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From: Joseph Diamond
To: Christopher Meyer
CC: Jim_Stobaugh@blm.gov; Linda_Self@ca.blm.gov; Paula David
Date: 1/21/2009 1:45 PM
Subject: Fwd: SolarReserve socio-economic impacts
Attachments: 08 1015 Imperial Solar Energy POD Final.pdf

Christopher,
Please docket this e-mail for the Solar 2 project/socioeconomics.

Thank you,
Joseph Diamond Ph. D.
Economist
California Energy Commission

>>> Andrew Wang <Andrew.Wang@solar-reserve.com> 1/21/2009 12:46 PM >>>
Joe ~ attached is a copy of our BLM Plan of Development for our Imperial site. Take a look at pages 30 and 40 where we have details on your socio-economic inquiries:

1. Expected dates of construction - 30 months with COD approximately 7/1/2014

2. Estimated labor force - average 250 employees onsite at any given time with 400-500 at peak of construction (bell-shaped curve for mobilization/demobilization)

3. Operating life of project - at least 30 years

4. Operational labor force - 40-45 employees during normal facility operation

Also as we discussed, our CAISO interconnection request reflects a 250 MW, not 120 MW, capacity. That output level could drop depending on the eventual outcome of the interconnection studies.

Thanks.

Andrew Wang
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Imperial Solar Energy, LLC

PLAN OF DEVELOPMENT

Submitted to:

BLM EL Centro Field Office
El Centro Resource Area
1661 S. 4th Street
El Centro, CA 92243

Submitted By:

SolarReserve

2425 Olympic Blvd., Suite 500 East
Santa Monica, California 90404

October 15, 2008

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EXECUTIVE SUMMARY

This Plan of Development is submitted to the Bureau of Land Management (BLM) in support of an application for a Right-of-Way grant allowing a solar energy project to be constructed on land managed by the BLM. The proposed project will be a concentrated solar electric generating facility on a site located in Imperial County, approximately 18 miles southeast of El Centro, California. The project will be capable of producing approximately 500 gigawatt-hours (GWh) of renewable energy annually, with a nominal net generating capacity of 100-250 megawatts (MW).

SolarReserve's technology is a concentrating solar power (CSP) technology, utilizing a central receiver/tower and equipped with an integrated thermal storage system. The proprietary receiver and storage components are provided through an exclusive license with United Technologies Corporation subsidiary Hamilton Sundstrand Rocketdyne ("UTC" or "Rocketdyne"). The salt storage technology was demonstrated successfully at the Solar Two facility in Barstow, CA in the late 1990's.

SolarReserve's technology generates power from sunlight by focusing energy from a field of sun tracking mirrors called heliostats onto a central receiver. Liquid salt, which has the viscosity and appearance similar to water when heated, is circulated through tubes in the receiver, collecting the energy gathered from the sun. The heated salt is then routed to an insulated storage tank where it can be stored with minimal energy losses. When electricity is to be generated, the hot salt is routed to a heat exchanger (or steam generator) and used to produce steam, which generates electricity in a conventional steam turbine cycle. After exiting the steam generator, the salt is sent to the cold salt thermal storage tank and the cycle is repeated.

The benefits of this unique technology are as follows. First, salt in the liquid state has highly efficient heat transfer and storage properties. Because the salt is used as the heat transfer medium in the cycle, no natural gas is required for startup or to maintain steam cycle conditions during cloud cover, as with some other solar technologies. Second, because the salt stores energy, the stored energy can be extracted upon demand to produce electricity even when there is no sunlight. Third, the storage capability also provides flexibility to generate electricity in large quantities for short periods of time or in smaller quantities over longer periods of time, thereby matching the seasonal and varying electricity demands of the state.

The primary objective for the proposed project is to construct, operate and maintain an efficient, economic, reliable, safe and environmentally-sound, solar-powered generating facility. The facility will help meet the State of California objectives mandated for renewable electric energy. The site selected is located in an area within the state where excellent solar resources exist.

The project will have the following features:

- A large field of heliostats or mirrors to reflect the sun's energy onto a central receiver or tower
- A conventional steam turbine to generate electricity
- Thermal storage tanks to store the hot and cold liquid salt
- An air cooled condenser designed to minimize water use by use of fogging only during times of high electricity demand
- Associated equipment such as pumps, transformers, heat exchangers, and buildings
- Associated linear facilities including a transmission line, access road and water supply pipeline

The project offers the following key benefits:

- The proposed solar power plant is expected to generate approximately 500,000 MWh per year and can displace the use of natural gas and associated carbon dioxide (CO_2 – a greenhouse gas) emissions produced by a modern high-efficiency natural-gas-fired power plant to produce an equivalent amount of energy. The project will assist the State of California in developing renewable sources of energy and displacing older conventional power generation.
- The project will minimize the use of water by utilizing an air cooled condenser with occasional fogging to enhance energy production during times of high demand.
- The project can provide flexibility for state renewable power supplies by being able to generate a large quantity of electricity for a short period of time or a smaller quantity of electricity over a longer period of time without changing the size of the solar array.
- The project is expected to promote economic development by creating approximately 40-45 permanent jobs and up to 400-500 peak construction jobs

1. INTRODUCTION

SolarReserve submitted an Application for Transportation and Utility Systems and Facilities on Federal Lands (Standard Form 299) to the BLM to secure a Right-of-Way (ROW) Grant on April 24, 2008 to permit, build, construct, and operate a 100-250 MW solar power generating facility based on concentrating solar power technology (CSP). This technology utilizes heliostats (reflecting mirrors) to redirect sunlight on a receiver erected in the center of a solar field. The solar power facility is proposed to be located on BLM property located in Imperial County, California (hereinafter, the Site), further defined in Section 4.

Commercial operation is anticipated to commence in the summer of 2014 or earlier, if all required permits and authorizations have been secured. SolarReserve anticipates filing an Application for Certification (AFC) for the project with the California Energy Commission (CEC) in the fall of 2009. Construction of the facility will take approximately 30 months to complete.

This Plan of Development (POD) is submitted by SolarReserve, LLC in support of the application for a ROW in accordance with guidelines recently provided by the BLM. (Appendix C contains the information requested by the BLM for the POD as well as a cross-reference table indicating the location in this document of the information requested by the BLM.) The primary objective of the POD is to supplement the Standard Form 299 by providing the following project-related information:

- Project Description, including the purpose and need for the project, general facility description and design, and permitting requirements;
- Project construction methods;
- Related Facilities and Systems, including transmission facilities;
- Operations and Maintenance; and
- Environmental Considerations, which describes the anticipated impacts and proposed mitigation to various resources.

This initial POD is not intended to be a final and complete document but rather a dynamic document that may be amended to include supplemental information, analysis, or studies as the project progresses. Additional supplemental information anticipated to be submitted to the BLM before the environmental review process is completed will include, among other things, final engineering and civil design drawings, project alternatives, final facility management plans, and final facility decommissioning plans.

2. PURPOSE AND NEED

The Project is designed to meet the increasing demand for clean, renewable electrical power. The United States has a greater solar energy resource potential than that of any other industrialized nation. The multiple benefits associated with developing this resource have been recognized by both Federal and state policy-makers. Development of solar resources reduces reliance on foreign sources of fuel, promotes national security, diversifies energy portfolios and contributes to the reduction of greenhouse gas emissions.

In addition, effective January 1, 2003, California enacted a Renewable Portfolio Standard (RPS) requiring that utilities and other load serving entities serve 20 percent of their retail demand with renewable energy. Subsequent legislation accelerated the year in which this goal must be attained from 2017 to 2010. California is currently considering whether to enact an additional requirement of reaching 33 percent renewable energy by 2010. The Project is an eligible renewable resource within the meaning of the California RPS. Construction and operation of the Project will contribute to achieving California's RPS goals.

In addition to its environmental attributes, the project will contribute much needed on-peak power to the electrical grid that serves the western United States. The demand for power continues to grow in these states. As older technology fossil-fuel plants reach the end of their useful lives there is a benefit in replacing them with clean, reliable energy sources. The Project responds to this need.

3. APPLICANT FINANCIAL AND TECHNICAL CAPABILITY

SolarReserve is a Santa Monica, California based energy company formed by US Renewables Group, a private equity firm focused exclusively on renewable energy. SolarReserve now holds the exclusive worldwide license to build solar plants that use equipment manufactured by United Technology Corporation's subsidiary, Hamilton Sundstrand, through its Rocketdyne division. More than $100 million has been invested to date by Rocketdyne, the US Department of Energy and others in the design and manufacture of these components. Hamilton Sundstrand brings a broad base of experience in building the most reliable power systems in the world and supports a multitude of other programs to support the further development and implementation of the technology.

US Renewables Group (USRG) is one of the largest private equity firms focused exclusively on investing in renewable power, biofuels and clean technology infrastructure. USRG was founded in 2003 and has mobilized $575 million of capital commitments and has made 17 diversified investments across two funds. USRG has offices in Los Angeles and New York.

The SolarReserve team, both solely and in cooperation with other energy firms, is developing a portfolio of opportunities to deploy solar energy plants in the United States, Europe, Africa, the Middle East, Latin

America and Australia. The SolarReserve management team has successfully developed more than $7 billion in electricity generation projects at previous companies. This includes solar and wind energy projects as well as natural gas, cogeneration, and biomass-fired electricity generating facilities located in the United States and more than a dozen countries around the world.

SolarReserve recently closed a second round of funding totaling $140 million. The additional funds will enable the company to advance its development of utility scale power plants in locations across the globe. The financing was led by the renewable energy private equity group within Citi Alternative Investments, Sustainable Development Investments (SDI), and Good Energies, one of the largest private investors in the solar industry. Other investors include US Renewables Group, the founding investor in SolarReserve, along with PCG Clean Energy & Technology Fund (CETF), Nimes Capital, LLC and Credit Suisse.

SolarReserve has already invested substantial resources for this project, including securing a place in the transmission queue and engaging qualified engineering and environmental consultants to support development efforts. Additional contributors to this POD are as follows:

• **WorleyParsons** —WorleyParsons has provided engineering support to a broad portfolio of clients in the utility-scale solar energy field, including utilities, major IPPs, and recently formed ventures. WorleyParsons' staff has extensive experience with all four types of concentrating solar technologies. Solar power staff has been involved in the design, construction, and operation of nineteen concentrating solar power facilities including the nine SEGS plants in Southern California, six dish/Stirling solar power systems, Solar I and II power tower systems and two compact linear reflecting Fresnel systems. Worley Parsons is currently completing solar plant engineering for FPL Energy and other project developers. Their world-class conventional power engineers have the capability to design and build the power block of solar power facilities rapidly and at a minimum cost. They also have experience with flat-plate and concentrating photovoltaic systems. Worley Parsons capabilities include solar resource assessment and site selection, plant design point and annual performance simulation, plant design and cost estimating, construction management, acceptance testing, and plant O&M. WorleyParsons will provide engineering services throughout the project's life from concept selection, plant configuration tailored to match utility load, preliminary engineering and detailed design. WorleyParsons commenced operations over 25 years ago and now employs 32,200 personnel in 118 office locations in over 38 countries and has an established track record of successfully executing major projects for its customers.

• **URS** — URS Corporation offers a range of professional planning, engineering and architectural design, environmental, construction, and program and construction management services. URS also provides system integration, operations and maintenance, management and a wide range of specialized technical services. URS is organized into three divisions: the URS Division, the EG&G Division, which includes the operations of Lear Siegler Services, and the Washington Division. With an established presence in major cities in the Americas, Europe, the Middle East, and Asia-Pacific, URS serves the U.S. federal government, state and local government agencies and private-industry clients, including *Fortune* 500 companies worldwide.

4. PROJECT DESCRIPTION

The proposed solar power project is based on concentrating solar power (CSP) technology. The proposed CSP technology utilizes heliostats/reflecting mirrors to redirect sunlight on a receiver erected in the center of the solar field (the power tower or central receiver). A heat transfer fluid (HTF) is heated as it passes through the receiver and then circulated through a series of heat exchangers to generate high-pressure superheated steam. The steam is then used to power a conventional Rankine cycle steam turbine/generator, which produces electricity. The exhaust steam from the turbine is condensed and returned via feedwater pumps to the heat exchangers where the high-pressure superheated steam is generated again.

Both the central receiver and type of heat transfer fluid distinguish SolarReserve technology from other concentrating solar power technologies. With the SolarReserve technology, salt, which is melted to a liquid form, is circulated through the tubes in the central receiver, collecting the energy gathered from the sun. The heated salt is then routed to an insulated storage tank (hot thermal storage tank) where the energy can be stored with minimal energy losses. When electricity is to be generated, the hot salt is routed to the heat exchanger (or steam generator) and used to produce steam at high temperature. The steam is then used to power a conventional steam turbine, generating electricity. After exiting the steam generator, the salt is sent to a "cold" salt thermal storage tank and the cycle is repeated.

The salt is a combination of sodium and potassium nitrate, with a melting temperature of 460°F. In the liquid state, the salt has the viscosity and an appearance similar to water. Salt is a heat storage medium that retains thermal energy very effectively over time. Once the salt is melted to a liquid form during construction, it will remain heated and in a liquid state throughout the plant's operating life, being reused again and again in the cycle. The salt utilized is a technical grade salt similar to commercial fertilizers.
A primary advantage of the central receiver technology using salt is that the heat transfer medium can be heated to temperatures over 1000°F. Steam can be generated at utility-standard temperatures, allowing the use of highly efficient steam turbine cycles. While SolarReserve's technology is thus among the most efficient of solar technologies, one characteristic of the technology is a tall, central tower. The tall tower, described in further detail below, ensures that the large array of heliostats can focus the solar energy onto the receiver mounted on top of the tower.

