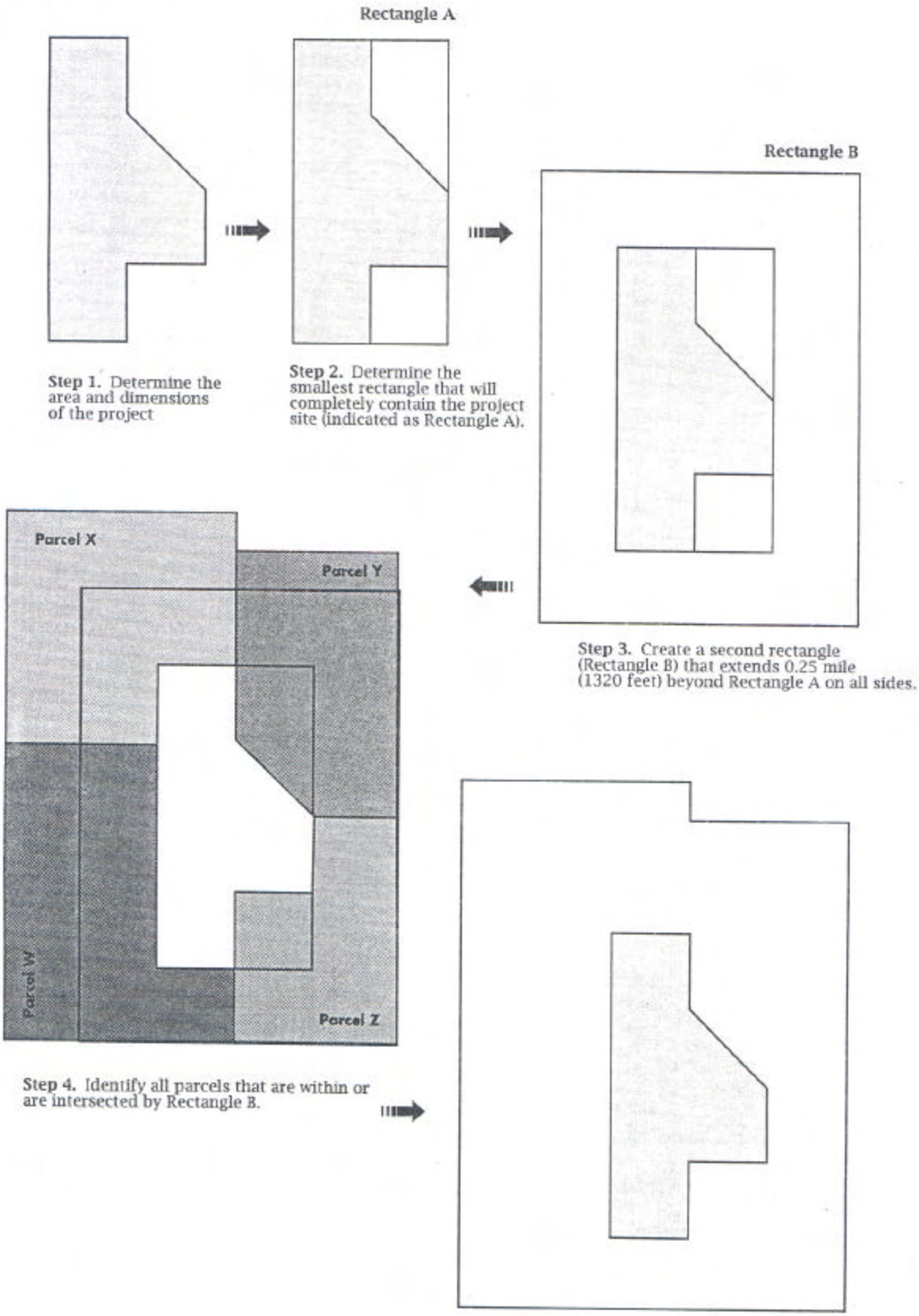
Step 3.
Create a second rectangle (Rectangle B) that extends 0.25 mile (1320 feet) beyond Rectangle A on all sides.

Step 4.
Identify all parcels that are within or are intersected by Rectangle B.

Step 5.
Define the project site's "zone of influence" as the entire area of all parcels identified in Step 4, less the area of the proposed project from Step 1.

