5.17 Water Resources

This section presents a discussion of the potential impacts on water resources by the PHPP. The section addresses both water supply and water quality considerations, and discusses both potential direct and indirect impacts at the plant site and along the Project's linear facilities.

5.17.1 LORS Compliance

Federal, State, and local LORS applicable to water resources are summarized on Table 5.17-1. The Project will comply with the applicable LORS related to water use and water quality during construction and operation.

Table 5.17-1 LORS Applicable to Water Resources

LORS	Applicability	Where Discussed in AFC
Federal		
Clean Water Act (CWA), Section 402, 33 USC Section 1342; 40 CFR Parts 112 and 122-136	The objective of the CWA (1977) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The CWA regulates both direct and indirect discharges, including storm water discharges from construction and industrial activities.	Section 5.17.3
State		
California Constitution, Article 10, Section 2	Prohibits waste or unreasonable use of water, regulates use and of diversion of water, and requires conservation and reuse of water to the maximum extent possible.	Section 5.17.3
California Water Code Section 461	Stipulates that the primary interest of the people of the state is conservation of available water resources. Requires the maximum reuse of reclaimed water.	Section 5.17.3
The Porter-Cologne Water Quality Control Act, California Water Code, Division 7, Sections 13000-14958	Requires the State to develop and implement a statewide program to preserve, enhance, and restore the quality of the State's water resources. The Act established the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) as the principal state agencies with the responsibility for controlling water quality in California.	Section 5.17.3
California Water Code, Sections 13260-13274, Waste Discharge Requirements	Requires any person discharging waste, or proposing to discharge waste, that could affect the quality of the waters of the state, other than into a community sewer system, to file a report of the discharge with the appropriate RWQCB.	Section 5.17.3
California Water Code Section 13523	Provides requirements for users and/or producers of recycled water.	Section 5.17.4

Table 5.17-1 LORS Applicable to Water Resources

LORS	Applicability	Where Discussed in AFC
California Water Code Sections 13550-13551	Requires the use of recycled water for industrial purposes, subject to recycled water availability, quality, quantity, cost, and public health impacts. Prohibits use of potable domestic-quality water for non-potable uses if suitable recycled water is available.	Section 5.17.4
California Water Code Section 13552.6	Requires use of recycled water in cooling towers if availability and other criteria are met.	Section 5.17.4
California Storm Water Permitting Program	Construction activities that disturb equal to or greater than one acre require a General Construction Permit. Industrial activities with the potential to impact storm water discharges require a General Industrial Permit.	Section 5.17.3
SWRCB Resolution 75-58	Encourages the use of wastewater for power plant cooling and sets an order of priority for sources of wastewater to be used for cooling purposes.	Section 5.17.4
SWRCB Resolution 77-1	Encourages projects using recycled water and serves as a basic framework to guide decisions related to use of recycled water.	Section 5.17.4
CCR, Title 20, Division 4, Chapters 5-6	Provides for the inclusion of requirements in the CEC's decision on an AFC to assure protection of environmental quality and requires submission of information to the CEC concerning proposed impact on water resources.	Section 5.17.3
California Public Resources Code, Section 25523(a)	Requires submission of information to the CEC concerning proposed water resources and water quality protection in the AFC.	Section 5.17.3
Local		
City of Palmdale Storm Water Management Plan Ordinance	Requires a storm water management plan for grading activities occurring between October 1 and April 15.	Section 5.17.3
City of Palmdale Water-Efficient Landscape Ordinance	As a condition of approval for any development proposal, an applicant must submit landscape plans to the City Planning Department. The landscape plan will be scored according to water efficiency criteria and must achieve a minimum score in order to be approved.	Section 5.17.3
City of Palmdale Floodplain Management Ordinance	A floodplain development permit must be obtained before construction or development begins within a Special Flood Hazard Area.	Section 5.17.3

5.17.1.1 Federal LORS

Clean Water Act of 1977 (including 1987 amendments) Section 402, 33 USC Section 1342; 40 CFR Parts 112, 122 – 136

The primary objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the United States' surface waters. Pollutants regulated under the CWA include "priority" pollutants, including various toxic pollutants; "conventional" pollutants, such as total suspended solids, oil and grease, and pH-impacting substances; and "non-conventional" pollutants, including any pollutant not identified as either conventional or priority.

The CWA regulates both direct and indirect discharges. The National Pollutant Discharge Elimination System (NPDES) Program (CWA §502) controls the direct discharges and storm water discharges into waters of the United States. NPDES permits contain industry-specific, technology-based limits and may also include additional water quality-based limits, and establish pollutant-monitoring requirements. A NPDES permit may also include discharge limits based on Federal or State water quality criteria or standards. In 1987, the CWA was amended to include a program to address storm water discharges for industrial and construction activities.

Facilities with the potential to impact Waters of the U.S. with releases of oil are required to develop and implement a Spill Prevention Control and Countermeasure (SPCC) Plan. The Plan must describe both spill prevention and response measures. Secondary containment is required for all oil storage containers with a capacity of 55-gallons or more. Secondary containment is also required for oil-filled equipment. The SPCC Plan must be certified by a Professional Engineer.