SolarReserve, in conjunction with Rocketdyne, has optimized the size of the solar array or heliostat field and tower height to achieve a technology which can operate at commercial scale and produce renewable energy at a competitive price. Thus, the tower height and size of the solar field are characteristics of the technology and will not vary based on plant output.

Additional information on the tower height and size of the solar array are provided below.

4.1 Project Location

Located approximately 18 miles southeast of El Centro, California, the Site is on lands administered by the Bureau of Land Management (BLM) within Imperial County (**Figure 1**):

> Sections 22, 23, 27, 26, 34 & 35 of Township 16S, Range 17E, the eastern half of Sections 21, 28, and 33 of Township 16S, Range 17E, and northern portion of Sections 1, 2, & 3 Township 17S,

Range 17E. *(Note: The portions of sections 21, 22, and 23 that are located at or north of Interstate 8 will not be included in the project boundary.)*

No incorporated towns or cities, or developed areas, are located within or near the Site. The closest municipality is the City of El Centro. Interstate-8, which traverses the northern portion of the site in a diagonal direction, is the primary east-west vehicular route through Imperial County between San Diego, California, and Yuma, Arizona. The 4-laned highway (which has two lanes in each direction) serves as an integral route for people and goods movement, provides connection to other states, and provides access to desert recreational activities. State Route 98 (SR-98) is a two lane east-west route traversing the southern boundary of the Site. The highway serves interregional, intraregional, and international travel and provides an alternate route to I-8. The Site is bounded by undeveloped private and BLM-managed land to the north and east, BLM-managed land and the All American Canal to the south, and BLM-managed land to the west. Sand dunes surround the project to the north, west, and east.

The land necessary for construction of the proposed solar power plant, including the heliostat array, power block, and associated facilities consists of approximately 1,600 acres located within the land boundaries described above and shown on **Figure 4.** The proposed boundaries as filed in the SF-299 application are currently in excess of the minimum needed to site the physical equipment. Because the project is at the preliminary project design stage, the additional land will allow the applicant the flexibility to adjust the location of the central tower based on the results of soils/geotech, cultural, and biological baseline studies and then determine an adequate buffer between plant facilities and any adjacent uses before finalizing the equipment location within the Right-of-Way and finalizing the plant boundaries. Additional right of way will also be required for a transmission line if the project interconnects to an off-Site San Diego Gas & Electric (SDG&E) substation located southwest of El Centro, as outlined in Section 4.4.2. A temporary off-Site pipeline may also be needed to provide construction water to the Site from an off-Site source, as outlined in Section 4.6 of this POD.

4.2 Generating Facility Description

The overall site layout for the proposed facility is shown on **Figure 4** and includes the following components:

- The solar array, a circular field with a radius of approximately 4,500 feet where the heliostats are located.
- The power block, a circle with a radius of about 400 feet which houses the central receiver tower, storage tanks, steam turbine, air cooled condenser, transformers, heat exchangers, power block buildings, and other ancillary equipment.
- An administration building, warehouse, and evaporation ponds, which will be located along the outside perimeter of the solar array.
- Associated linear facilities including transmission, access road and water pipeline.

4.2.1 Solar Field

A solar power tower/central receiver system generates electric power from sunlight by focusing concentrated solar radiation on a tower-mounted receiver. The system use thousands of sun-tracking mirrors called heliostats, which are arranged concentrically around the central receiver tower and reflect the incident sunlight onto the receiver.

The proposed facility will consist of up to approximately 17,350 heliostats occupying approximately 1,400 acres. Each heliostat will be approximately 670 square feet in size, yielding a total reflecting surface of about 12,000,000 ft^2 (1,100,000 m^2).

The arrangement of the heliostats within the array is optimized to maximize the amount of solar energy that can be collected by the field and arranged to avoid interference among heliostats as they track the sun during the day. The heliostats will be arranged in arcs around the solar receiver asymmetrically, as described below.

- The first row or line of heliostats has a radius of approximately 420 feet.
- The longest arc/line of heliostats, with a radius of approximately 5,100 feet, is in the northern section of the heliostat array. This is due to the greater collection efficiency of heliostats located north of the receiver tower for sites in the northern hemisphere of the world. With the sun predominantly in the southern sky, the cosine effect of incidence and reflection angles are less in the northern heliostats than in the southern ones. The converse – lower collection efficiency in the southern section – is also true; therefore, the maximum southern arc radius is the shortest, 3,580 feet, and the southern heliostat field is the smallest.
- The eastern sector of the heliostat is more valuable than the western sector for energy collection because afternoon energy collection, during on-peak utility hours, is more valuable than morning energy collection, during part-peak or off-peak hours. The maximum eastern row arc radius may therefore be greater than the maximum western row arc radius.

4.2.2 Central Receiver/Tower

The tower is a concrete structure, approximately 538 feet high, which supports a cylindrical receiver, approximately 95 feet tall, mounted on the top of the tower. The receiver is composed of tube panels through which the liquid salt or HTF flows. Therefore, the top of the receiver will be at a height of approximately 633 feet. A maintenance crane will also be mounted on top of the receiver, which is expected to be 20 feet tall.

4.2.3 Power Block

The power block will include a steam turbine generator, multiple feedwater heaters, steam superheaters, lubricating oil system, hydraulic control system, valving, and feedwater pumps. Steam is generated at a temperature and pressure of 1,030°F and 1685 psia before entering the high-pressure section of the turbine. Steam exiting the high-pressure section of the turbine is reheated to increase it's temperature before entering the immediate-pressure section of the turbine. Exhaust steam from the turbine is directed to the air-cooled condenser. The turbine drives a generator, which delivers electrical power via a main step-up transformer in the on-site substation to the utility grid. Extraction steam from the steam turbine is used to preheat the feedwater and for deaerating the feedwater.

This high-efficiency turbine is designed for reliable operation under conditions of daily start up and shutdown over the life of the plant. The solar field and power generation equipment may be started each morning after sunrise and insolation build-up. The solar field will shut down in the evening as the sun sets though the integral thermal energy storage system will allow the steam turbine to continue operating if there is demand for electricity.

The primary components of the power block include:

- Solar Steam Generator System – The steam generator is the core of the steam supply system for the power block. The steam generator system includes a pre-heater, evaporator, superheater, reheater, and steam drum. High pressure feedwater enters the steam generator from the preheaters and leaves as saturated steam that subsequently flows to the superheaters.
- Solar Preheater – The solar preheaters are of a shell and tube design. High pressure feedwater enters the preheaters from the low pressure feedwater heaters and leaves as high pressure feedwater.
- Evaporator – The evaporator receives heated, high pressure water from the preheater and evaporates the water into saturated steam. The evaporator is of a shell and tube design.
- Solar Superheaters/Reheaters – The saturated steam flows to a shell and tube superheater to reach the desired steam-turbine temperature and pressure-operating conditions. The reheater receives "cold" outlet steam from the high-pressure turbine stage and reheats the steam before being reintroduced into the intermediate-pressure stage of the turbine.
- Steam turbine – Once the pressurized steam has reached the optimum temperature in the superheater, it flows to the steam turbine, which extracts thermal energy from the steam.
- Feedwater heaters – The feedwater is heated to the required conditions using conventional turbine extraction steam in low pressure feedwater heaters.
- Deaerator – A direct contact steam deaerator will be included to eliminate dissolved oxygen in the condensate and steam.

4.2.4 Cooling System

A dry cooling system with a fogging system will be employed at the site. The cooling system consists of a steam turbine, exhaust transfer duct exiting the steam turbine, air-cooled condenser, fogging system, condensate tank, and condensate pump. The system receives saturated turbine exhaust from the steam turbine, where it is piped through a transfer duct to a finned-tube air-cooled condenser. The air-cooled condenser blows ambient air across a heat transfer surface area, which cools and condenses steam. The finned tubes are usually arranged in the form of an A frame or delta over forced draft fans to reduce land area requirements. The air cooled condenser will be designed with a fogging system to increase the electricity generated and cycle efficiency. The fogging system will be operated during periods of high temperature to reduce the ambient air temperature as it is drawn through the air path of the air cooled condenser. The condensed steam is gathered in a condensate tank and provided to the feedwater circuit through a condensate pump.

A typical air-cooled condenser can condense steam within 30°F to 50°F of the ambient dry-bulb temperature. The air cooled system can use up to approximately 1,500 gallons of water per minute for fogging of the inlet during periods of high temperature.

4.2.5 Thermal Storage System

The thermal storage system utilizes hot and cold liquid salt tanks to store solar heat energy for later steam generation as well as associated pumps and piping. Thermal storage provides the facility with several enhancements. The solar field is nominally sized to provide excess solar energy to the system during summer months, and such sizing intentionally results in collection of excess heat that cannot be utilized instantly by the power block. The thermal storage capability allows the excess heat to be stored until utilized for power generation. Thermal storage can also extend the generation day of SolarReserve power plants. The heated salt can be stored in insulated tanks to provide a steam heating source after the sun sets, allowing the facility to more closely satisfy the load demands of the electricity grid system, which typically peak in the late afternoon and evening hours. The thermal storage system includes an auxiliary electric heat source to keep the salt in a molten state through protracted maintenance outages.

The thermal storage system contains two storage tanks -- one “cold” tank storing liquid salt at 550°F and one hot tank storing liquid salt at 1,050°F. As the sun rises, cold liquid salt (or HTF) is pumped from the cold liquid salt tank through the tubes inside the receiver. After absorbing energy from the concentrated sunlight, the temperature of the HTF is increased to the design outlet temperature of 1,050°F. Part of the heated HTF is then pumped to a hot liquid salt tank for storage and part to a steam generating system that produces superheated steam for use in the conventional Rankine cycle turbine/generator system. After exiting the steam generator, the HTF is returned to the cold tank where it is stored and eventually reheated in the receiver.

The HTF consists of sodium nitrate ($NaNO_3$) and potassium nitrate (KNO_3) in a “eutectic” mixture designed to remain liquid or molten over a wide temperature range. The HTF mixture has a melting point of 460°F and must be preheated and maintained above this minimum temperature in order to be pumped through the system. This arrangement allows for excess heat to be stored for power generation outside of the direct solar-heating period of the day. The system also includes piping, valves, pumps, expansion tanks, and heaters.

4.3 Major Electrical Systems and Equipment

The bulk of the electric power produced by the facility will be transmitted to the electric grid either under the control of the California Independent System Operators (CAISO). The applicant is also exploring providing power to the Imperial Irrigation District. During operation, a small amount of electric power will be used to power station auxiliary loads such as pumps and fans, control systems, and general facility loads including lighting, heating, and air conditioning, heliostat movement and other uses. Additionally, electric power will be used for heat tracing which will provide energy to maintain the salt in fluid state during protracted maintenance outages. Some power would be converted from alternating current (AC) to direct current (DC), which would be used as backup power for control systems.

4.3.1 Electrical Components

Power will be generated by the steam turbine generator (STG) and stepped up through the generator step-up transformer to the utility high voltage system. The generator shall be connected to the step-up transformer by isolated phase bus duct. A low-side generator breaker shall be provided between the generator and the generator step-up transformer (GSU).

4.3.2 Main Generator

The generator shall be synchronized to the utility's transmission system using the generator breaker. The STG shall be supplied with metering quality current and potential transformers and meters capable of supplying signals to the control system and performance monitoring systems.

4.3.3 Generator Step-up Transformers (GSUs)

A two winding, delta-wye GSU transformer shall be designed according to the Institute of Electrical and Electronics Engineers Standards (IEEE) C57.12.00-2000 and supplied for the STG generator. The neutral point of each high voltage (HV) winding shall be solidly grounded. The GSU transformer shall have metal oxide surge arresters adjacent to the HV terminals.

Accessories will include a local visual enunciator, magnetic liquid-level gauge, pressure-relief device, sudden pressure relay, oil preservation device, valves for top and bottom filter press connections, drain/sampling valves, grounding pads, bushing-mounted current transformers, combustible gas detector, on-line dissolved gas/water monitor with 4-20 milliamp signal out to the controller, and hot spot winding temperature elements.

The GSU will include manual de-energized tap changers located in the HV windings with taps ranging from 5 percent above normal to 5 percent below normal in 2.5 percent increments. GSU transformer auxiliaries shall be powered from two 480 V, three-phase, three wire sources for each transformer. Each power supply shall be fed from separate sources and routed in separate conduits.

4.3.4 Unit Auxiliary Transformer (UAT)

A two-winding, delta-wye UAT transformer shall be designed according to the IEEE Standards C57.12.00-2000 and supplied for 4,160 V service. The UAT will be rated to supply facility startup and maximum operating power requirements. A system calculation showing all connected equipment loads for the UAT transformer shall used to determine the requirements prior to procurement of the UAT. The neutral point of the UAT low voltage (LV) winding will be 1,000 amp (A) low-resistance grounded.

4.3.5 Electrical Building

A plant electrical building will house the 4,160 V switchgear, 4,160 V motor controllers, low voltage switchgear, low voltage motor control centers, control panels, power and lighting panels, uninterruptible power supply (UPS), DC station batteries, DC switchboard, and other miscellaneous equipment, steam turbine control equipment and the control I/O cabinets.

4.3.6 Medium Voltage Switchgear

The medium voltage switchgear shall be single-ended, rated 4,160 V nominal, three-phase, three-wire with ratings not to exceed 3,000 A continuous and the calculated fault current duty. The medium voltage switchgear shall receive power from the unit auxiliary transformer through non-segregated phase bus duct.

The medium voltage switchgear lineups shall be located indoors, shall use vacuum interrupters, and shall be rated to continuously distribute the full auxiliary load. Each lineup shall contain auxiliary power metering and voltage transformers, a main incoming breaker, and feeder breakers as necessary to distribute the load. All medium voltage breakers shall be electrically operated from the control system and equipped with a stored energy mechanism. Breakers shall be provided with remote racking mechanisms.