[In the illustration provided in Figure 1, Parcels W, X, and Y extend beyond Rectangle B and are therefore included in their entirety in defining the project site's Zone of Influence.**]**

Figure 1: Defining a Project's Zone of Influence



Measuring Surrounding Agricultural Land

Step 1.
Calculate the percentage of the project's Zone of Influence that is currently producing agricultural crops. **[**This figure can be determined using information from the Department of Conservation's Important Farmland Map Series, the Department of Water Resources' Land Use Map Series, locally derived maps, or direct site inspection. For agricultural land that is currently fallowed, a determination must be made concerning whether the land has been fallowed as part of a rotational sequence during normal agricultural operations, or because the land has become formally "committed" to a nonagricultural use. Land that has become formally committed, whether fallow or not, should not generally be included in determining the proportion of the Zone of Influence that is agricultural land. For further information on the definition of Committed Land, refer to the following Explanation of the Surrounding Agricultural Land Rating.**]**

Step 2.
Based on the percentage of agricultural land in the ZOI determined in Step 1, assign a Surrounding Agricultural Land score to the project according to Table 6, and enter this score in **Line 5** of the **Final LESA Scoresheet** (Table 8) .

Table 6. Surrounding Agricultural Land Rating

Percent of Project's Zone of Influence in Agricultural Use	Surrounding Agricultural Land Score
90 - 100%	100 Points
80 - 89	90
75 - 79	80
70 - 74	70
65 - 69	60
60 - 64	50
55 - 59	40
50 - 54	30
45 - 49	20
40 - 44	10
40 <	0

Explanation of the Surrounding Agricultural Land Rating

The Surrounding Agricultural Land Rating is designed to provide a measurement of the level of agricultural land use for lands in close proximity to a subject project. The California Agricultural LESA Model rates the potential significance of the conversion of an agricultural parcel that has a large proportion of surrounding land in agricultural production more highly than one that has a relatively small percentage of surrounding land in agricultural production. The definition of a "Zone of Influence" that accounts for surrounding lands up to a minimum of one quarter mile from the project boundary is the result of several iterations during model development for assessing an area that will generally be a representative sample of surrounding land use. In a simple example, a single one quarter mile square project (160 acres) would have a Zone of Influence that is a minimum of eight times greater (1280 acres) that the parcel itself.

Land within a Zone of Influence that is observed to be fallow will require a case by case determination of whether this land should be considered agricultural land. The Department of Conservation's Important Farmland Maps may be of assistance in making this determination. In addition, land currently in agricultural production may be designated as being "committed" to future nonagricultural development. The Department of Conservation's Farmland Mapping and Monitoring Program has a land use designation of Land Committed to Nonagricultural Use, and is defined as "land that is permanently committed by local elected officials to nonagricultural development by virtue of decisions which cannot be reversed simply by a majority vote of a city council or county board of supervisors. The "committed" land must be so designated in an adopted local general plan, and must also meet the requirements of either (a) or (b) below:

(a). It must have received one of the following final discretionary approvals:

1. Tentative subdivision map (approved per the Subdivision Map Act);
2. Tentative or final parcel map (approved per the Subdivision Map Act);
3. Recorded development agreement (per Government Code §65864);
4. Other decisions by a local government which are analogous to items #1-3 above and which exhibit an element of permanence. Zoning by itself does <u>not</u> qualify as a permanent commitment.

<u>Or</u>

(b) It must be the subject of one of the final fiscal commitments to finance the capital improvements specifically required for future development of the land in question as shown below:

1. Recorded Resolution of Intent to form a district and levy an assessment;
2. Payment of assessment;
3. Sale of bonds;
4. Binding contract, secured by bonds, guaranteeing installation of infrastructure;
5. Other fiscal commitments which are analogous to items #1-4 above and exhibit an element of permanence."

Lead agencies are encouraged to identify Land Committed to Nonagricultural Use within a project's ZOI and make the determination whether this land, while still in agricultural production, be considered nonagricultural land for the purposes of the calculation performed here.