The administering agencies for the Federal LORS are the State Water Resources Control Board (SWRCB), the Lahontan Regional Water Quality Control Board (RWQCB), and U.S. Environmental Protection Agency (EPA) Region IX.

5.17.1.2 State LORS

California Constitution

Article 10, Section 2: Prohibits the waste or unreasonable use of water, regulates the method of use and method of diversion of water, and requires all water users to conserve and reuse available water supplies to the maximum extent possible.

California Water Code

Section 461: Declares that the primary interest of the people of the State in the conservation of all available water resources requires the maximum reuse of reclaimed water in the satisfaction of requirements for beneficial uses of water.

Section 13000 et seq., Porter-Cologne Water Quality Control Act of 1967: Requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect State waters. Those criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. Water quality criteria for the proposed project area are contained in the Water Quality Control Plan for the Lahontan Region (Basin Plan) which was adopted in 1994 and is in the process of being amended. This

plan sets numerical and/or narrative water quality standards controlling the discharge of wastes to the State's waters and land.

Section 13260 et seq.: Requires any party discharging waste that could affect the quality of the waters of the State to file a report of waste discharge (RWD) with the appropriate RWQCB, unless the requirement is waived pursuant to Water Code Section 13269. The report must describe the physical and chemical characteristics of the waste that could affect its potential to cause pollution or contamination. The report must include the results of all tests required by regulations adopted by the board, any test adopted by the Department of Toxic Substances Control (DTSC) pursuant to Section 25141 of the Health and Safety Code for extractable, persistent, and bio-accumulative toxic substances in a waste or other material, and any other tests that the state board or regional board may require.

Section 13523: Section 13523 and 22 CCR Section 60323 provides the authority by which the RWQCB can prescribe water recycling requirements for users and/or producers of recycled water following consultation with the California Department of Health Services.

Section 13550: Requires the use of recycled water for industrial purposes subject to recycled water being available and a number of other criteria including provisions that the quality and quantity of the recycled water are suitable for the use, the cost is reasonable, the use is not detrimental to public health, and the use will not impact downstream users or biological resources.

Section 13551: A person or public agency, including a state agency, city, county, district, or any other political subdivision of the state, shall not use water from any source of quality suitable for potable domestic use for non-potable uses if suitable recycled water is available as provided in Section 13550.

Section 13552.6: Specifically identifies the use of potable domestic water for cooling towers is an unreasonable use of water within the meaning of Section 2 of Article 10 of the California Constitution if suitable recycled water is available and the water meets the requirements set forth in Section 13550.

California Storm Water Permitting Program

California Construction Storm Water Program: Construction activities that disturb equal to or greater than one acre are required to obtain coverage under California's General Permit for Discharges of Storm Water Associated with Construction Activity, Water Quality Order 99-08-DWQ (General Construction Permit). Activities subject to permitting include clearing, grading, soil stockpiling, and excavation.

For coverage under the General Construction Permit, a Notice of Intent (NOI) must be submitted to the SWRCB prior to the start of construction activities. An NOI receipt letter is mailed to the applicant within two weeks of receipt of a complete NOI, thus certifying coverage under the General Construction Permit. For the proposed Project, the provisions of the General Construction Permit will be implemented by the Lahontan RWQCB.

The General Construction Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will reduce or prevent construction pollutants from leaving the site in storm water runoff and will also minimize erosion associated with the construction project. The SWPPP must contain site map(s) that show the construction site perimeter, existing and proposed structures and roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the site. Additionally, the SWPPP must describe the monitoring program to be implemented.

Following completion of construction activities, a Notice of Termination must be completed and submitted to the SWRCB.

California Industrial Storm Water Program: Industrial activities with the potential to impact storm water discharges are required to obtain an NPDES permit for those discharges. In California, an Industrial Storm Water General Permit, Water Quality Order 97-03-DWQ (Industrial General Permit), is a NPDES permit that may be issued to regulate discharges associated with ten broad categories of industrial activities, including electrical power generating facilities. The General Industrial Permit requires the implementation of management measures that will protect water quality. A discharger must develop and implement a SWPPP and a monitoring plan. Through the SWPPP, sources of pollutants are to be identified and the means to manage the sources to reduce storm water pollution described. The monitoring plan requires sampling of storm water discharges during the wet season and visual inspections during the dry season. A report must be submitted each year by July 1 documenting the status of the program and monitoring results.

State Water Resources Control Board Resolutions

Resolution 75-58: On June 19, 1975, the SWRCB adopted the Water Quality Control Policy on the Use and Disposal of Inland Waters used for Power Plant Cooling. The purpose of the policy is to provide consistent statewide water quality principles and guidance for adoption of discharge requirements, and implementation actions for power plants that depend on inland waters for cooling. State policy encourages the use of wastewater for power plant cooling and sets the following order of preference for cooling purposes: 1) wastewater being discharged to the ocean; 2) ocean water; 3) brackish water or irrigation return flows; 4) inland waste waters of low total dissolved solids (TDS); and 5) other inland waters. The criteria for the selection of water delivery options involves economic feasibility (e.g., the power plant cooling system must be cost-effective to the project); engineering constraints, such as cooling water composition and temperature; and environmental considerations such as impacts on riparian habitat, groundwater levels, and surface and subsurface water quality.