4.3.7 Emergency Power Battery Systems

The emergency power for the plant switchyard and other plant critical loads will be supplied by the 125 volt DC (VDC) station battery system.

4.3.8 Lighting Systems

The project's lighting system will provide operation and maintenance personnel with illumination in for both normal and emergency conditions. Project lighting will be designed to minimize light pollution through the use of sensor lights and directional lighting in cases where this would not compromise safety or security.

Lighting will not be provided for the solar field, but is expected to be provided in the following areas:

- Building interior equipment, office, control, maintenance, and warehouse
- Tower
- Building exterior entrances
- Outdoor equipment within the power block and tank area
- Power transformers
- Power block roadway
- Parking areas within the power block area
- Tank Area
- Entrance gate
- Water treatment area
- Air Cooled Condenser

4.3.9 Communication Systems

The major communication system on site would be the SCADA (Supervisory Control and Data Acquisition) system. SCADA system is composed of industrial PLC (Programmable Logic Controllers) hardware and software, field instrumentation, meteorological stations, and communications devices designed for site monitoring, control and historical trending of the solar power plant.

All data collected from the field would be transmitted to the site Control Room via a fiber or copper communications infrastructure. The Control Room would also contain a router for the point of connection to a T1 line or equivalent as well as phone lines for communication to the outside.

4.4 Transmission System and Interconnection

4.4.1 Interconnection

The proposed project is considering interconnection to either the San Diego Gas and Electric (SDG&E) transmission system or the Imperial Irrigation District (IID) electrical system. For the SDG&E system, the project would interconnect to the Imperial Valley Substation located southwest of El Centro (Figure 3). For interconnection with IID system, the project would explore interconnecting to one of the existing IID transmission lines near the site.

The plant switchyard and the transmission line between the plant switchyard and electrical system interconnection shall be engineered, procured and constructed as part of this project. The high voltage interconnect from the plant to the electric utility will be made via a SF6-insulated, high voltage breaker with a single-circuit, overhead line from the plant switchyard to the utility substation.

4.4.2. Potential Transmission Route

The transmission line route shown in Figure 3 for interconnection to the SDG&E system is adjacent to SR-98 and adjacent to the right of way for the existing 500 kV SDG&E line across existing agricultural land (**Figure 3**). The applicant intends to investigate alternative routes for the transmission corridor. Alternate routings will consider land constraints, specific private property needs, and the potential available space within existing rights of way.

4.5 Civil/Structural Features

4.5.1 Access Roads

A paved access road will be constructed from SR-98 to the site, and to the power block, located centrally within the solar field. Deceleration and or acceleration lanes will be constructed, as required, to meet the California Department of Transportation and County requirements where the access road connects to SR-98. The access road will be a two lane road, constructed with adequate width for two directions of travel with a minimum of two foot shoulders on each side of the road. The proposed minimum road width is 24 feet – see **Figure 8**. Additionally, paved roads, meeting this same description will be constructed from the power block to the east and west edges of the solar field. A perimeter road will be constructed around the perimeter of the solar field, and is proposed to be surfaced with rock. A typical section of this road is shown on **Figure 8**.

4.5.2 Buildings and Enclosures

The following buildings and enclosures are planned as part of the project:

- Steam Generator Area Building. This structure is planned to be located between the HTF storage tanks within the power block. The purpose of the building is to provide structural support and protection for the equipment associated with the heat exchange process.
- Steam Turbine Enclosure/Building. This structure will house the steam turbine generator and associated equipment, and is located within the power block.
- Electrical Building: This structure will be located within the power block area and will house the switchgear, motor control centers, battery power supply and other primary plant electrical components.
- Administration/Maintenance Building: This building will serve as the center for support staff for the project during operations. This facility is planned to be located outside the heliostat field, near the access road.
- Heliostat assembly building/Warehouse: This building will be used as a protected environment for the assembly/construction of heliostats during construction of the plant. This facility will be converted to other uses at the completion of the construction of the project.

4.5.3 Material Storage

On site storage for spare field and power block components will be required for maintenance uses. In addition, onsite storage facilities for water pretreatment chemicals, cooling water treatment chemicals, and boiler water treatment chemicals will be necessary. The HTF material (salt) will be delivered to the project as dry, solid pellets. The material will be delivered in 1-ton “super sacks” which can be stored on site until melted for use in the plant process. The salt must be heated until fluid for use in the system, and will be stored within the lay down area of the site until it is heated, liquefied and sent to the storage tanks. Potentially polluting substances will be managed in accordance with all applicable laws, ordinances, regulations and standards to protect worker health, prevent leaks and spills, and protect storm water quality as discussed further in Sections 4.9 and 4.14.

4.5.4 Storage Tanks

The following storage tanks will be located on site:

- Demineralized Water Storage Tank: One demineralized water storage tank will be constructed to store demineralized water for use as mirror wash water, steam cycle make up, and for use in the fogging system for the Air Cooled Condensor.
- Fire/Service Water Storage Tank: One fire water/service water tank will be constructed to store water for fire protection, service water needs, and for raw water storage prior to treatment.

- HTF Storage Tanks: Two tanks will be constructed to contain the HTF. One will house the hot HTF (1,050 F), and the other will house the cold HTF (550 F).
- A lube oil storage tank will be associated with the STG.
- Additional ancillary tanks will be on-site for a variety of liquids within the power block area.

4.5.5 Pipelines

Project operational water will be obtained from on-site wells; therefore, an off-site pipeline will not be required. The CSP technology proposed for the project will not require a natural gas source.

During construction of the project, there will be a high demand for water for soil moisture conditioning and dust control. A construction water source may be located off-site. A temporary pipeline from the off-site water source to the site will be considered to minimize off-site truck traffic and emissions. Therefore, the applicant is investigating the potential for a pipeline to the nearest available Imperial Valley Irrigation water source for construction water.

4.5.6 Site Drainage

The storm water drainage system will be designed as a series of graded planes that allow the flow of storm water to follow the predevelopment flow patterns. Any storm water passing through the site that flows generally from east to west across the site will be re-routed into a roadside ditch that will allow the water to infiltrate, and will re-route any excessive flows around the heliostat field.

Ditches will be constructed along road ways to provide a path of travel for water, and to allow infiltration of rainfall.

The storm water drainage system will be designed using the Soil Conservation Service (SCS) method (TR-55) to determine the amount of rainfall during a specific rainfall event, and in accordance with requirements specified in the most current version of the Imperial County design requirements.

All surface water runoff during and after construction will be controlled in accordance with the requirements of the National Pollutant Discharge Elimination System (NPDES) Storm Water Runoff Permit, the requirements of Imperial County, and all other applicable laws, ordinances, regulations, and standards.

The power island will be elevated and all rainfall within the power island will be directed to the containment ponds adjacent to the on-Site salt tanks and allowed to infiltrate. Pipe culverts will be used, as required, where storm channels cross roads.

4.6 Water Demand and Sources

4.6.1 Water Sources

Loeltz et al (1975) reported two wells within the site boundaries. Well 16S/17E-23R is a shallow observation well screened from 155 to 157 feet below ground surface (bgs). One groundwater sample was collected from this well in 1964 and the TDS concentration was 1,270 milligrams per liter (mg/L). Well 17S/17E-3C is owned by the Imperial Irrigation District and is screened from the ground surface to 105 feet bgs. This well is a 16-inch diameter well used for industrial or mining applications and a discharge rate of 600 gallons per minute was reported. Four groundwater samples have been collected from this well between 1950 and 1961. The TDS concentrations ranged from 678 to 1,210 mg/L. Additional well information including pumping tests, water quality data, water levels and well logs are available in the vicinity of the Project and would be summarized in future technical reports, if necessary.

Canals operated by the Imperial Irrigation District are also in the vicinity of the project.

4.6.2 Water Demand

Water will be necessary for both the operation of the project as well as construction of the project.

During construction of the project, water will be required water for soil moisture conditioning during the earthmoving operations and for dust control. Based on the expected soil conditions (existing moisture content and the optimal moisture of the soil necessary to achieve proper compaction), it is estimated that a total of approximately 1,000 acre-feet (AF) of water will be needed the first year of construction, while the major earthwork is on-going, and 150 AF of water will be needed per year of construction after the initial earth moving operations are complete for ongoing dust control during construction and moisture conditioning of soils for ongoing backfilling operations.

Water needs of the operating plant include three primary uses:

- Steam Cycle makeup water – estimated at 100 AF per year.
- Mirror wash water – estimated at 70 AF per year
- Air Cooled Condenser Augmentation – estimated at 430 AF per year

Although the steam cycle is a “closed system”, operational steam blow down requires the addition of makeup water throughout the operating time frame. The heliostat mirrors’ reflectivity will decrease in efficiency, and therefore the ability to generate electricity will decrease as the mirrors collect dust and other particles. A mirror wash program will be implemented that will wash the mirrors on a continual basis. This program may run up to 7 days/nights per week. In the hottest, and driest times of the year, a fogging system may be designed into the air cooled condenser (ACC). As water is “misted” into the air stream that enters the ACC, its temperature will decrease. The decreased air temperature will increase the efficiency of the ACC and allow for the production of additional electricity during these times when electricity is in highest demand.

The process, fire and potable water needs as well construction water needs may be met by a combination of groundwater and temporary diversions from a nearby IID source. The location, number, depth and design of the groundwater wells that would be used to supply the project will be determined based on a groundwater investigation and test well program; however, at least two wells would be used for redundancy.

For operational use, water will be pumped into a raw water storage tank. Raw water will be treated through a reverse osmosis water treatment facility and converted to demineralized water for use in the steam cycle, for mirror washing, and for fogging into the air-cooled condenser. The need for additional pre-treatment such as water softening or ion exchange, if any, will be determined based on analytical data obtained during the groundwater investigation.

4.7 Site Investigations and Data Needs

The following site investigations and data needs may be undertaken and or required as part of the planning and permitting for the project and would be provided to BLM as supplemental submittals:

- Aerial (LIDAR) survey to support detailed civil grading and drainage design;
- Hydrologic/drainage study for detailed site drainage design;
- Geotechnical investigation, including borings, soil sampling, and ground penetrating studies for foundation and earthwork design;
- Test well program and aquifer testing to evaluate potential on-site groundwater sources;
- Meteorological and Insolation Station with security fence for detailed solar field design and generation profile development; and
- Pile Test program – may be necessary to provide additional information about the soils and the lateral resistance of pile foundations.

4.8 Temporary Construction Facilities

The project construction contractor will mobilize and develop temporary construction facilities and laydown areas adjacent to the power block. Once a final design has been established, the contractor will prepare site maps showing the construction project in detail. Temporary construction facilities will include construction staging areas, employee parking areas, temporary shop buildings, office trailer complete with electrical, telephone, and internet service, temporary sanitary facilities, construction office complete with temporary electric and communications, a guard shack, and on-site dumpsters. Additionally, rock processing equipment and a portable batch plant may be mobilized for site development. The majority of these temporary facilities will be located within the construction logistics/lay down/parking areas. Additionally, temporary sanitary facilities will be located throughout the Site for use by construction personnel and will be sized and located in accordance with OSHA requirements. Several areas internal to the solar field will also be set up to temporarily store materials for the construction of the power block facilities, for the construction of the heliostats and for temporary storage and heat conditioning of solid HTF. The purpose of this is to locate material more closely to the point of installation.

4.9 Erosion Control and Storm Water Drainage

4.9.1 Erosion Control

Construction and industrial operations at the site will be subject to the General Construction and General Industrial Storm Water National Pollution Discharge Elimination System (NPDES) permits, respectively. Compliance with these permits will require preparation and implementation of construction and operation Storm Water Pollution Prevention Plans (SWPPPs) that address the following requirements (among others):

- Identification of activities that may pollute storm water;
- Identification of Best Management Practices (BMPs) to control storm water pollution, including water erosion and wind erosion;
- BMP inspection, maintenance and repair;
- Training; and
- Site inspection and monitoring.

In addition, land within the Site is classified and managed by the BLM as Multiple-Use Class L (Limited). This designation is intended to protect sensitive, natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed generally to provide for lower intensity and carefully controlled multiple-use of resources. Therefore, the protection of soil resources will be an important factor in the design of erosion and sedimentation controls.

Erosion and sedimentation control BMP's will be designed and implemented to meet the requirements of the General Construction and General Industrial Storm Water NPDES permits as well as any requirements specified by the BLM. In addition, grading and earthwork will follow, the general requirements of the Imperial County General Plan and the Imperial County Development Code.

The area of soil disturbance for the project would be kept to a minimum to limit wind and water erosion and enhance successful site rehabilitation/restoration. The areas of soil disturbance would be limited to pipeline alignments, access roads, construction support areas, and the heliostat, power block and operational support facilities.

Soil stabilization measures would be used to prevent soil being detached by stormwater runoff or wind erosion. The Applicant would employ temporary and permanent BMPs to protect the soil surface by covering or binding soil particles or preventing the concentration of runoff. The project would incorporate erosion-control measures required by regulatory agency permits and contract documents as well as other measures selected by the engineer. Site-specific BMPs would be identified in the SWPPP, with final selection and design by the engineer, and associated figures to be included in the final active project SWPPP.

Project design features and or mitigation measures that will aide in the protection of soil resources could include at a minimum:

- Erosion and sedimentation control calculations would be performed to verify acceptable stormwater velocities, calculate BMP clean out frequencies and to size rip rap.
- Construction and final drainage would be designed to promote sheet flow, avoid un-necessary concentration of runoff, and control runoff velocity.
- Stone filters and check dams would be strategically placed throughout the Site to provide areas for sediment deposition and to promote the sheet flow of stormwater prior to leaving the Site boundary. Where available, native materials (rock and gravel) would be used for the construction of the stone filter and check dams. A stone crusher may be provided on site to utilize local stone for the production of gravel.