4. Site Assessment - The Surrounding Protected Resource Land Rating

The Surrounding Protected Resource Land Rating is essentially an extension of the Surrounding Agricultural Land Rating, and is scored in a similar manner. Protected resource lands are those lands with long term use restrictions that are compatible with or supportive of agricultural uses of land. Included among them are the following:

- Williamson Act contracted lands
- Publicly owned lands maintained as park, forest, or watershed resources
- Lands with agricultural, wildlife habitat, open space, or other natural resource easements that restrict the conversion of such land to urban or industrial uses.

Instructions for the Surrounding Protected Resource Land Rating

Step 1.
Utilizing the same "Zone of Influence" (ZOI) area calculated for a project under the Surrounding Agricultural Land Rating, calculate the percentage of the ZOI that is Protected Resource Land, as defined above.

Step 2.
Assign a Surrounding Protected Resource Land score to the project according to Table 7, and enter this score on **Line 6** of the **Final LESA Scoresheet** (Table 8).

Table 7. Surrounding Protected Resource Land Rating

Percent of Project's Zone of Influence Defined as Protected	Surrounding Protected Resource Land Score
90 - 100%	100 Points
80 - 89	90
75 - 79	80
70 - 74	70
65 - 69	60
60 - 64	50
55 - 59	40
50 - 54	30
45 - 49	20
40 - 44	10
40 <	0

Section III. Weighting of Factors and Final LESA Scoring

The California LESA Model is weighted so that 50 percent of the total LESA score of a given project is derived from the Land Evaluation factors, and 50 percent from the Site Assessment factors. Individual factor weights are listed below, with the sum of the factor weights required to equal 100 percent.

Land Evaluation Factors

Land Capability Classification	25%
Storie Index Rating	25%
Land Evaluation Subtotal	**50%**

Site Assessment Factors

Project Size	15%
Water Resource Availability	15%
Surrounding Agricultural Lands	15%
Surrounding Protected Resource Lands	5%
Site Assessment Subtotal	**50%**
Total LESA Factor Weighting	**100%**

Each factor is measured separately (each on 100 point scale) and entered in the appropriate line in **Column B** of the **Final LESA Scoresheet** (Table 8). Each factor's score is then multiplied by its respective factor weight, resulting in a weighted factor score in **Column D** as indicated in Table 8. The weighted factor scores are summed, yielding a Total LESA Score (100 points maximum) for a given project, which is entered in **Line 7** of **Column D**.

Table 8. Final LESA Scoresheet

A	B		C		D
Factor Name	Factor Rating (0-100 points)	X	Factor Weighting (Total = 1.00)	=	Weighted Factor Rating
Land Evaluation					
1. Land Capability Classification	<Line 1>_____	X	0.25	=	_____
2. Storie Index Rating	<Line 2>_____	X	0.25	=	_____
Site Assessment					
1. Project Size	<Line 3>_____	X	0.15	=	_____
2. Water Resource Availability	<Line 4>_____	X	0.15	=	_____
3. Surrounding Agricultural Lands	<Line 5>_____	X	0.15	=	_____
4. Protected Resource Lands	<Line 6>_____	X	0.05	=	_____
			Total LESA Score (sum of weighted factor ratings)		<Line 7>_____

Section IV. California Agricultural LESA Scoring Thresholds - Making Determinations of Significance Under CEQA

A single LESA score is generated for a given project after all of the individual Land Evaluation and Site Assessment factors have been scored and weighted as detailed in Sections 2 and 3. Just as with the scoring of individual factors that comprise the California Agricultural LESA Model, final project scoring is based on a scale of 100 points, with a given project being capable of deriving a maximum of 50 points from the Land Evaluation factors and 50 points from the Site Assessment factors.

The California Agricultural LESA Model is designed to make determinations of the potential significance of a project's conversion of agricultural lands during the Initial Study phase of the CEQA review process. Scoring thresholds are based upon both the total LESA score as well as the component LE and SA subscores. In this manner the scoring thresholds are dependent upon the attainment of a minimum score for the LE and SA subscores so that a single threshold is not the result of heavily skewed subscores (i.e., a site with a very high LE score, but a very low SA score, or vice versa). Table 9 presents the California Agricultural LESA scoring thresholds.