Resolution 77-1: On January 6, 1977 the SWRCB adopted the Policy with Respect to Water Reclamation in California to serve as a basic framework to guide decisions related to use of recycled water. In the policy, the SWRCB resolved to encourage, and consider or recommend for funding, water reclamation projects in which: 1) beneficial use will be made of waste waters that would otherwise be discharged to marine or brackish receiving waters or evaporation ponds, 2) reclaimed water will replace or supplement the use of fresh water or better quality water, or 3) reclaimed water will be used to preserve, restore, or enhance instream beneficial uses which include, but are not limited to, fish, wildlife, recreation and aesthetics associated with any surface water or wetlands.

California Public Resources Code

Section 25300 et seq.: In the 2003 "Integrated Energy Policy Report", consistent with SWRCB Resolution 75-058 and the Warren-Alquist Act, the CEC adopted a policy stating they will approve the use of "fresh inland" water for cooling purposes by power plants only where alternative water supply sources and alternative cooling technologies are shown to be "environmentally undesirable" or "economically unsound."

Section 25523(a): The Public Resources Code provides for the inclusion of requirements in the CEC decision on an Application for Certification (AFC) to assure protection of environmental quality and requires submission of information to the CEC concerning proposed water resources and water quality protection.

The administering agencies for the State LORS are the CEC, the SWRCB, and the Lahontan RWQCB.

5.17.1.3 Local LORS

Palmdale Municipal Code

Chapter 8.04.265, Chapter 70, Section 7010 – Storm Water Management Plan (Erosion Control): According to this regulation, grading activities occurring between October 1 and April 15 require a storm water management plan in order to receive a grading permit. The plan must include details of protective measures, including de-silting basins or other temporary drainage or control measures, or both, as may be necessary to protect adjoining public and private property from damage by erosion, flooding or the deposition of mud, debris or construction-related pollutants which may originate from the site or result from the grading operation. All equipment used for grading and related activities must be stored, serviced and refueled in a designated area specifically designed to prevent waste oils, fuels, solvents and other pollutants from contaminating the soil or being conveyed by storm water. All fuels, solvents, oil, and other foreign substances and their containers must be stored in accordance with their listing and protected from the weather in such a manner as to prevent them from contaminating the soil or being conveyed by storm water.

Chapter 14.05 Landscape Water Conservation, "Palmdale water-efficient landscape ordinance" (Ord. U-992 § 1, 1993): This ordinance requires that as a condition of approval for any development proposal, the applicant must submit landscape plans prepared by a California licensed landscape architect, architect, landscape contractor, or irrigation designer to the Planning Department. The landscape plan will be scored according to water efficiency criteria and must achieve a minimum score in order to be approved. The ordinance encourages use of reclaimed water for landscape irrigation.

Chapter 15.28 Floodplain Management: A floodplain development permit shall be obtained before construction or development begins within any Special Flood Hazard Area. A Special Flood Hazard Area is defined as an area of the floodplain subject to a one percent or greater chance of flooding in one given year (i.e., 100-year flood zone) as identified by the Federal Insurance Administration (FIA) of the Federal Emergency Management Agency (FEMA). An application for a development permit shall be made on forms furnished by the Floodplain Administrator (i.e., City Engineer) and may include, but need not be limited to: plans in duplicate drawn to scale showing the nature, location, dimensions and elevation of the area in question; existing or proposed structures, fill, storage of materials, drainage facilities; and the location of the foregoing.

5.17.1.4 Involved Agencies

Agencies involved include the Lahontan RWQCB (storm water permits) and City of Palmdale (grading permits, landscape plan approval). Contacts for these agencies are provided in Table 5.17-2.

Table 5.17-2 Water Resources Agencies and Contact Information

Contact	Phone/Email	Permits/Issue
Mike Plaziak, Senior Water Resources Control Engineer Lahontan RWQCB - Victorville Office 14440 Civic Drive, Suite 200 Victorville, CA 92392	(760) 241-7353 / mplaziak@waterboards.ca.gov	Storm water permits
Shane Walter, Director City of Palmdale Department of Building and Safety 38250 Sierra Highway Palmdale, CA 93550	(661) 267-5353 / swalter@cityofpalmdale.org	Storm water plan approval; Grading permits
Connie Brown Senior Landscape Architect City of Palmdale, 38250 Sierra Highway Palmdale, CA 93550	(661) 267-5265 cbrown@cityofpalmdale.org	Landscaping Plan approval
Mike Mischel, City Engineer 38250 Sierra Highway Palmdale, CA 93550	(661)267-5272 / mmischel@cityofpalmdale.org	Floodplain development permit

5.17.1.5 Required Permits and Permit Schedule

Agency-required permits related to water resources are summarized in Table 5.17-3. Agencies will be contacted to obtain the necessary permits at the appropriate time.