- Diversion berms, culverts and water bars would be utilized to redirect stormwater.
- Diversion channels would be armored as required to prevent erosion and scouring.
- Flat detention/infiltration ponds and ditches would be used.
- Where possible, maintenance roads would be designed not to disrupt regional flow patterns.
- Silt fences would be utilized extensively during each phase of construction to minimize wind and water erosion. Silt fence locations have yet to be determined and would be provided on the 90% engineering drawings.
- In areas of temporary disturbance (e.g., pipeline or transmission line alignment, temporary construction support areas), the surface would be recontoured to promote sheet flow and restore and match the original or surrounding drainage function. Native vegetation would be restored to promote healing of the landscape.
- Periodic maintenance would be conducted as required after major storm events and when the volume of material behind the check dams exceeds 50 percent of the original volume. Stone filters and check dams are not intended to alter drainage patterns but are intended to minimize soil erosion and promote sheet flow.
- Erosion and Sedimentation control BMP design would be in accordance with applicable government codes and standards.

4.9.2 Storm Water Drainage

The storm water drainage system will be designed as a series of graded planes that allow the flow of storm water in the developed area to generally follow the predevelopment flow patterns. Storm water drainage currently passing through the site from east to west will be re-routed into maintenance roadside ditches that will allow the water to infiltrate, and will re-route any excessive flows around the heliostat field, see Figure 7. Concentration of flows will be minimized by the use of check dams, stone filters, armored areas, and diversion swales that keep water from concentrating in areas of steeper slope. An infiltration area will be constructed at the downstream area of the heliostat field (to the west) in order to slow the water, allow it to infiltrate, and promote sheet flow into it's existing drainage pattern.

The storm water drainage system will be designed using the Soil Conservation Service (SCS) method (TR-55) to determine the amount of rainfall during a specific rainfall event, and in accordance with requirements specified in the most current version of the Imperial County design requirements.

All surface water runoff during and after construction will be controlled in accordance with the requirements of the General Construction and General Industrial Storm Water NPDES Permit, the requirements of Imperial County, and all other applicable laws, ordinances, regulations, and standards.

The power island will be elevated and all rainfall within the power island will be directed to the containment ponds adjacent to the on site salt tanks and allowed to infiltrate. Pipe culverts will be used, as desired, where storm channels cross roads.

4.10 Vegetation Treatment and Weed Management

The developed portions of the site will be cleared of vegetation, grubbed and graded level to the extent necessary. Prior to clearing, cacti will be removed and offered for public sale in accordance with BLM policy. After vegetation and soil disturbance, the site cannot be immediately returned to its pre-disturbance condition, or climax vegetation, because the abiotic and biotic conditions of the soil are no longer appropriate for that plant association.

Key considerations for vegetation treatment of the site include the following:

- Soil disturbance in support of construction will increase likelihood of noxious weed introductions. Regular weed monitoring and management during construction would be required. Ongoing maintenance activities at the heliostat locations would also have the potential for ongoing introduction of weedy species through soil disturbance and equipment entrance. As a result, ongoing weed management will be required as discussed in Section 4.12.1.
- Where temporary access is needed to install facilities or site leveling is not required for drainage or access, no removal of existing vegetation or grading would occur. Rather, trucks and equipment would drive over and crush existing desert scrub vegetation without direct removal. Crushed vegetation is much more likely to show a rapid recovery than sites where vegetation is removed and reseeded, or where soils are more intensively disturbed.
- Cut and fill construction activities will alter topographic surfaces, compact soils in some areas, and reduce the bonding of soil particles in other areas. These activities would increase the risk of erosion from wind and surface water, and soil-profile disruption would affect the capacity of the site to support revegetation. Compaction of soil where excavation took place, decompaction by ripping where vehicle compaction of surface layers took place, would be necessary to rehabilitate soil conditions and would be incorporated into the recontouring of the site.
- Revegetation with native species would be implemented to the extent feasible. Areas of temporary disturbance, such as pipeline routes, temporary construction roads and temporary construction support, staging and laydown areas will be recontoured and revegetated.

4.10.1 Weed Management

The Applicant will develop a Weed Management Plan (WMP) for the Site that describes the non-native, noxious or invasive weed species that occur or are likely to occur in the Site, and prescribes management actions that may be taken to monitor for and eradicate specified species, including mechanical and chemical methods. The WMP will also describe applicable regulations for the use of herbicides on federally managed lands in California, and provide the basis for proper management and use of herbicides at the Site.

Typical operations and maintenance requirements for native landscapes are low once established. The WMP will include weeding, annual pruning, and soil monitoring if necessary. Weeding should occur frequently, typically weekly, during the initial growth period to ensure that invasive plants do not mature and set seed. Weeding activities would follow the approved WMP. Once the native plant species are established, weeding frequency would drop to less frequent intervals.

4.11 Fire Protection

The project will rely on both onsite fire protection systems and offsite fire protection services during both construction and operations. The fire protection system would be designed to protect personnel and limit property loss and plant downtime in the event of a fire. The primary source of fire protection water would be the Service / Fire Water Storage Tank.

A Fire Protection and Prevention Plan will be prepared for construction and operation of the facility. The plans will include measures relating to safeguarding human life, preventing personnel injury, preservation of property and minimizing downtime due to fire or explosion. Fire protection measures will include fire prevention methods to prevent the inception of fires. Of concern are adequate exits, fire-safe construction, reduction of ignition sources, control of fuel sources, and proper maintenance of fire water supply and sprinkler systems.

During construction, the permanent facility fire suppression system will be placed in service as early as practicable. Prior to installation of the facility's permanent fire suppression system, fire extinguishers and other portable fire fighting equipment will be available onsite. These fire extinguishers will be maintained for the full construction duration, in accordance with local and federal OSHA requirements.

Locations of portable fire extinguishers would include, but not necessarily be limited to, portable office spaces, hot work areas, flammable chemical storage areas, and mobile equipment (e.g., passenger vehicles and earthmoving equipment). Fire-fighting equipment would be located to allow for unobstructed access to the equipment and will be conspicuously marked. Portable fire fighting equipment would be routinely inspected per regulatory requirements and replaced immediately, if defective, or if in need of recharge.

The Facilities operating fire protection water system will be supplied from a dedicated portion of the water storage tank located on the plant site. One electric and one diesel-fueled backup firewater pump, each with a capacity of 3,000 gallons per minute, will deliver water to the fire protection water-piping network. A smaller electric motor-driven pump jockey pump will maintain pressure in the piping network. If the jockey pump is unable to maintain a set operating pressure in the piping network, the diesel fire pump starts automatically.

A piping network will be configured in a loop so that a piping failure can be isolated with shutoff valves without interrupting the supply of water to a majority of the loop. The piping network will supply fire hydrants located at intervals throughout the power plant site, a sprinkler deluge system at each unit transformer, and sprinkler systems at the STG lube oil equipment. Sprinkler systems would also be installed in the Administration/Control/Warehouse/Maintenance Building and Fire Pump enclosure as required by National Fire Protection Association (NFPA) and local code requirements. Handheld fire extinguishers of the appropriate size and rating would be located in accordance with NFPA 10 throughout the facility.

4.12 Site Security

Chain link security fencing will be installed around the site perimeter, switchyard and other areas requiring controlled access prior to beginning construction. Site perimeter fence will be 8 feet high and have an overall height of no more than 10 feet from the bottom of the fabric to the top barbed wire. The fence shall have top rail, bottom tension wire, and three strands of barbed wire mounted on 45 degree extension arms. Posts shall be set in concrete.

Controlled access gates will be located at the entrances to the facility. Site gates shall be swing or rolling type access gates. Access through the main gate will require an electronic swipe card, preventing unaccompanied visitors from accessing the facility. All visitors will be logged in and out of the Facility during normal business hours. Visitors and non-employees will be allowed entry only with approval from a staff member at the facility. Visitors will be issued visitor passes that are worn during their visit and returned at the main office when leaving.

Personnel will staff the facility 24 hours per day/seven days per week. Even when the solar power plant is not operating, personnel will be present as necessary for maintenance, to prepare the plant for startup, and/or for site security.

4.13 Hazardous Materials and Waste Management

There will be a variety of chemicals and hazardous substances stored and used during construction and operation of the project. The storage, handling, and use of all chemicals will be conducted in accordance with applicable laws, ordinances and regulations. The following planning documents will specify procedures for the proper storage and management of these substances at the Site.

Health and Safety Requirements - To comply with regulations set forth by the Occupational Health and Safety Administration (OSHA) and the California Department of Safety and Health, Health and Safety programs will be established for construction and operations at the Site that will document potential hazards and requirements for establishing and maintaining a safe working environment during construction and operation. The programs will include identification of all hazardous substances and chemicals used at the site, including Material Safety Data Sheets (MSDS), a communication and training program, labeling, and identification of hazards and safe work practices. In addition, safety showers and eyewashes would be provided adjacent to, or in the vicinity of, chemical storage and use areas. Plant personnel would use approved personal protective equipment during chemical spill containment and cleanup activities. Personnel would be properly trained in the handling of these chemicals and instructed in the procedures to follow in case of a chemical spill or accidental release. Adequate supplies of absorbent material would be stored onsite for spill cleanup.

Construction and Operating Stormwater Pollution Prevention Plans (SWPPP). – The project will comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) through preparation and implementation of a SWPPP and filing of a Notice of Intent (NOI) to comply with the General Construction and General Industrial Stormwater NPDES Permit. The plans will include procedures to be followed during construction to prevent erosion and sedimentation, non-stormwater discharges, and contact between stormwater and potentially polluting substances.

Hazardous Materials Business Plans (HMBP) – Hazardous Materials Business Plans will be filed with Imperial County for the construction and operation of the facility. The plans will inventory the hazardous materials and waste properties, quantities, storage containers and locations, and contingency planning and emergency response procedures.

Spill Prevention Control and Countermeasure Plans (SPCC) - SPCC Plans will be prepared for construction and operation of the Site. The plans will include spill prevention and countermeasures procedures to be implemented including (but not limited to) a spill record (if applicable), analysis of potential spills, description of containment facilities, fill and overfill prevention facilities, spill response procedures, personnel training and spill prevention.

The solar facility will require the use of large amounts of nitrate salt ($NaNO_3$ or KNO_3) at the site. To ensure worker safety, the hot and cold HTF tank areas will be designed such that any release would be contained in a basin. The Construction SWPPP will specify procedures to prevent contact between HTF and stormwater during processing of this material prior to plant startup. In addition, the processing area would be cleaned to assure residual HTF is removed from surface soil after processing.

Industrial wastewater would consist of a relatively small amount of blowdown from the steam system and RO treatment return flow. This wastewater would be disposed in evaporation ponds at the Site. A Joint Technical Document will be submitted to the California Integrated Water Management Board (CIWMB) and the Regional Water Quality Control Board (RWQCB) to permit evaporation ponds for industrial wastewater disposal at the site. The Joint Technical Document will include waste characterization, impoundment design, leak collection and detection, construction and operating parameters for the ponds, and closure requirements. .

Domestic wastewater will be treated and disposed at the site using a septic disposal system consisting of septic tanks and leach field permitted with Imperial County. It is anticipated that separate septic and leach field systems would be constructed for the power block and administrative building.

The project would produce maintenance and plant wastes typical of a power generation plant. These wastes will be managed in accordance with a Waste Management Plan. Wastes may include oily rags, broken and rusted metal and machine parts, defective or broken solar mirrors and electrical materials, empty containers, and other miscellaneous solid wastes including the typical refuse generated by workers. These materials would be collected by a local waste disposal company and disposed at a landfill permitted to receive these wastes. Waste collection and disposal would be in accordance with applicable regulatory requirements to minimize health and safety effects, prevent leaks and spills, and prevent potential contact with stormwater.

Several methods would be used to properly manage and dispose of hazardous wastes generated by the project. Waste lubricating oil would be recovered and recycled by a waste oil recycling contractor. Spent lubrication oil filters would be disposed of in a Class I landfill. Workers would be trained to handle hazardous wastes generated at the site.

Chemical cleaning wastes will consist of alkaline and acid cleaning solutions used during pre-operational chemical cleaning of heat exchangers after the units are put into service. These wastes, which can contain elevated metal concentrations, would be temporarily stored on site in portable tanks, and disposed of off-site by a chemical cleaning contractor in accordance with applicable regulatory requirements.

4.14 Health and Safety Program

A Health and Safety Program will be established for construction and operation at the Site. The Program will include the following components:

- Policies and Responsibilities;
- Emergency response and contingency planning;
- Hazard identification and job safety analysis;
- Hazard communication;
- Safe work practices;
- Personal protective equipment;
- Hazardous work permitting systems;
- Special considerations for electrical safety, hazardous materials and wastes, fall protection, confined spaces and mobile equipment safety;
- Training requirements;
- Incident reporting and investigation; and
- Record keeping requirements.

The project would also develop and implement a Construction Safety Training Program that would be adapted to serve as an Operations Safety Training Program as the project transitions from construction into routine power generation facility operations. As mentioned above for the PPE Program, the elements of the Safety Training Program will be essentially the same for operations as for construction, but specifics of the training would be adapted as needed to be suitable for the specific work activities associated with operations to the extent that the various activities differ between the two phases. Typical training courses and the employees who are required to receive the training are provided in **Table 1** below.