Table 9. California LESA Model Scoring Thresholds

Total LESA Score	Scoring Decision
0 to 39 Points	Not Considered Significant
40 to 59 Points	Considered Significant only if LE and SA subscores are each greater than or equal to 20 points
60 to 79 Points	Considered Significant unless either LE or SA subscore is less than 20 points
80 to 100 Points	Considered Significant

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3. *Statewide LESA Methodologies Report - Project Size and Water Resource Availability Factors*. Prepared by Nichols - Berman, for the Department of Conservation. 1995.

4. *LESA Guidelines for Local Jurisdictions - Project Size and Water Resource Availability Factors*. Prepared by Nichols - Berman, for the Department of Conservation. 1995.

5. Office of the Federal Register National Archives and Records Administration. The Farmland Protection and Policy Act, part 658. Code of Federal Regulations - Agriculture, Parts 400 to 699. 1990.

6. Pease, J and R. Coughlin. Land Evaluation and Site Assessment: *A Guidebook for Rating Agricultural Lands, Second Edition*; prepared for the USDA Natural Resources Conservation Service; Soil and Water Conservation Society. 1996.

7. Pease, J., et al. *State and Local LESA Systems: Status and Evaluation*; In: Steiner, F., J. Pease, and R. Coughlin, eds. *A Decade with LESA: The Evolution of Land Evaluation and Site Assessment*. Soil and Water Conservation Society. 1994.

8. Steiner, F., J. Pease, and R. Coughlin, eds. *A Decade with LESA: The Evolution of Land Evaluation and Site Assessment*. Soil and Water Conservation Society. 1994.

★ Wells on prime farmland

1/4 mile

1 well = 9000 → 25,000 ft²

NOTES

- 4 wells located on Prime Farmland
- 1 well = 2,500 ft² = .05 acres
- .05 acres x 4 wells = 0.2 acres

Impact area = 0.2 acres

Calculation of the Land Evaluation (LE) Score

Part 1. Land Capability Classification (LCC) Score:

(1) Determine the total acreage of the project.
(2) Determine the soil types within the project area and enter them in **Column A** of the **Land Evaluation Worksheet** provided on page 2-A.
(3) Calculate the total acres of each soil type and enter the amounts in **Column B**.
(4) Divide the acres of each soil type (**Column B**) by the total acreage to determine the proportion of each soil type present. Enter the proportion of each soil type in **Column C**.
(5) Determine the LCC for each soil type from the applicable Soil Survey and enter it in **Column D**.
(6) From the LCC Scoring Table below, determine the point rating corresponding to the LCC for each soil type and enter it in **Column E**.

LCC Scoring Table

LCC Class	**I**	**IIe**	**IIs,w**	**IIIe**	**IIIs,w**	**IVe**	**IVs,w**	**V**	**VI**	**VII**	**VIII**
Points	**100**	**90**	**80**	**70**	**60**	**50**	**40**	**30**	**20**	**10**	**0**

(7) Multiply the proportion of each soil type (**Column C**) by the point score (**Column E**) and enter the resulting scores in **Column F**.
(8) Sum the LCC scores in **Column F**.
(9) Enter the LCC score in box <1> of the **Final LESA Score Sheet** on page 10-A.

Part 2. Storie Index Score:

(1) Determine the Storie Index rating for each soil type and enter it in **Column G**.
(2) Multiply the proportion of each soil type (**Column C**) by the Storie Index rating (**Column G**) and enter the scores in **Column H**.
(3) Sum the Storie Index scores in **Column H** to gain the Storie Index Score.
(4) Enter the Storie Index Score in box <2> of the **Final LESA Score Sheet** on page 10-A.

Land Evaluation Worksheet

Land Capability Classification (LCC) and Storie Index Scores

A	B	C	D	E	F	G	H
Soil Map Unit	Project Acres	Proportion of Project Area	LCC	LCC Rating	LCC Score	Storie Index	Storie Index Score
CcA2	.05	.25%	IIe	90	22.5	75	18.75
HgA	.05	.25%	IIe	90	22.5	88	22
CcA2	.05	.25%	IIe	90	22.5	75	18.75
HgA2	.05	.25%	VIIe	10	2.5	88	22
Totals	0.2	(Must Sum to 1.0)		***LCC Total Score***	70	***Storie Index Total Score***	81.5

Site Assessment Worksheet 1.