Table 5.17-3 Required Water Resources Permits and Schedule

Permit/Approval	Schedule
California General Storm Water Permit for Construction Activities	Submit Notice of Intent at least one month prior to initiating construction activities.
California General Storm Water Permit for Industrial Activities	Submit Notice of Intent at least one month prior to plant startup.
Floodplain Development Permit	A floodplain development application will be submitted at least six (6) weeks prior to the start of construction.

5.17.2 Affected Environment

The Project site is located in the western Mojave Desert. Water issues in the Mojave Desert are complex and affect supply, demand, and quality for domestic, commercial, industrial, and agricultural uses. Figure 5.17-1 presents the hydrologic environment of the Project area.

Because the gas and transmission lines associated with the Project will not require water as part of their operations and only minimal amounts during construction, the majority of the following discussion focuses on the plant site and the reclaimed water supply line.

5.17.2.1 Climate and Precipitation

The Project is located in the western Mojave Desert, which exhibits typical California high desert climate conditions. Typical of these conditions are mean summer temperatures above 80°F with annual rainfall of less than 8 inches. Winters are cold, and average temperatures in December and January are below freezing.

While summers may produce an occasional thunderstorm, over 90% of the precipitation in the Palmdale area typically occurs between October and April. Climate records from the Palmdale Airport (approximately one mile from the Project) for the period 1948 to 2007 indicate average annual rainfall of 5.11 inches and average annual snowfall of 4.5 inches (Western Regional Climate Center, 2007). The average annual evapotranspiration rate, the rate of water loss to the atmosphere by the combined processes of evaporation and transpiration, is approximately 66.19 inches, which greatly exceeds annual precipitation (California Irrigation Management Information System, 2008).

5.17.2.2 Groundwater Resources

The following subsections discuss the hydrogeology and water quality of the groundwater in the Project vicinity.

Regional Hydrogeology

The Project site is located within the Antelope Valley Groundwater Basin, a closed basin which underlies an extensive alluvial valley in the western Mojave Desert. The basin is bounded on the northwest by the Garlock fault zone at the base of the Tehachapi Mountains and on the southwest by the San Andreas fault zone at the base of the San Gabriel Mountains. The basin is bounded on the east by ridges, buttes, and low hills that form a surface and groundwater drainage divide (California Department of Water Resources [CA DWR], 2003).

The primary water-bearing materials in the Antelope Valley Groundwater Basin 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. Coarse alluvial deposits form the two main aquifers of the basin; a lower aquifer and an upper aquifer. Clay beds up to 400 feet thick were deposited in large perennial lakes during periods of heavy precipitation. These clays are inter-bedded with lenses of coarser water-bearing material as thick as 20 feet. The clay deposits form a zone of low permeability between the permeable alluvium of the upper aquifer and that of the lower aquifer, although leakage between the two aquifers may occur. The upper aquifer, which is the primary source of groundwater for the valley, is generally unconfined whereas the lower aquifer is generally confined. Specific yield of these deposits ranges from 1 to 30 percent, and wells typically have a moderate to high ability for water well production (CA DWR, 2004).

Recharge to the basin 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. The Big Rock and Little Rock Creeks, in the southern part of the basin, contribute about 80 percent of runoff into the basin. Other minor recharge is from return of irrigation water and septic system effluent (CA DWR, 2004).

Historically, groundwater in the basin flowed north from the San Gabriel Mountains and south and east from the Tehachapi Mountains toward Rosamond Lake, Rogers Lake, and Buckhorn Lake. These dry lakes are places where groundwater can discharge by evaporation. Because of groundwater pumping, groundwater levels and flow have been altered in urban areas such as Lancaster and 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, 292 square miles of Antelope Valley had subsided more than one foot. This subsidence has permanently reduced aquifer-system storage by about 50,000 acre-feet (CA DWR, 2004)

Plant Site and Vicinity Hydrogeology

ENSR reviewed the Final Results of the 2007 Semiannual Groundwater Monitoring Events at Installation Restoration Program (IRP) Site 29, Air Force Plant 42, Palmdale, California (Monitoring Report). According to the Monitoring Report, the two closest monitoring wells to the plant site are identified as MW1-1 and MW1-13, both of which are located to the east of the subject property. The Monitoring Report states that groundwater depth in September 2007 was 363 feet below ground surface (bgs) for MW1-1 and 375 feet bgs for MW1-13. According to the Monitoring Report, the direction of groundwater flow in the vicinity of the plant site is to the south-southwest.

There is known groundwater contamination (primarily from trichloroethylene [TCE]) in areas adjacent to the east of the plant site. This contamination is associated with historical operations at Air Force Plant 42. According to the 2007 Monitoring Report, the TCE plume does not extend to the plant site, but remains confined to areas underlying Air Force Plant 42. The two monitoring wells closest to the plant site, MW1-1 and MW1-13, did not have detectable concentrations of analyzed contaminants (primarily TCE) during May and September 2007 monitoring events. Groundwater remediation and monitoring activities at Air Force Plant 42 have been overseen by the California Department of Toxic Substances Control (DTSC) and the Lahontan RWQCB.