Table 1 – Training Program

Training Course	Target Employees
Injury and Illness Prevention Training	All employees.
Emergency Action Plan Training	All employees.
PPE Training	All employees.
Heavy Equipment Safety Training	Employees working on, near, or with heavy equipment.
Forklift Operation Training	Employees working with forklifts.
Excavation and Trenching Safety Training	Employees involved with trenching or excavation operations.
Fall Protection Training	All employees.
Scaffolding and Ladder Safety Training	Employees required to use or erect scaffolding and employees using ladders.
Hoist and Rigging Program	Employees and supervisors responsible for conducting hoists

Table 1 – Training Program	
Training Course	**Target Employees**
	and rigging operations.
Crane Safety Training	Employees supervising, crane operators, and employees involved in crane operations.
Fire Protection and Prevention Training	All employees.
Confined Space Entry Program	All employees
Blood Borne Pathogens Training	First Responders
Hazard Communication Training	Employees working with or handling hazardous materials.
Electrical Safety Training	Employees performing work with electrical systems, equipment, or electrical extension cords. Additionally, employees working with lockout/tagout activities.
Hand and Portable Power Tool Safety Training	All employees.
Heat Stress and Cold Stress Safety Training	All employees.
Hearing Conservation Training	All employees.
Back Injury Prevention Training	All employees.
Safe Driving Training	All employees.
Pressure Vessel and Pipeline Safety Training	Employees supervising or working on pressurized vessel, pipes, or equipment.
Respiratory Protection Training	All employees required to wear respiratory protection equipment.
Hot Work Training	All employees working with welding, heating, or other equipment that generates ignition sources.

5. REQUIRED PERMITS AND AUTHORIZATIONS

All construction, operation, and maintenance activities associated with the proposed project would be conducted in compliance with all relevant federal, state, and local regulations and permit requirements. Appendix A, Preliminary List of Required Permits and Authorizations provides a summary of the permits and authorizations that the Applicant may be required to obtain prior to construction and operation of the facility.

Because the Applicant would need to obtain a Right of Way (ROW) from the Bureau of Land Management (BLM) and a certification from the California Energy Commission (CEC), this project would be subject to both BLM and CEC jurisdiction. Under federal law, BLM is responsible for processing requests for rights-of-way to authorize projects (such as the one described herein) and associated transmission lines and other appurtenant facilities to be constructed and operated on land it manages. In processing the applications, BLM must comply with the requirements of the National Environmental Policy Act (NEPA), which requires that federal agencies reviewing projects under their jurisdiction consider the environmental impacts associated with their construction and operation. In the case of solar thermal power plant projects, this would be accomplished through preparation of Draft and Final Environmental Impact Statements (EIS) in coordination with CEC and its Preliminary and Final Staff Analyses.

Separate consultation requirements and associated documentation are required for Section 106 of the National Historic Preservation Act and Endangered Species Act (ESA) section 7 consultations associated with the project, should they be required. These consultations would be completed by BLM. BLM is also responsible for Native American consultation, including Government to Government consultation. The result of this cooperative effort is intended to result in a public participation process and environmental documents that fully meet BLM's requirements.

Under California law, the CEC is responsible for reviewing applications for certification and also has the role of lead agency for the environmental review under the Warren Alquist Act, which is the functional equivalent of the California Environmental Quality Act (CEQA). The CEC conducts this review in accordance with the administrative adjudication provisions of the Administrative Procedure Act and its own regulations governing site certification proceedings. These provisions require the staff to conduct an independent analysis of applications for certification and prepare an independent assessment of a project's potential environmental impacts, feasible mitigation measures, and alternatives as part of this process. The CEC considers the staff assessments, along with those of the applicant, interested local, regional, state, and federal agencies, intervenors, and interested Native American tribes, in developing its decision on an application for certification. The CEC has a certified regulatory program under CEQA that exempts the agency from having to draft an environmental impact report and, instead, requires a final staff assessment, evidentiary hearings, and a decision based on the Application for Certification, the hearing record, which includes the staff's and other parties' assessments.

It is in the interest of the BLM and CEC to share in the preparation of an environmental analysis of the projects in a public process in California to avoid duplication of staff efforts, to share staff expertise and information, to promote intergovernmental coordination at the local, state, and federal levels, and to facilitate public review by providing a joint document and a more efficient environmental review process. As such, the BLM and CEC executed a Memorandum of Understanding in 2007 concerning the joint review of environmental review of solar thermal power plant projects.

No permit applications have been filed with any agency, aside from Standard Form 299, which was filed with the BLM for a Right-of-Way Grant.

Table 2 below summarizes the estimated project development schedule. Section 6.1 includes a timetable indicating the anticipated duration and sequence of construction.

Table 2 – Project Development Schedule

Phase	Duration
Prepare, review and approve Plan of Development	3 months
Field studies and resource reports for Application for Certification (AFC) and Environmental Impact Statement (EIS) and prepare AFC	8 months
Joint CEC/BLM (AFC/EIS Process)	16-18 months from AFC completion
BLM File ROD	1-2 months
BLM issues ROW	1 month
Construction	30 months

6. CONSTRUCTION

6.1 Construction Process and Conceptual Schedule

Construction of the generating facility, from site preparation and grading to commercial operation, would be expected to take about 30 months. It would take about 100 man-years of construction workers' time to build the plant. The man loading will follow a bell shaped curve over the 30 months of construction and will peak at approximately 400 to 500 personnel of construction craft people, supervisory, support, and construction management personnel onsite during construction.

Typically, construction would be scheduled to occur between 5AM and 7PM on weekdays and Saturdays. Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities (e.g. pouring of concrete at night during hot weather, working around time-critical shutdowns and constraints). During some construction periods and during the startup phase of the project, some activities would continue 24 hours per day, seven days per week.

Table 3 below represents a conceptual project schedule beginning with site mobilization. The activities listed below are representative of SolarReserve projects.

Table 3 – Project Schedule

Activity	Date/Timeframe
SITE CONSTRUCTION	
Start Construction	Month 1
Mobilization	Month 1
Delineate and mark the boundaries of the construction zone	Month 1
Stabilize construction entrance/exit and roadway. Install tire wash	Month 1
Establish parking and staging areas for vehicle and equipment storage, maintenance	Month 1
Establish laydown area(s) for materials storage/staging	Month 1
Establish concrete washout area	Month 1
Clear and Grub - Strip topsoil	Months 1-2
Install certified weed-free fiber rolls or silt fence at the base of slopes adjacent to delineated sensitive areas (i.e., wetlands), if any	Months 1-2
Construct stormwater infiltration/evaporation area	Month 3-6
Assemble and erect heliostats	Month 10-20
Power block construction	Month 6-24
Construct reinforced concrete foundations	Month 6-24
Construct administration/warehouse building	Month 20-22
Final stabilization of site	Month 27
Commissioning and testing	

6.2 Project Phasing

The construction phases for the proposed project are expected to be as follows:

Site Disturbance – Within the heliostat array fields, the power block area, the permanent facilities located around the perimeter road and in the temporary construction logistics area, clearing would be performed. All vegetation would be removed with a brush rake in order to separate the vegetation from the soil.

Preparation – Parking areas for construction workers and laydown areas for construction materials would be prepared. Detailed information regarding the location within the solar field of the laydown and parking areas would be developed once the project is finalized.

Access Road – Primary access to the site would be from SR-98. The access road to the plant would be asphalt paved. Access road beds would typically be 24-foot-wide asphalt roads with 2-foot-wide crushed rock shoulders. A stabilized entrance/exit would be provided to clean vehicle wheels prior to exiting the construction area. Most construction staff and workers would come daily to the jobsite from either the El Centro area, approximately 15 miles away, or from the Yuma, AZ area, approximately 30 miles away.

Site Grading – The existing site has about a 0.5% to 1% slope, Grading will take place to maintain the minor slopes of the terrain, however, cuts and fills will be made to generate uniform planes for the erection and operation of the heliostat fields. Extensive grading of the site would be limited to the power block areas, receiving towers, and the major access roads (gravel roads between power blocks, and gravel roads servicing the receiving towers from the power blocks). Materials stored temporarily in the lay down area would be stored on dunnage to protect it from ground moisture.

Foundation – All underground piping and wiring would be installed, followed by installation of the foundation for the new power blocks, solar towers, and associated structures.

Plant Construction – After final site design and prior to any soil disturbance, the Applicant would be required to finalize the Drainage, Erosion, and Sediment Control Plan / Construction SWPPP (DESCP / SWPPP). During construction, the Applicant would be required to follow the DESCP/SWPPP to prevent the offsite migration of sediment and other pollutants and to reduce the effects of runoff from the construction site. Best Management Practices (BMPs) to be used at the site would be fully addressed in the DESCP/SWPPP; the DESCP/SWPPP would include the location of BMPs to be used, installation instructions, and maintenance schedules for each BMP.

Site Stabilization – It is expected that site stabilization will include soil binders, geo-grid or the use of aggregate surfacing to allow the movement of maintenance vehicles and mirror wash water trucks to travel within the solar array. The predominant surface soil is expected to be relatively uniformly graded sand, which can be difficult to maneuver across. The power block area would be graded with moderate slopes to direct runoff into the salt containment basin. This will allow the storm water to infiltrate locally. The western area of the site will contain the infiltration/sediment control pond that will provide an area to allow sediment to be deposited and storm water to infiltrate.

Demobilization – All temporary construction facilities would be removed and recontoured and revegetated as necessary. The project construction team or contractor would mobilize and develop temporary construction facilities and laydown areas adjacent to the power block. Once a final design has been established, the contractor would prepare site maps showing the construction project in detail. Temporary facilities would include:

- Approximately 10 single-wide full-length trailer offices or equivalent
- Chemical toilets
- Parking for approximately 500 vehicles
- Approximately 15 tool sheds/containers
- Equipment parking for approximately 20 pieces of construction equipment
- Construction material laydown area
- Solar field equipment laydown area
- Batch plant
- Rock processing equipment
- Construction Access and Material/Equipment Delivery

Access road construction may involve improvement and widening/addition of exit and acceleration lanes to the existing SR-98, as needed. Grading for access roads will include the removal of existing vegetation, filling of ruts and depressions, and widening to a width of 24 feet. Some roads will be groomed and surfaced with approximately 4 to 5 inches of road base. These roads will then be compacted with a heavy roller to provide all-weather access. In addition, these roads will be sloped to allow natural runoff or drainage structures (e.g., culverts) will be installed as needed. As part of this process, a permanent access road to the site will also be installed. This roadway will be 24 feet in width and will be paved. Designated staging areas will be graded as needed and road base, gravel, or a similar all-weather surface will be placed.

6.3 Construction Work Force and Equipment

The construction workforce will consist of a total of approximately 400 to 500 personnel at peak, including supervisors and management personnel, with an average of approximately 250 crewmembers on site at any given time. Project construction will also require additional support staff, including construction inspectors, surveyors, project managers, and environmental inspectors.

Prior to commencing construction, crews will mobilize to the Site. During this time, equipment and construction materials will be transported to the designated construction staging areas, and trailers and temporary shop buildings will be established. In addition, personnel will receive appropriate safety and environmental training. Signage may also be erected at this time to designate approved access, fueling, smoking, concrete washout, and exclusion areas. **Table 4** outlines the construction process.

Table 4 – Construction Process

Construction Phase	Description	Approximate Number and Type of Construction Equipment and Vehicles
Rough Grading	Grubbing, clearing and bulk grading, including approximately 3,000,000 cubic yard of cut and compacted fill	Approximately 20 Scrapers, 5 Compactors, 4 Graders, 2 Loaders, 4 Dozers, 10 Water Trucks, 6 Water Pulls
Finish Grading	Final grading to finish grade at a rate of approximately 960,000 sf/day (22 acres).	Approximately 4 Scrapers, 8 Graders, 1 Dozer, 4 Water Trucks
Roads, Foundations, Flatwork and Site Utilities	Construction of roads, excavation and construction of foundations for	Approximately 20 to 40 pieces of equipment will be present at any one time, including concrete trucks, concrete pumps, backhoes, excavators, loaders, graders, foundation drills, paving machines, drum rollers, fork lifts, tractors, dump trucks, small cranes and additional support vehicles.
Heliostat Assembly and Deployment	Field assembly of heliostats in temporary shop buildings constructed at the site. Installation of assemblies on cast-in-place piers, or other foundations.	Approximately 8 to 10 crews, each with one or two pieces of equipment including small cranes, forklifts, welding machines, trucks and tractors.
Power Block Construction	Construction of foundations, structural frames and buildings, installation of utilities and equipment, including the STG, condenser, pumps, buildings, ACC cooling structure, TES tanks, and central receiver tower.	An average of 12 to 18 pieces of equipment will be utilized for power block construction over the duration of the project, with more equipment being utilized during the early stages of foundation construction and frame erection. Equipment will include backhoes, excavators, foundation drills, concrete trucks, concrete pumps, forklifts, boom trucks, lifts, cranes, welders, trucks and other support vehicles.
Liquid Salt Preparation	Melting of the delivered dry salt product	Temporary propane fired auxiliary boiler, forklifts, loaders, and trucks.

6.4 Site Preparation

Site preparation will include the removal of vegetation within all areas to be disturbed. Removal of plant material will be done with heavy equipment and may include the use of a bull dozer equipped with a brush rake. Waste vegetation will be chipped and incorporated into the topsoil, chipped and spread on disturbed areas that are not part of the permanent project, or burned. Any topsoil encountered that is not suitable for structural fill will be stockpiled temporarily and re-used in the disturbed areas outside the permanent project facilities (for example the construction lay down and parking area). A temporary fence will be installed around the construction lay down and parking area, and the permanent plant fence facility will be installed as soon as doing so will not disrupt construction of the project.

6.5 Clearing, Grading, and Excavation

Excavation will require the removal of all vegetation from the areas to either be excavated (cut) or filled. Grading activities will be completed with traditional earthmoving equipment including but not limited to bull dozers, scrapers, motor graders, excavators, water trucks, water wagons, loaders, and compactors. The majority of the efforts to grade the site will be completed within the first year of construction activities. Early grading will be completed in the area of the roads (to provide access), the laydown area (to provide an early location for storage), and in the power block (to provide an early start to the power block construction activities). Completion of the earthwork within the solar field will follow immediately after or during the early grading activities in order to allow construction of the solar field heliostats.