Project Size Score

	I	J	K
	LCC Class I - II	LCC Class III	LCC Class IV - VIII
	.05		
	.05		
	.05		
			.05
Total Acres	.15		.05
Project Size Scores	0		0

Highest Project Size Score 0

NOTES

Calculation of the Site Assessment (SA) Score

Part 1. Project Size Score:.

(1) Using **Site Assessment Worksheet 1** provided on page 2-A, enter the acreage of each soil type from **Column B** in the **Column - I, J or K** - that corresponds to the LCC for that soil. (Note: While the Project Size Score is a component of the Site Assessment calculations, the score sheet is an extension of data collected in the Land Evaluation Worksheet, and is therefore displayed beside it).
(2) Sum **Column I** to determine the total amount of class I and II soils on the project site.
(3) Sum **Column J** to determine the total amount of class III soils on the project site.
(4) Sum **Column K** to determine the total amount of class IV and lower soils on the project site.
(5) Compare the total score for each LCC group in the Project Size Scoring Table below and determine which group receives the highest score.

Project Size Scoring Table

Class I or II		**Class III**		**Class IV or Lower**	
Acreage	Points	Acreage	Points	Acreage	Points
>80	100	>160	100	>320	100
60-79	90	120-159	90	240-319	80
40-59	80	80-119	80	160-239	60
20-39	50	60-79	70	100-159	40
10-19	30	40-59	60	40-99	20
10<	0	20-39	30	40<	0
		10-19	10		
		10<	0		

(6) Enter the **Project Size Score** (the highest score from the three LCC categories) in box <3> of the **Final LESA Score Sheet** on page 10-A.

NOTES

Part 2. Water Resource Availability Score:

(1) Determine the type(s) of irrigation present on the project site, including a determination of whether there is dryland agricultural activity as well.

(2) Divide the site into portions according to the type or types of irrigation or dryland cropping that is available in each portion. Enter this information in **Column B** of **Site Assessment Worksheet 2. - Water Resources Availability**.

(3) Determine the proportion of the total site represented for each portion identified, and enter this information in **Column C**.

(4) Using the Water Resources Availability Scoring Table, identify the option that is most applicable for each portion, based upon the feasibility of irrigation in drought and non-drought years, and whether physical or economic restrictions are likely to exist. Enter the applicable Water Resource Availability Score into **Column D**.

(5) Multiply the Water Resource Availability Score for each portion by the proportion of the project area it represents to determine the weighted score for each portion in **Column E**.

(6) Sum the scores for all portions to determine the project's total Water Resources Availability Score

(7) Enter the Water Resource Availability Score in box <4> of the **Final LESA Score Sheet** on page 10-A.

Site Assessment Worksheet 2. - Water Resources Availability

A	B	C	D	E
Project Portion	Water Source	Proportion of Project Area	Water Availability Score	Weighted Availability Score (C x D)
1	Irrigated by Water District	75%	80	60
2	Non- Irrigated	25%	30	7.5
3				
4				
5				
6				
		(Must Sum to 1.0)	***Total Water Resource Score***	67.5

Water Resource Availability Scoring Table

Option	Non-Drought Years			Drought Years			WATER RESOURCE SCORE
	RESTRICTIONS			RESTRICTIONS			
	Irrigated Production Feasible?	Physical Restrictions ?	Economic Restrictions ?	Irrigated Production Feasible?	Physical Restrictions ?	Economic Restrictions ?	
1	YES	NO	NO	YES	NO	NO	100
2	YES	NO	NO	YES	NO	YES	95
3	YES	NO	YES	YES	NO	YES	90
4	YES	NO	NO	YES	YES	NO	85
5	YES	NO	NO	YES	YES	YES	80
6	YES	YES	NO	YES	YES	NO	75
7	YES	YES	YES	YES	YES	YES	65
8	YES	NO	NO	NO	-- --	-- --	50
9	YES	NO	YES	NO	-- --	-- --	45
10	YES	YES	NO	NO	-- --	-- --	35
11	YES	YES	YES	NO	-- --	-- --	30
12	Irrigated production not feasible, but rainfall adequate for dryland production in both drought and non-drought years						25
13	Irrigated production not feasible, but rainfall adequate for dryland production in non-drought years (but not in drought years)						20
14	Neither irrigated nor dryland production feasible						0

NOTES

- Total Acreage of ZOI = 2 miles^2 = 1280 acres
- 80% of 1280 = 1024 acres

Part 3. Surrounding Agricultural Land Use Score:

(1) Calculate the project's Zone of Influence (ZOI) as follows:

(a) a rectangle is drawn around the project such that the rectangle is the smallest that can completely encompass the project area.