5.17.2.3 Surface Water

The following paragraphs address surface water bodies, floodplains, and wetlands issues in the Project vicinity.

Surface Water Bodies

There are no surface water bodies at the PHPP power plant site. The nearest surface water bodies to the plant site are Amargosa Creek, approximately one mile to the west; Anaverde Creek, approximately five miles to the southwest; and Little Rock Creek, approximately five miles to the east. These creeks are normally dry except during intense rainfall events. There are also two reservoirs in the project vicinity: Lake Palmdale is located approximately six miles south of the plant site, and Littlerock Reservoir is approximately 12 miles to the southeast. Both reservoirs are used for irrigation and municipal use as well as recreational uses.

The proposed transmission line route crosses Little Rock Creek in two locations, the first along E Ave L between 60th and 70th Sts E, and the second near the intersection of Mount Emma Road and Cheseboro Road. The proposed linear facility routes also cross several other small unnamed ephemeral watercourses, as depicted in Figure 5.17-1.

Floodplains

According to the Federal Emergency Management Agency (FEMA) flood insurance rate map (1999) the proposed plant site is not located within a Special Flood Hazard Area (i.e., 100-year flood zone) or Moderate Flood Hazard Zone (i.e., 500-year flood zones). The proposed linear facility routes cross several Special Flood Hazard Areas and Moderate Flood Hazard Areas as depicted in Figure 5.17-1. The Little Rock Dam provides flood control for areas along Little Rock Wash.

Wetlands

As discussed in Section 5.3, Biological Resources, a Jurisdictional Delineation prepared for the PHPP indicated that the Project would avoid and thus not affect Federal or State jurisdictional waters or wetlands.

5.17.2.4 Water Supply

As described in Section 2, Project Description, the Project will use reclaimed water supplied by the City of Palmdale Water Reclamation Plant (PWRP) for cooling tower makeup and other industrial uses. Potable water for uses such as drinking water, sanitary uses, safety showers, etc. will be obtained from the Los Angeles County Waterworks District No. 40. The following paragraphs discuss the supply of both reclaimed water and potable water in the Project vicinity.

Reclaimed Water

Reclaimed water is an important and growing component of the Mojave Desert region's water supply. It is obtained through the treatment of municipal wastewater and produces a safe and reliable water supply for non-potable uses. Reclaimed water from the PWRP will be the primary source of process water for the Project. The PWRP's current treatment capacity is 15 million gallons per day (mgd), and in 2004 the PWRP treated an average flow of 9.4 mgd (Los Angeles County Sanitation District, 2005). The current 15 mgd capacity for the PWRP is projected to be reached by 2013, and the Los Angeles County Sanitation District 20 (District 20), which encompasses Palmdale, plans to expand the capacity of the PWRP to 22.4 mgd by 2025.

Treated wastewater management is a particular challenge in District 20 because the Antelope Valley is a closed basin with no outlet to the Pacific Ocean. Historically, treated wastewater was disposed of through land application or agricultural reuse. In 2000, the Lahontan RWQCB revised the Waste Discharge Requirements (WDRs) for the PWRP, due to suspected nitrate contamination in groundwater attributed in part to land application and agricultural reuse of treated wastewater. Land application and agricultural use above rates that can be utilized by crops or vegetation are no longer acceptable and the PWRP must devise alternative uses for treated wastewater. District 20 estimates that 7.8 mgd could be used for municipal reuse for irrigating parks, school grounds, golf courses, and similar areas, but this is still much less than the projected flow rate of 22.4 mgd in 2025 (Los Angeles County Sanitation District, 2005). Therefore the District is looking for additional uses for reclaimed water, including the proposed Project. It should be noted that the PHPP is a desirable type customer for reclaimed water because it requires reclaimed water on a 24/7 basis throughout the year, whereas demand fluctuates for reclaimed water customers who use the water for landscaping. District 20 has provided a Will Serve Letter for the Project, which is included in Appendix E.

The Project will also have a backup water source in the event of an extended outage in the PWRP system. The proposed backup source would be reclaimed water from the City of Lancaster Water Reclamation Plant (LWRP). A proposed reclaimed water pipeline system, linking the City of Palmdale with the City of

Lancaster is scheduled to be completed in the fall of 2013 (Los Angeles County Sanitation District, 2004). The LWRP has a current maximum capacity of 16 mgd and treated an average flow of 12.8 mgd in 2002. The capacity of the LWRP is planned to be expanded to approximately 26 mgd by 2020.