Minor grading will be ongoing in form of excavation and backfill for foundations, pipelines, conduits and other miscellaneous facilities for the duration of construction.

6.6 Solar Array Assembly and Construction

The heliostat assemblies will be mounted on steel or concrete foundations. The geotechnical information and the potential pile test program will provide the information necessary to determine the most cost effective foundation. The most likely foundation will be a reinforced concrete pier foundation that is cast in a drilled hole. Alternate foundations could be concrete or steel piles.

The heliostats consist of glass mirror modules, structural support components, motor drives, a heliostat controller and a foundation. There are a total of approximately 17,350 heliostats each with a mirror surface area of approximately 670 ft^2 (62.4$m^{2)}$. The total mirror surface area for the plant is approximately 12,000,000 sf^2 (1,081,200m^2). The support structure consists of a steel frame backing to support the mirror modules and a steel tubular post for supporting the heliostat in the ground. Finally, the heliostat assemblies will be mounted on steel or concrete foundations. The geotechnical information and the potential pile test program will provide the information necessary to determine the most cost effective foundation. The most likely foundation will be a reinforced concrete pier foundation that is cast in a drilled hole. Alternate foundations could be traditional concrete mat foundations, concrete piles, or steel piles.

The Heliostat Array Controller (HAC) includes all hardware and software to control the Collector Field and consists of the Heliostat Control Software (HCS) and Beam Characterization System (BCS). The HCS actively controls the pointing of each heliostat to ensure that the heliostats image is properly positioned to ensure proper flux on the receiver. The actual pointing varies by the time of year and day, ambient temperature and mode of operation. Modes of operation include start-up, normal operation, shut-down and a number of off-nominal conditions (e.g., loss of heliostat power). The BCS automatically calibrates each individual heliostat using a BCS target located on the tower. There are sixteen (16) BCS targets on the tower and heliostat calibration is integrated into normal plant operations on a daily basis. Control/power wire for the HCS will be installed underground throughout the solar field.

6.7 Power Block Construction

The first phase of power block construction would consist of foundation work and underground mechanical work. Foundation construction would involve excavation, form, and rebar work preceding a number of concrete pours. The specific equipment in-use is more variable as the individual foundations and components are erected. The central receiver tower will be constructed of reinforced concrete using a slip-form process. Underground pipe work would require trenching, onsite welding, backfill, and compaction. When the foundations have cured adequately, major equipment and aboveground piping can be installed. During this phase of construction the steam turbine generator (STG), water treatment system, air-cooled condenser, generator step-up transformer, auxiliary transformers, and other ancillary equipment would be set on their corresponding foundations. Major equipment components would be installed and pump, turbine, fan alignments would be performed.

With the equipment set on their foundations, aboveground piping and electrical activities can be completed. Piping and electrical cable would be terminated at equipment interfaces. High-voltage bus duct will be installed between the STG and generator step-up transformer. The final construction activities will include switchyard installation, site paving, and control system installation and programming. Once systems are installed and complete, commissioning will begin. Commissioning activities include operating pumps and motors, opening and closing valves, cleaning pipe systems by water flushes and air blows, and energizing equipment. Equipment is operated isolated from other systems to ensure proper operation. Once systems are verified the plant as a whole is operated to ensure all systems function correctly. During start-up, all systems are operated and steam is generated to perform steam blows, which are used to clean the steam piping. Once the steam lines are cleaned steam is introduced into the steam turbine. Once the plant is running reliably, performance testing is performed to ensure emissions and performance guarantees are met.

Concrete, mechanical, and electrical works would be performed over a period of months, with the aid of graders, rollers, front loaders, dump trucks, trenching machines, concrete mixer and pump trucks, cranes, and pick-ups. Approximately 60,000 cubic yards of concrete will be used to construct the power block and heliostat fields.

Some of the above areas may impinge on areas intended for the later stages of solar field erection. As solar field erection nears completion in the power block area, temporary construction mobilization areas would be reduced as required. Solar field equipment and materials laydown areas would be rotated through the site on the quadrants currently being assembled.

Miscellaneous, non-vehicle, motorized equipment will also be used over the length of the job, such as welding machines and compressors.

6.8 Thermal Medium Processing

The HTF system hot and cold tanks would be first preheated to help prevent against thermal shock to the tank and foundation. The cold tank, for example, will be maintained at the preheat temperature for at least a week or longer before fluid salt is pumped into the tank. It is expected to take approximately 2 to 3 months to melt and load the complete volume of salt. An external recirculation loop with a heater will then raise the temperature and maintain it at 550° F.

HTF processing will take place in an area surrounded by temporary earth dikes to prevent potential migration of the salt from the processing area with storm water. Incidental spills of salt would be cleaned up. In the event of inclement weather conditions, stockpiles and storage sacks of salt would be covered with plastic to prevent potential contact with storm water.

6.9 Gravel, Aggregate, and Concrete

Gravel will be required for the surfacing of roads, parking areas, and for use in concrete. A geotechnical investigation will provide information necessary to determine if adequate aggregate can be generated on site. Based on visual observations of the site, it appears that gravel sources within the grading area of the project are available. If on site gravel/sand is available (in quantity and quality), a portable rock processing operation will be used to generate select aggregate from on site sources. The rock processing operation will include screens, crushers, and conveyors to generate material that meets the project requirements.

If adequate material is not available on site, gravel and aggregate will be purchased from commercial sources in El Centro, CA or Yuma, AZ and transported to the project.

The construction of the project will require a large quantity of concrete delivered to the site over the duration of the construction timeframe. Two options exist to serve the project needs. First, a portable concrete batch plant can be mobilized and used to batch the concrete necessary for the project. The second option is to obtain concrete from a commercial source in either El Centro, CA of Yuma, AZ.

6.10 Electrical Construction Activities

The transmission line will be constructed using lattice steel towers or steel poles. Foundation holes for the tower legs will be excavated, forms constructed, reinforcing bars installed, and concrete poured. The structures will be assembled in sections at a staging area and then transported to the site by truck or helicopter, placed by crane or helicopter, and bolted to the foundations. The design of the transmission line will be in accordance with standards established by the California Public Utility Commission's (CPUC) General Order 95, Rules for Overhead Electric Line Construction.

Before conductor installation begins, temporary guard structures will be installed at road crossings and other locations where the new conductors may inadvertently come into contact with electric or communications facilities and/or vehicular traffic during installation. These guard structures consist of one or two poles on either side of the feature crossed with a "V"-shaped cargo net tensioned between the guard structures.

The actual conductor-stringing operation begins with the installation of rollers attached to the cross arm of the transmission structure. The rollers allow the individual conductors to be pulled through each structure until the conductor is ready to be pulled up to the final tension position. When the pull and tension equipment is set in place, a sock line (a small cable used to pull in the conductor) is pulled from tower to tower using ground equipment. After the sock line is installed, the conductor is attached to the sock line and pulled in, or strung, using the tension-stringing method. This involves pulling the conductor through each tower under a controlled tension to keep the conductor elevated above crossing structures, roads, and other facilities. After the conductor is pulled into place, tension is adjusted to a pre-calculated level. The conductor is then clamped to the end of each insulator as the rollers are removed. The final step of the conductor installation is to install vibration dampers and other accessories.

6.11 Aviation Lighting

Aviation lightings will be installed according to the recommendations of U.S. Department of Transportation Federal Aviation Administration's Advisory Circular, AC 70/7460-1K, Obstruction Marking and Lighting.

6.12 Site Stabilization and Protection

The applicant would restore all temporarily disturbed areas to their preconstruction conditions, as required by the BLM. These include temporary construction areas and access roads as well as pipeline alignments. These areas would be regraded and revegetated to restore them to preexisting conditions.

It is expected that site stabilization will include soil binders, geo-grid or the use of aggregate surfacing to allow the movement of maintenance vehicles and mirror wash water trucks to travel within the solar array. The predominant surface soil is expected to be relatively uniformly graded sand, which can be difficult to maneuver across. Other procedures for Site stabilization and protection are discussed in Section 4.10.

6.13 Low-Impact Development Methods

Extensive grading of the site would be limited to the power block areas, receiver tower and the major access roads (asphalt roads between power blocks and gravel roads servicing the receiving towers from the power blocks). With the heliostat array fields, grading cuts and fills would be limited, only as required to obtain smooth graded planes.

All vegetation within the heliostat array fields would be cut or removed to the soil surface to reduce the risk of fire. Occasional cutting of the vegetation would be required to control plant re-growth. All cut vegetation would not leave the site, but would buried, burned, or composted onsite to limit waste disposal. Heliostat foundations may consist of steel posts with concrete foundations or driven concrete filled steel pipes (exact method to be determined at a later date). Some re-grading for maintenance would most likely be required within the access road due to soil erosion and regular use.

Because the proposed site is located on federal land under the control of the BLM, the project is not under the direct authority of Imperial County. However, for design purposes, the erosion and sedimentation control BMPs will be engineered to meet the requirements of Imperial County, unless other specific direction is provided by the BLM. Construction of the project would also be subject to requirements of the state National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction Activities. BMPs would be developed and implemented to provide an effective combination of erosion and sediment controls.

Source controls and structural controls are proposed for management erosion and sedimentation as discussed in Section 4.10.

Because low-impact development practices will be incorporated into the project design, construction, and operation, the increase in sediment yield from the Site is not expected to be substantially greater than pre-project condition. Above- and below ground portions of plants would only be removed in areas that require more extensive grading. By limiting disturbance of existing vegetation, plants will continue to filter both water- and wind-carried sediment.

6.14 Decommissioning and Reclamation

The procedures described for decommissioning are designed to ensure public health and safety, environmental protection, and compliance with applicable regulations. It is assumed that decommissioning would begin 30-50 years after the commercial operation date of the solar plant.
The project goals for site decommissioning are as follows:

- Remove above ground structures unless converted to other uses;
- Restore the lines and grades in the disturbed area of the site to match the natural gradients of the site; and
- Re-establish native vegetation in the disturbed areas.

The proposed implementation strategy to achieve the goals for site decommissioning could include the following:

- Use industry standard demolition means and methods to decrease personnel and environmental safety exposures by minimizing time and keeping personnel from close proximity to actual demolition activities to the extent practical;
- Plan each component of the decommissioning project such that personnel and environmental safety are maintained while efficiently executing the work;
- Conduct pre-decommissioning activities such as final decommissioning and restoration planning that addresses the “as-found” site conditions at the start of the project;
- Remove of all residual materials and chemicals from the Site prior to demolition for reuse at other facilities or for proper disposal at licensed facilities;
- Demolition of the above-ground structures (dismantling and removal of improvements and materials) in a phased approach while still using some items until close to the end of the project. For instance, the water supply, administrative building and some electrical power components will be modified to be used until very late in the decommissioning project;
- Demolition and removal of below-ground facilities (floor slabs, footings, and underground utilities) as needed to meet the decommissioning goals;
- Soils cleanup, if needed, with special attention applied to retention pond and hazardous materials use/storage areas to ensure that clean closure is achieved;
- Disposal of materials in appropriate facilities for treatment / disposal or recycling;

- Recontouring of lines and grades to match the natural gradient and function of the site; and
- Revegetation with native plants.

Although various types of decommissioning and demolition equipment will be utilized to dismantle each type of structure or equipment, dismantling will proceed according to the following general staging process. The first stage consists of dismantling and demolition of above-ground structures to be removed. The second stage consists of concrete removal as needed to ensure that no concrete structure remains within 3 feet of final grade (i.e., floor slabs, below-ground walls, and footings) as appropriate. The third stage consists of removal/dismantling of underground utilities within 3 feet of final grade. The fourth stage is excavation and removal of soils, and final site contouring to return the originally disturbed area of the site to near original conditions while disturbing as little of the other site areas as is practical.

Above ground demolition entails breakdown and removal of above-ground structures and facilities. Residual materials from these activities would be transported via heavy haul dump truck to a central recycling / staging area where the debris will be processed for transport to an off site recycler. A project recycle center (either at each power unit as the work progresses or at the central admin area) would be established to:

- Size reduce and stage metals and mirrors for transport to an off site recycler:
- Crush concrete and remove rebar;
- Stockpile concrete for later use at the Site;
- Stage rebar for transport to an off site recycler; and
- Temporarily store and act as a shipping point for any hazardous materials to an approved TSD facility.

The strategy for demolition consists of use of mechanized equipment and trained personnel in the safe dismantling and removal of the following above-ground structure:

- Heliostats and related equipment using low environmental impact equipment;
- Towers using explosives to put the towers on the ground, then conventional heavy equipment to size reduce and transport for recycling (this is the industry standard for safe demolition of large towers and massive concrete structures);
- Removal of the turbine generators, condensers and related equipment, transmission lines and towers, and above ground pipelines using conventional demolition equipment and techniques; and
- Near the very end of the project, the removal of site related fencing.

The below-ground facilities to be removed include concrete slabs and footings that would remain within 3 feet of final grade at the end of the project. It is anticipated that any and all site related piping and utilities, including water lines, below ground electric / control / communication lines, and gas lines would be completely removed, regardless of the depth below final grade. These materials would be excavated and transported to the recycling area(s) for processing and ultimate recycling. The resulting trenches would be backfilled with suitable material of similar consistency and permeability as the surrounding native materials and compacted to 85 percent relative compaction.