(b) a second rectangle is then drawn which extends one quarter mile on all sides beyond the first rectangle.

(c) The ZOI includes all parcels that are contained within or are intersected by the second rectangle, less the area of the project itself.

(2) Sum the area of all parcels to determine the total acreage of the ZOI.

(3) Determine which parcels are in agricultural use and sum the areas of these parcels

(4) Divide the area in agriculture found in step (3) by the total area of the ZOI found in step (2) to determine the percent of the ZOI that is in agricultural use.

(5) Determine the Surrounding Agricultural Land Score utilizing the Surrounding Agricultural Land Scoring Table below.

Surrounding Agricultural Land Scoring Table

Percent of ZOI in Agriculture	Surrounding Agricultural Land Score
90-100	100
80-89	90
75-79	80
70-74	70
65-69	60
60-64	50
55-59	40
50-54	30
45-49	20
40-44	10
<40	0

(5) Enter the Surrounding Agricultural Land Score in box <5> of the **Final LESA Score Sheet** on page 10-A.

Site Assessment Worksheet 3.
Surrounding Agricultural Land and Surrounding Protected Resource Land

A	B	C	D	E	F	G
Zone of Influence						
Total Acres	Acres in Agriculture	Acres of Protected Resource Land	Percent in Agriculture (A/B)	Percent Protected Resource Land (A/C)	Surrounding Agricultural Land Score (From Table)	Surrounding Protected Resource Land Score (From Table)
1280	1024	0	80%	0	95	0

NOTES

Part 4. Protected Resource Lands Score:

The Protected Resource Lands scoring relies upon the same Zone of Influence information gathered in Part 3, and figures are entered in Site Assessment Worksheet 3, which combines the surrounding agricultural and protected lands calculations.

(1) Use the total area of the ZOI calculated in Part 3. for the Surrounding Agricultural Land Use score.
(2) Sum the area of those parcels within the ZOI that are protected resource lands, as defined in the California Agricultural LESA Guidelines.
(3) Divide the area that is determined to be protected in Step (2) by the total acreage of the ZOI to determine the percentage of the surrounding area that is under resource protection.
(4) Determine the Surrounding Protected Resource Land Score utilizing the Surrounding Protected Resource Land Scoring Table below.

Surrounding Protected Resource Land Scoring Table

Percent of ZOI Protected	Protected Resource Land Score
90-100	100
80-89	90
75-79	80
70-74	70
65-69	60
60-64	50
55-59	40
50-54	30
45-49	20
40-44	10
<40	0

(5) Enter the Protected Resource Land score in box <6> of the **Final LESA Score Sheet** on page 10-A.

NOTES

Final LESA Score Sheet

Calculation of the Final LESA Score:

(1) Multiply each factor score by the factor weight to determine the weighted score and enter in Weighted Factor Scores column.
(2) Sum the weighted factor scores for the LE factors to determine the total LE score for the project.
(3) Sum the weighted factor scores for the SA factors to determine the total SA score for the project.
(4) Sum the total LE and SA scores to determine the Final LESA Score for the project.

	Factor Scores	Factor Weight	Weighted Factor Scores
LE Factors			
Land Capability Classification	<1> 70	0.25	17.5
Storie Index	<2> 81.5	0.25	20.38
LE Subtotal		***0.50***	37.88
SA Factors			
Project Size	<3> 0	0.15	0
Water Resource Availability	<4> 67.5	0.15	10.13
Surrounding Agricultural Land	<5> 95	0.15	14.25
Protected Resource Land	<6> 0	0.05	0
SA Subtotal		***0.50***	24.38
		Final LESA Score	62.26

For further information on the scoring thresholds under the California Agricultural LESA Model, consult Section 4 of the Instruction Manual.