Potable Water

The small quantity of potable water required by the Project's construction and operation workforce will be provided by the Los Angeles County Waterworks District No. 40. Los Angeles County Waterworks District No. 40 obtains its water from three sources: surface water from the State Water Project (California Aqueduct), surface water from the Little Rock Reservoir, and groundwater from the Antelope Valley Groundwater Basin via 23 groundwater wells. Approximately 60 percent of the District's water supply comes from surface water and 40 percent from groundwater. All sources are regularly tested and treated in compliance with all applicable regulations to ensure high water quality.

5.17.3 Environmental Impacts

This section provides a general description of the potential environmental consequences of the Project on water resources.

Project water supply impacts would be considered significant if the Project resulted in:

- Substantial depletion of groundwater resources and interference with local wells,
- Substantial interference with groundwater recharge, or
- Use of water in a wasteful manner.

Project water quality or erosion/flooding-related impacts would be considered significant if the Project resulted in:

- Degradation of groundwater quality,
- Discharge into surface waters resulting in any alteration of surface water quality, and,
- Activities that cause or contribute to substantial erosion.

5.17.3.1 Construction Impacts

Construction activities are expected to take place over a period of approximately 27 months. This section describes potential impacts to water resources related to construction activities.

Water Use

Reclaimed water from the PWRP will be used for dust suppression and other construction related water requirements. This use is allowed by the Lahontan RWQCB with the requirement that chlorine be applied to the secondary treated water and the RWQCB be notified. No permits are necessary. The water will be trucked to the Project site from the PWRP until completion of construction of the Project's reclaimed water supply pipeline from the treatment plant. Construction-phase water demand will be greatest during site grading. During grading of the power block, the maximum water demand is expected to be approximately 65,000 gallons per day (gpd). During grading of the much larger solar field area, which will occur immediately after site preparation of the power block, average water demand is expected to be

approximately 560,000 gpd with a peak of 650,000 gpd. Following the initial grading period, water demand is expected to decrease significantly, averaging approximately 58,000 gpd.

Bottled water will be used for drinking purposes by Project construction personnel. Portable sanitary facilities will be used onsite during the construction phase, and thus no water will be required for sanitary uses and no sanitary wastewater will be discharged from the construction site.

Water Quality

Water quality impacts could result from releases of chemicals used during construction, such as motor oil, fuel, and solvents. These chemicals can potentially contaminate surface water during heavy storm events, or groundwater through infiltration. Equipment wash water will be discharged at designated wash areas. This wash water will be transported to the nearby PWRP by a vacuum truck hauler, and no significant impacts are expected. A permit for discharge to the PWRP will be obtained prior to discharge. Water quality impacts during construction are not expected to be significant and a number of mitigation measures are in place to prevent spills of chemicals, as well as to respond to spills should they occur.

Drainage and Runoff

The Project site is located in the Mojave Desert where the annual rainfall is less than eight inches. Storm water discharges during the Project construction phase will be managed in accordance with the California General Storm Water Construction Permit issued by the SWRCB and overseen by the Lahontan RWQCB. A SWPPP will be prepared and implemented for the construction phase of the Project, as will a Drainage, Erosion, and Sediment Control Plan (DESCP) to meet CEC requirements (a preliminary DESCP is provided as Appendix L). The construction SWPPP will identify the best management practices (BMPs), such as erosion and sediment controls, that will be used to prevent construction activities from causing or contributing to exceedance of applicable water quality standards in regional groundwater aquifers or surface water bodies. No significant impacts are expected related to storm water discharges associated with the Project.

5.17.3.2 Operation Impacts

This section describes potential environmental impacts on water resources related to the ongoing operation of the Project.

Potable Water Use

Approximately 3,200 gallons/day of potable water for drinking, sanitary purposes, safety showers, etc., will be required to meet the needs of the Project. This water will be provided by Los Angeles County Waterworks District No. 40. No significant impacts are expected from the small quantity of water to be used for domestic and sanitary purposes.

Reclaimed Water Use

An adequate volume of reclaimed water will be available to the Project from the PWRP (see "Will-Serve" letters in Appendix E). As discussed in Section 2.0, Project Description, the peak process and cooling water usage rate for the Project is 2,965 gallons/minute, or approximately 4.3 million gallons per day (mgd). The PWRP's current treatment capacity is 15 million gallons per day and in 2004 the PWRP treated an average flow of 9.4mgd (Los Angeles County Sanitation District, 2005). The capacity of the PWRP is expected to

expand to 22.4 mgd by 2025. As described above, the PWRP can no longer dispose of treated wastewater through land application above agronomic levels, as it has done historically. The PWRP therefore currently has, and is expected to have in the future, an excess of treated water. As the PWRP is expected to be able to supply the Project while meeting its other commitments and still have additional reclaimed water available for sale, the Project is not expected to have significant water supply impacts.

Reclaimed water from the LWRP will be used as the backup cooling water supply source in the event that there is an extended outage of the PWRP reclaimed water supply system. This water would be supplied from a proposed reclaimed water pipeline "backbone" system, linking the City of Palmdale with the City of Lancaster. This system is scheduled to be completed in the fall of 2013.