The need for, depth and extent of contaminated soil excavation will be based on observation of conditions and analysis of soil samples after removal of the evaporation pond and hazardous materials storage areas, and upon closure of the recycling center(s) and waste storage areas using during decommissioning. At this time, removal of contaminated soil is assumed not to be needed. If required, removal would be conducted to the extent feasible and as required to meet regulatory cleanup criteria for the protection of groundwater and the environment. If contaminated soil removal is required, the resulting excavations would be backfilled with native soil of similar permeability and consistency as the surrounding materials and compacted to 85 percent relative compaction.
Recontouring of the site would be conducted using standard grading equipment to return the land to match within reason the previously existing surface and surrounding grade and function. Grading activities would be limited to previously disturbed areas that require recontouring. Efforts would be made to disturb as little of the natural drainage and vegetation as possible. Concrete rubble, crushed to approximately 2-inch minus size, would be placed in the lower portions of fills, at depths at least 3 feet below final grade. Fills would be compacted to approximately 85 percent relative compaction by wheel or track rolling to avoid over-compaction of the soils. To the extent feasible, efforts would be made to place a layer of coarser materials at the ground surface to add stability.

After recontouring, the Site would be revegetated using native plants where appropriate. This would be conducted with a native seed collection company.

7. STATUS OF AGREEMENTS

7.1.1 Power Purchase Agreements

The Applicant does not have an executed Power Purchase Agreement at the time of the filling of this POD. Any change to this status will be brought to the attention of the BLM.

7.1.2 Interconnect Agreements

The Applicant has filled an application for interconnection with the California Independent System Operators (CAISO). This application was filed, including all necessary backup information, and further information regarding this application will be forwarded to the BLM upon request.

8. OPERATIONS AND MAINTENANCE

8.1 Overview

Management, engineering, administrative staff, skilled workers, and operators would serve the solar plant. It is expected to employ up to 40-45 full-time employees during operation and 400-500 during project construction. The facility may be operated up to 7 days a week, 10 hours per day. The solar plant would be expected to have an annual availability of up to 92 to 95 percent (of no cloudy, daylight hours).

The facility may be operated in one of the following modes:

- The facility could be operated up to its maximum output as dictated by the available solar insolation and the available thermal storage, for as many hours per year as possible.
- The facility would be placed in standby mode every night when the solar insolation or thermal energy storage level drops to a point which results in the STG dropping below its minimum load.
- A full shutdown would occur if forced by equipment malfunction, transmission line disconnect, or scheduled maintenance.

8.2 Maintenance

Long-term operation of the facility would include periodic maintenance and overhaul of all balance-of-plant and solar facility equipment such as STG, pumps, piping, etc. in accordance with manufacturer recommended schedules. Periodic cleaning of the heliostats with demineralized water will be necessary to maintain the desired mirror reflectivity.

Routine inspections of substation and electric transmission line would be conducted by certified site personnel on a monthly basis or as needed under emergency conditions. All of the substation structures will be inspected from the ground on an annual basis for corrosion, misalignment, and foundation condition. Ground inspection will include the inspection of hardware, insulator keys and conductors.

Regular inspection of electric lines, support systems, and instrumentation and controls is critical for the safe, efficient, and economical operation of the project. Various inspection processes, including aerial inspection, ground inspection, and climbing may be conducted. Ground inspection includes checking of the hardware, insulators, and conductors for corrosion, breaks, broken insulators and failing splices. The frequency of inspection may vary depending on factors such as the age of the system, structure type, and vegetation conditions.

8.3 Operations Workforce and Equipment

It is planned that plant personnel will be on site in two 12-hour shifts, seven days a week to ensure that the facility is staffed at all times. A full-time staff will be required for operations and maintenance of the Power Plant: including one operator for every 12-hour rotating shift, four relief operators, four maintenance technicians, four mirror washers, one to two process/performance engineer, one maintenance manager, and five to seven administrative staff members per day. An additional part-time staff of five to 15 subcontractor personnel will be on site daily to conduct occasional maintenance of the facility, including cleaning or repairing equipment; system testing; removing, repairing, and/or installing insulation before and after maintenance; scaffold installation and removal; and personnel facility-related activities.

9. ENVIRONMENTAL CONSIDERATIONS

9.1 Resource Values and Environmental Concerns

9.1.1 Biological Resources

Biological resources potentially affected by the proposed project include vegetation, wildlife, corridors, and riparian resources. Potential impacts to these resources may be either directly or indirectly impacted by the project and may be either permanent or temporary in nature. Examples of potential impacts as they pertain to the proposed project are described below.

- **Direct:** Any alteration, disturbance, or destruction of biological resources that would result from Project-related activities is considered a direct impact. Examples include clearing vegetation, encroaching into wetlands, diverting natural surface water flows, and the loss of individual species and/or their habitats.
- **Indirect:** As a result of Project-related activities, biological resources may also be affected in a manner that is not direct. Examples include elevated noise, dust, misc. air emissions, soil compaction, increased human activity, decreased water quality, and the introduction of invasive wildlife (domestic cats and dogs) and plants (weeds or other non-native species).
- **Permanent:** All impacts that result in the long-term or irreversible removal of biological resources are considered permanent. Examples include constructing a building or permanent road on an area containing biological resources.
- **Temporary:** Any impacts considered to have reversible effects on biological resources can be viewed as temporary. Examples include the generation of fugitive dust during construction, or removing vegetation for underground pipeline trenching activities and either allowing the natural vegetation to recolonize or actively revegetate the impact area. Surface disturbance that removes vegetation and disturbs the soil is considered a long-term temporary impact because of slow natural recovery in arid ecosystems. Therefore, all such impacts in the project area are considered permanent.

Although more research and surveys are necessary to determine exactly how the potential impacts listed above may affect biological resources on the Site, initial research conducted by URS (August 2008) indicates that the Site is located in an area comprised primarily of desert scrub vegetation and sand dunes. Habitat that supports flat-tailed horned lizard (FTHL) (*Phrynosoma mcallii;* CSC, BLM Sensitive) and the BLM East Mesa FTHL Management Area that is situated north of I-8 are located adjacent to the Site. The Site is surrounded on the west and southwest by the Lake Cahuilla Area of Critical Environmental Concern (ACEC) that is managed to protect cultural resources. Yuma clapper rail (*Rallus longirostris yumamensis;* FE; ST) is the closest listed species recorded near the site, and is located south of the Site. In addition, burrowing owl (*Athene cinicularia*, SSC) is a common species in Imperial County and may be present within or near the Site. **Table 5** indicates the special status species with the potential to occur in the vicinity of the Site.

Table 5
Special Status Species with the Potential to Occur in the Vicinity of the Proposed Project

Common Name	Scientific Name	Federal Status	State Status	Habitat Associations
Reptiles				
Flat-Tailed Horned Lizard	*Phrynosoma Mcallii*	BLM Sens.	SC	Low dunes and flatlands with sparse vegetation and hard-packed sand substrates
Birds				
Western Burrowing Owl	*Athene Cunicularia*	SC	SC	Grasslands where there are ground squirrel burrows for nesting and little overstory; vegetation also uses culverts and human made debris piles
Yuma Clapper Rail	*Rallus Longirostris Yumamensis*	FE	ST	Fresh-water marshes dominated by cattail or bulrush; early successional marshes with little residual vegetation may be preferred

Wildlife movement in the project area is generally constrained by the presence of I-8 to the north and SR-98 to the south. The Lake Cahuilla ACEC was designated to recognize and protect the significant cultural resources found along the eastern edge of the ancient shoreline of Lake Cahuilla, and is managed to minimize ground impacts. As a result, this area is generally not disturbed by off-road vehicle use or other disturbances that would limit wildlife movement. Wildlife movement through this area is assumed to be minimally constrained, allowing a southeast-northwest movement corridor around the Site from BLM land south of the project north to FTHL habitat in the East Mesa FTHL Management Area. Thus, the location of the project would not be expected to cause adverse effects to wildlife movement corridors.

The topography of the Site is of generally low-elevation and lacking any blue-line streams or apparent flood channels. During the generally survey process, any jurisdictional wetlands/waters detected will be formally delineated per Army Corps of Engineers (ACOE) protocol. If any are identified and determined to be jurisdictional, permits for impacts to jurisdictional waters would be required.

Agency consultation, project planning and design, and implementation of appropriate mitigation measures will ensure that potential impacts to biological resources are either avoided and/or minimized to the maximum extent feasible. Proposed project design features and mitigation measures could include the following.

- All construction areas will be minimized by providing taped and flagged boundaries to delineate where surface disturbance will not be allowed to occur. The Project Environmental Compliance staff will review all site plans and provide written approval prior to any surface disturbance.

Setting and flagging construction area boundaries will limit surface disturbance and habitat impacts only to those areas needed for construction, thereby preventing unnecessary impacts.

- Off-road travel will be prohibited in sensitive biological areas and all native habitats during construction and operation. Such areas will be posted prior to initiation of construction and parking areas will be designated as appropriate.
- Speed limits on and near the Site will be posted and limits will be developed with consideration for potential wildlife mortality, in cooperation with BLM.
- An environmental awareness program will be developed to educate employees about sensitive biological resources and to provide background and reasons for restrictions, legalities, and appropriate procedures to be followed. This measure will be implemented prior to construction, and written material and other information will be provided to employees at project orientation. This information also will be provided to all contractors and subcontractors that will be working at the job site.
- A trash and litter control program will be developed for the project in order to reduce the possibility of animals ingesting or becoming entangled in foreign matter. In addition, trash control will reduce predator attraction and consequent increased predation, and will serve to increase overall pride in the area and foster environmental awareness.
- Restoration of disturbed right-of-ways and other temporary disturbance areas in native habitat will follow recommended procedures including ripping, seeding, and mulching, as appropriate. Seed mixtures will include shrubs and other species of utility as wildlife habitat. This measure will provide mitigation for temporarily-disturbed areas and will restore habitat for use by wildlife.
- Field surveys to determine the potential for the site to support sensitive wildlife will be conducted. If it is determined that federally protected species and or their habitats are located within the site, assistance to BLM in completing consultation pursuant to Section 7 of the Endangered Species Act and assistance to the USFWS to mitigate any adverse effects will be provided. Unavoidable impacts to habitats of federal, as well as state, listed threatened or endangered species will be mitigated as appropriate.

9.1.2 Cultural Resources

Ground-disturbing construction activities have the potential to directly impact cultural resources by altering site integrity and the qualities that make the resources significant. In addition, in the case of built resources, impacts can occur to the setting of a resource, even if the resource is not physically damaged. Based on a review of terrain maps and records search documents, undocumented prehistoric or historic-period cultural resources may be present on or near the Site. The prehistory of this region exceeds 12,000 years during which time the environment has undergone several climactic episodes, a number of which were conducive to occupation including multiple stands of Lake Cahuilla. Given the types of known cultural resources adjacent to the project area, it is anticipated that prehistoric resources could range from individual (isolated) artifacts to major occupation sites encompassing greater than 100 acres each. These sites are, in large part, indicative of activities associated with Lake Cahuilla. The lake, with an upper stand at the 40 foot above sea level contour (located approximately 1.5 miles west of the project area), was the result of periodic filling by the Colorado River. The present Salton Sea is a relict of one such event that took place in the early 20th century.

The preliminary analysis of the proposed Site indicates the presence of documented cultural resources directly adjacent to and within the proposed Project area. These consist of both prehistoric and historic archaeological sites, as well as built environment resources, specifically the All American Canal. A records search conducted by the Southeast Information Center (SEIC) at the Imperial Valley College Desert Museum indicates only a small portion of the project area has been previously investigated for cultural resources, consisting of mostly linear or overview surveys. The records search indicates 57 cultural resources have been recorded within the study area (the project area and a one-mile radius). One site, the All American Canal, is the only cultural resource within the study area formally determined to be eligible for the National Register of Historic Places (NRHP).

Three (3) cultural resources are known to be present within the proposed project area. Further information regarding these sites will be provided to BLM under confidential cover upon request.

Appropriate consultation including BLM consultation with the State Historic Preservation Office (SHPO) and Native Americans in addition to project planning and design, and implementation of relevant mitigation measures will ensure that potential impacts to cultural resources are either avoided and/or minimized to the maximum extent feasible. Proposed project design features and mitigation measures could include the following:

- Additional cultural resources inventory will be conducted for the Site. This inventory may include a pedestrian field survey of the potential area of disturbance to locate previously identified cultural resources as well as to survey areas that have not yet been reviewed. Upon completion of surveys, the applicant will consult with the SHPO for Section 106 compliance for the project, inclusive of the preparation of a Cultural Resources Technical Report. The report will contain recommendations as appropriate on how to address any resources found during the records search and ground survey.
- Wherever possible, the applicant will avoid cultural resource sites identified as eligible for inclusion on the NRHP. Where avoidance is infeasible, effects to resources will be mitigated through a treatment plan developed through consultation between BLM, California SHPO, and applicable Tribes.
- A paleontological survey will be conducted to determine the potential for paleontological resources at the site. This information will be included in the Cultural Resources Technical Report. If there is potential for paleontological resources, a paleontological monitoring program will be developed to minimize any impacts to those resources during construction.
- Prior to the start of project construction, a cultural resources specialist will be designated to implement the cultural resource monitoring and mitigation plan. This will include a programmatic agreement and/or an Unanticipated Discovery Plan.
- Prior to the start of project construction, the cultural resources specialist will conduct a worker education session for the construction crew and supervisory personnel to explain the importance of and legal basis for the protection of significant archaeological resources. Construction crews

will be briefed regarding identification of suspected new sites, reporting and preservation of existing and suspected new sites.

- A cultural resources monitor will be present at the construction site at times when excavation (subsurface disturbance) is taking place in areas of high cultural sensitivity. These areas will be identified by the cultural resources specialist.
- If a new cultural resources site is discovered during construction, and determined to be significant, the cultural resources specialist will notify and implement a mitigation plan in accordance with federal and state regulations on public lands.
- The cultural resources specialist will arrange for the curation at a qualified curation facility of any cultural materials collected during the construction monitoring and mitigation program.