Wastewater Discharge

As described in the Section 2.0, Project Description, the Project has been designed as a zero liquid discharge (ZLD) facility; therefore, with the exception of the minimal amounts of sanitary wastewater generated from the Project's operation workforce of 36 individuals, no wastewater will be discharged from the facility. Flows to the sanitary sewer will occur through a new sanitary wastewater pipeline described in Section 2.0, Project Description. The Project will obtain the necessary approvals for connection with the sanitary sewer and will comply with applicable influent limitations. Thus, no significant impacts are expected from the Project wastewater discharges.

Drainage and Runoff

Currently at the plant site, only natural swales and low ponding areas exist and there are no drainage ditches or storm drains. There is an average slope of one percent toward the north-northeast at the site. For the proposed development, the plant site was divided into two sections – North and South. The North section includes the area of the solar field north of the access road and roughly the northern half of the power block. Runoff from the North section will drain to the north into an infiltration pond along the northern boundary of the plant site. The South section of the site includes the area of the solar field south of the access road and roughly the southern half of the power block. Runoff from the South section will drain to the infiltration ponds located on the south side of the access road and the south side of the power block area. No discharge is expected to leave the plant site.

Project operations phase storm water discharges will be covered under the California General Storm Water Permit for Industrial Activities issued by the SWRCB and implemented by the Lahontan RWQCB. An operation-phase SWPPP will be developed and implemented. The SWPPP will identify and evaluate sources of pollutants that may affect the quality of storm water discharges and identify site-specific BMPs and other management controls to minimize storm water contact with contaminants and thus minimize pollutants in storm water such that water quality standards are not exceed (as required by the permit). These Project management controls include employee training, good housekeeping, inspection, preventive maintenance, and spill prevention and response programs; erosion and sediment controls and structural BMPs such as temporary containments during maintenance activities and permanent secondary containment structures at chemical storage and process areas. With implementation of these management controls, Project operation is expected to result in no significant impacts associated with drainage and runoff of storm water.

Potential Spills and Releases

Oils and hazardous materials will be stored onsite within secondary containment. Facility transformers will be constructed within secondary containment. In addition, a SPCC Plan will be prepared and implemented

for the Project. The plan will describe the spill prevention measures, training, spill response, reporting requirements and inspection program to be implemented by the Project.

While solar collector design has advanced to an excellent level of performance and reliability, occasional small spills of HTF do occur, primarily due to equipment failures. The existing solar thermal plants in southern California (e.g., 80 MW facility at Kramer Junction) that utilize the same basic technology as proposed for the Project have reduced HTF spills due to accidents or pipe rupture to very low levels. Good maintenance practices and the use of ball joint assemblies rather than flexible hoses in the HTF system are the major contributors to this improvement.

If a spill or release is identified, the system operators in the power block will be notified immediately and the affected collector loop shut down. An appropriately equipped crew will make any necessary equipment repairs and any HTF-impacted soil will be cleaned up immediately and placed in drums for offsite disposal at an appropriately permitted disposal facility.

5.17.3.3 Flooding Impacts

Los Angeles County participates in the National Flood Insurance Program (NFIP) by adhering to federally-set requirements to reduce flood hazards. The County uses flood districts and zones to prevent construction of habitable structures in flood zones. The plant site is the only Project area that will include habitable structures. According to FEMA, the plant site is not in an area of high flood risk and thus will have no significant flooding impacts. With careful placement and design of structures, the Project's transmission structures located in areas that cross flood zones will not lead to significant flooding impacts.

5.17.3.4 Cumulative Impacts

As discussed above, projections by County Sanitation District 20 of the supply and demand for reclaimed water from the PWRP indicate that supply is expected to be adequate to meet the needs of the Project plus other existing and expected demands (e.g., municipal reuse), while leaving additional reclaimed water available for sale. The projects (primarily commercial and residential uses with little industrial) identified in Section 5.1 for the cumulative analysis would not appear likely to be major users of reclaimed water and thus, the PHPP will not contribute to a significant cumulative water supply impact.

5.17.4 Mitigation Measures

This section presents the mitigation measures that will implemented to minimize Project impacts on water resources.

WTR-1 Design the site drainage system to be in conformance with good engineering practice and with applicable regulatory requirements.

WTR-2 Perform project construction activities in accordance with the SWPPP that will be developed to meet the requirements of the General NPDES permit for Discharges of Storm Water Associated with Construction Activity and the DESCP prepared to meet CEC requirements. This will include implementation of the BMPs identified in the SWPPP to control erosion, sediment transport, and discharge of pollutants during construction.

WTR-3 Perform project operations in accordance with the SWPPP prepared to meet the requirements of the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity and

the DESCP. The will include implementation of the BMPs identified in the SWPPP to control erosion, and minimize the entrainment of pollutants associated with Project operation in entering storm water discharges.

WTR-4 Utilize reclaimed water for cooling tower makeup, process water, landscape irrigation, and the Project's other non-potable uses. Use of reclaimed water will comply with all applicable requirements of Title 22 California Code of Regulations.

5.17.5 References

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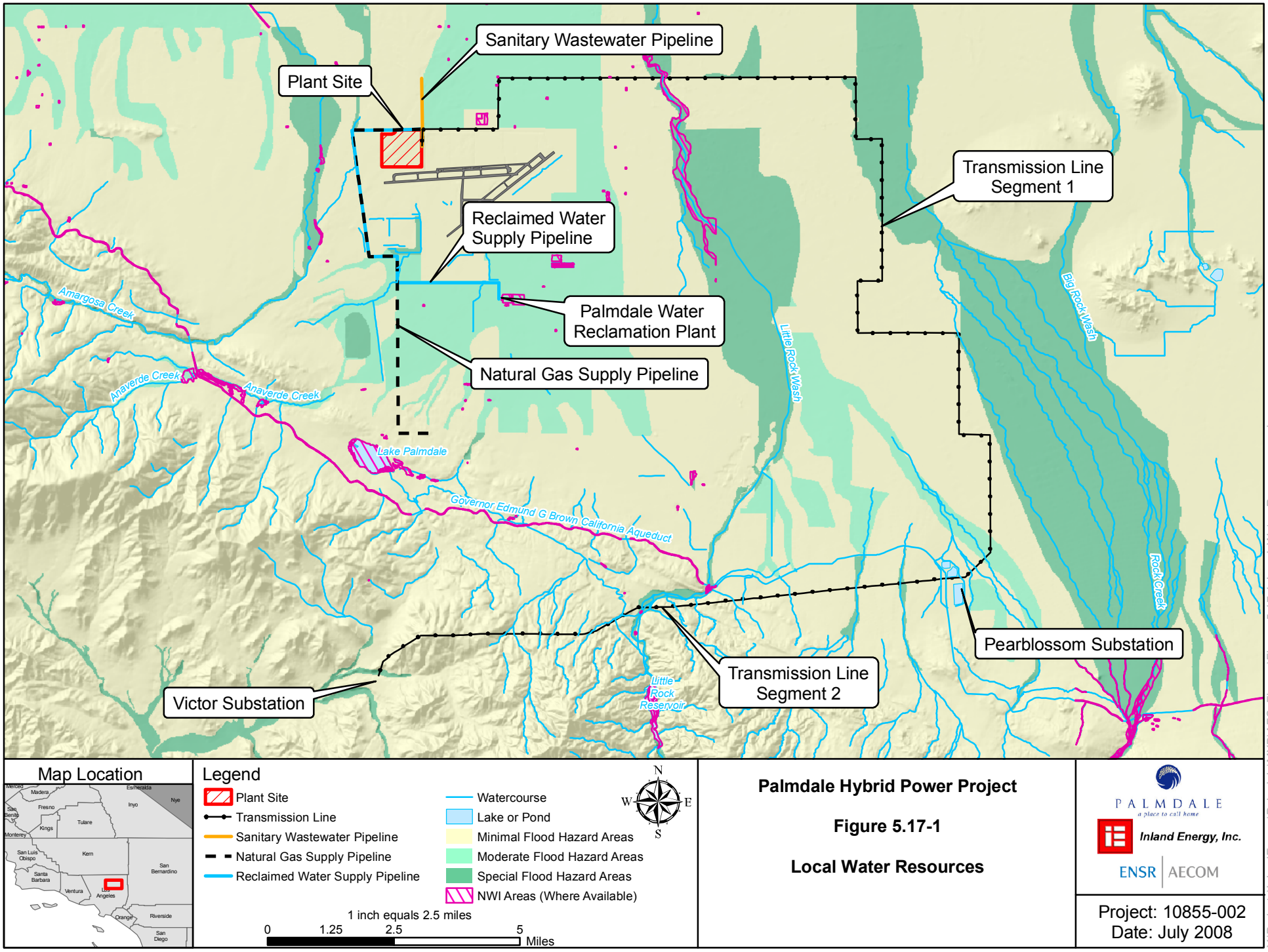
Sanitary Wastewater Pipeline
Plant Site
Transmission Line Segment 1
Reclaimed Water Supply Pipeline
Palmdale Water Reclamation Plant
Natural Gas Supply Pipeline
Amargosa Creek
Anaverde Creek
Anaverde Creek
Little Rock Wash
Big Rock Wash
Lake Palmdale
Governor Edmund G Brown California Aqueduct
Rock Creek
Pearblossom Substation
Transmission Line Segment 2
Victor Substation
Little Rock Reservoir
Map Location
Legend
Plant Site
Transmission Line
Sanitary Wastewater Pipeline
Natural Gas Supply Pipeline
Reclaimed Water Supply Pipeline
Watercourse
Lake or Pond
Minimal Flood Hazard Areas
Moderate Flood Hazard Areas
Special Flood Hazard Areas
NWI Areas (Where Available)
N
W
E
S
1 inch equals 2.5 miles
0
1.25
2.5
5
Miles
Palmdale Hybrid Power Project
Figure 5.17-1
Local Water Resources
PALMDALE
a place to call home
Inland Energy, Inc.
ENSR | AECOM
Project: 10855-002
Date: July 2008
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