9.1.3 Land Use and Existing Corridors

Imperial County is a predominantly agricultural region (e.g., agriculture comprises approximately one fifth of the County's total area). Approximately fifty percent of all County lands are largely undeveloped and under federal ownership (Imperial County, 2006). Undeveloped or vacant land is the most prevalent land use within the Imperial County.

According to the Imperial County Land Use Plan, the Site is planned for open space and recreation. Areas designated as Open Space/Recreation are characterized by a low intensity of human utilization and include mountain areas, sand dunes, desert lands, and other lands that are essentially unimproved and not predominantly used for agriculture (Imperial County, 2006). The Imperial County General Plan Land Use Element states that a majority of land planned for Open Space/Recreation is public land administered by the BLM. A small amount of non-BLM administered land located within the northern boundary of the site is zoned for S2G3. Consultation with the County during further studies will determine if the current zoning classification is compatible with the proposed solar facility.

Land within the Site is classified and managed by the BLM as Multiple-Use Class L (Limited). According to the 1980 California Desert Conservation Area (CDCA) Plan, as amended, the Multiple-Use Class L designation is intended to protect sensitive, natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed generally to provide for lower intensity and carefully controlled multiple-use of resources, while ensuring that sensitive resource values are not significantly diminished. The CDCA Plan identifies the guidelines (permitted uses) for Class L, which may include (1) electric generation facilities, including wind/solar and geothermal, after National Environmental Policy Act (NEPA) requirements are met; new electric transmission facilities within designated corridors, after NEPA requirements are met, (2) new distribution facilities placed within existing rights-of-way (ROW) where they are reasonably available, (3) motorized vehicle access and transportation, including new roads developed under ROW grants or pursuant to approved plans of operation, and (4) low- to moderate-use recreational activities.

In 1989, the BLM approved an amendment to the CDCA Plan changing the Multiple Use Class of the East Mesa Area from Class M to Class L in order to provide added protection for the FTHL and cultural resources along the Lake Cahuilla shoreline. The amendment stated that cultural resources could extend further east than originally indicated. Since the boundary of Lake Cahuilla Areas of Critical Environmental

Concern (ACECs) No. 5 and No. 6 abut the Site, it is likely that sensitive cultural resources could be discovered within the Site, especially in close proximity to the Lake Cahuilla ACEC boundary. Further analysis of the project's potential impact on the FTHL and cultural resources would be provided later in the planning and permitting process through field surveys and technical reports.

The site lies adjacent and to the southeast of the East Mesa Geothermal Field. Portions of the site lie within the Known Geothermal Resource Area (KGRA). The potential for land use issues associated with the KGRA would be evaluated in supplemental studies.

Other notable land use features within the Site primarily consist of linear rights-of-way. These features, which are located near the northern and southern boundaries of the site, include I-8, State Route 98 (SR-98), a 500kV transmission line, a 115kV transmission line, and four BLM routes of travel. I-8, which traverses the northern portion of the site in a diagonal direction, is the primary east-west vehicular route through Imperial County between San Diego, California, and Yuma, Arizona. The 4-laned highway (which has two lanes in each direction) serves as an integral route for people and goods movement, provides connection to other states, and provides access to desert recreational activities (Imperial County, 2006). SR-98 is a two lane east-west route traversing the southern boundary of the Site. The highway serves interregional, intraregional, and international travel and provides an alternate route to I-8. Closure of either of these major arterial roadways for construction or operation of solar facilities would be considered an incompatible use.

Motorized vehicular access throughout a majority of the site has been designated as "limited to approved routes of travel" through BLM land use plans. North of I-8 (within the FTHL Management Area) vehicular access is "limited to existing routes of travel" through BLM land use plans. According to the CDCA Plan, new routes for permanent or temporary use must minimize resource damage and use conflicts, in keeping with the criteria of 43 CFR 8342.1. Within the Site, the BLM has designated certain routes as open to all types of vehicular use. Route T670506 is located parallel to and north of I-8. Routes T6705385, T670507, and T670508 are located south of SR-98. Closure of these routes for development of the proposed project would be considered an incompatible use, unless alternate routes or access are provided for public use. Implementation of a traffic control plan during project construction and design of permanent access roads that do not interfere with current vehicular routes would ensure that the proposed project is compatible with current access routes.

Approximately two-thirds of the Site is located within two joint use utility planning corridors designated by the BLM in the 1980 CDCA Plan. The western half of the site is located within Utility Corridor M and the southern third of the site is located within Utility Corridor L. Utility Corridor M was designated by the CDCA 1980 Plan as 2 miles wide and did not have any existing facilities within the corridor at the time the CDCA Plan was approved (in 1980). Utility Corridor L was designated by the CDCA 1980 Plan as 2 miles wide. Existing facilities within Utility Corridor L at the time the CDCA Plan was approved (in 1980) included one 161kV power line and one canal, which are considered compatible electric facilities. Portions of the site which are located inside or nearest to the existing utility corridors would be considered highly compatible with BLM's planned land uses.

Land uses inventoried that are not located within the site and/or not found to conflict with the proposed solar facility are listed below.

- Grazing Allotments. No BLM grazing allotments are located inside or abutting the site boundary (BLM, 2008).
- Scenic Highways. No scenic highway segments designated by the State of California are located within the Site.
- ACECs. No ACECs were found to be located inside the site boundary. However, two ACECs abutting the site boundary include the Lake Cahuilla No. 5 ACEC, abutting the western boundary of the site and the Lake Cahuilla No. 6 ACEC abutting the southwest boundary of the site. The Lake Cahuilla ACECs were designated to protect archaeological sites associated with the shoreline of the prehistoric Lake Cahuilla by the 1980 CDCA Plan, as Amended. The East Mesa ACEC which is located approximately one-half mile northeast of the site was created to protect the flat-tailed horned lizard habitat and prehistoric values.

9.1.4 Native American Tribal Considerations

At this time, the applicant knows of no Native American resources on the Site. However, the potential exists for resources to be unearthed during project construction. As such, during the planning and permitting process, BLM consultation with Native Americans in compliance with Executive Orders regarding Government-to-Government relations with Native Americans and other federal and state laws and regulations would take place.

Formal and informal consultation and contacts would be made with interested tribal entities at several points in the planning process. Letters would be sent to the chairman of each band or tribe which could have cultural ties to the project area or had expressed an interest in the planning area to formally consult on this project. Letters would also be sent to council members, staff, and individuals who might have an interest or special knowledge of the project area. Each letter would detail the need for the project, describe the project area, and request comments on any and all issues that may have been of concern to the tribe, including religious or cultural values that may be affected by planning decisions. Native American tribes and interested persons would continue to be consulted and comments requested at key milestone points in the planning process and would continue through project implementation.

9.1.5 Recreation and OHV Conflicts

Numerous opportunities exist in the project area for off-highway vehicle (OHV) recreation, rock-hounding, hiking and walking, and camping. Further study is required to determine the specific recreation opportunities located on the Site and in the vicinity.

9.1.6 Other Environmental Concerns

9.1.6.1 Aesthetics

The Site is located approximately 18 miles southeast of El Centro, California, primarily on lands administered by the Bureau of Land Management (BLM) within Imperial County. The Site is bounded by undeveloped private and BLM-managed land to the north and east, BLM-managed land and the All American Canal to the south, and BLM-managed land to the west.

Because of the site's proximity to I-8 and SR-98, it is highly visible to the public; however, there are no state or county designated scenic highways in the project area.

The BLM evaluates federally-managed lands under its Visual Resources Management (VRM) system. The BLM-managed federal lands in the project area have not been designated under the BLM's VRM system. Further study of the area with respect to the BLM classification system would occur in future supplemental studies.

The project will change the visual appearance of the area. When viewed from eye level, during most hours of the day, the solar field would be relatively unobtrusive, with the power block only slightly visible in the distance (if at all), and the view of the project will be dominated by the central tower and receiver. Operations would require onsite nighttime lighting for safety and security. To reduce offsite lighting impacts, lighting at the facility would be restricted to areas required for safety, security, and operation. Exterior lights would be hooded, and lights would be directed onsite so that light or glare would be minimized. Low-pressure sodium lamps and fixtures of a non-glare type would be specified. Switched lighting would be provided for areas where continuous lighting is not required for normal operation, safety, or security; this would allow these areas to remain un-illuminated (dark) most of the time and thereby minimizing the amount of lighting potentially visible offsite. There will be a small amount of additional visible nighttime lighting associated with the project structures and open site areas. At times when lights are turned on, the lighting will not be highly visible offsite and would not produce offsite glare effects. The offsite visibility and potential glare of the lighting would be minimized by specification of non-glare fixtures and placement of lights to direct illumination into only those areas where it is needed.

Project construction activities typically would occur during normal Monday through Friday working hours, although nighttime activities may occur at certain times during the construction period depending on the project schedule. When and if nighttime construction activities take place, illumination would be provided that meets State and Federal worker safety regulations. To the extent possible, the nighttime construction lighting would be erected pointing toward the center of the site where activities are occurring, and would be shielded. Task-specific lighting would be used to the extent practical while complying with worker safety regulations. In spite of these measures, there may be times, when and if there is nighttime construction, when the Site may temporarily appear as a brightly lit area as viewed from nearby locations.

Construction of the project's transmission line would involve installation of wood, concrete or steel power poles. The insulators will be made of a non-reflective and non-refractive material, and the conductors will be non-specular (i.e., their surfaces will have a dulled finish so that they do not reflect sunlight). The proposed routing would follow the existing lines.

- Project equipment other than the solar arrays would have non-reflective surfaces and neutral colors to minimize their visual impacts to the extent practicable.
- A paint color acceptable to the BLM would be used on all project facilities that can be painted to blend the facility with the existing setting.

- Nighttime lighting would be limited to areas required for operations or safety and would be directed on site to avoid backscatter. Whenever possible, nighttime lighting would be directed or shielded from major roadways.
- Lighting at high illumination areas not occupied on a continuous basis would be controlled by switches or motion detectors to light the areas only when occupied.

9.1.6.2 Air Quality

Imperial County is one of the hottest areas in California and often has the highest humidity of all desert land. Average daily maximum temperatures rise to 100 degrees Fahrenheit or more approximately 100 days out of the year. Average low temperatures for the same period are in the high 70s. Winter temperatures average in the high 60s and low night temperatures are in the high 30s. Temperatures in the mountainous areas average about 10 to 15 degrees lower. Annual precipitation averages below five inches. The summer is often characterized by violent thunderstorms and flash floods.

The Site is under the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD) within the Salton Sea Air Basin. The ICAPCD maintains a network of four air quality monitoring stations located in El Centro, Brawley, Westmorland, and Niland. The current criteria pollutant status for the site is shown in **Table 6** below.

Table 6
ICAPCD 2006 Attainment Status

Pollutant[1]	Averaging Time	California Standards		Federal Standards	
		Concentration[2]	Attainment Status[3]	Concentration	Attainment Status[4]
O_3	1-hour 8-hour	0.09 ppm 0.070 ppm	Moderate Nonattainment	-- 0.08 ppm	-- Nonattainment
CO	1-hour 8-hour	20 ppm 9 ppm	Attainment	35 ppm 9 ppm	Unclassified/ Attainment
NO_2	1-hour Annual	0.18 ppm 0.030 ppm	Attainment	-- 0.053 ppm	Unclassified/ Attainment
SO_2	1-hour 24-hour Annual	0.25 ppm 0.04 ppm --	Attainment	-- 0.14 ppm 0.03 ppm	Attainment
PM_{10}	24-hour Annual	50 $\mu g/m^3$ 20 $\mu g/m^3$	Nonattainment	150 $\mu g/m^3$ --	Nonattainment
$PM_{2.5}$	24-hour Annual	12 $\mu g/m^3$ --	Unclassified	35 $\mu g/m^3$ 15 $\mu g/m^3$	Unclassified/ Attainment

Source: California Air Resources Board (CARB), 2008

[1] Ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$)
[2] Concentrations are provided in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$)
[3] Effective as of July 26, 2007
[4] Current as of September 2006

The ICAPCD uses a two-tiered approach for determination of operational air quality significance thresholds. Under Tier I, any proposed residential, commercial, or industrial development with a potential to emit less than 55 lbs/day of NOx or ROG; less than 150 lbs/day of PM_{10} or SOx; or less than 550 lbs/day of CO may potentially have an adverse impact on local air quality. From the ICAPCD's perspective residential, commercial and industrial developments with a potential to emit below this level will not be required to develop a Comprehensive Air Quality Analysis Report. Under Tier II, any proposed residential, commercial, or industrial development with a potential to meet or exceed the 55 lbs/day of NOx or ROG; 150 lbs/day of PM10 or SOx; or 550 lbs/day of CO is considered to have a significant impact on regional and local air quality. Therefore, Tier II projects are required to implement all standard mitigation measures as well as all feasible discretionary mitigation measures. These measures must be listed and incorporated into the environmental document which is prepared by the Lead Agency.

For construction related air quality impacts and thresholds, the ICAPCD considers particulate matter (PM10) as the pollutant of greatest concern. Past experience has shown that the emissions from construction can cause substantial increases in localized concentrations of PM10. The most common activities associated with construction involve site preparation, earthmoving activities and general construction. These activities include, but are not limited to: demolition, grading, excavation, cut and fill operations, trenching, soil compaction, land clearing, grubbing and the addition of improvements such as roadway surfaces, structures and facilities. These common construction activities generate emissions from:

- Fuel combustion from mobile heavy-duty diesel and gasoline powered equipment.
- Portable auxiliary equipment
- Worker commuter trips
- Fugitive dust from soil disturbance

While construction PM10 emissions can vary greatly depending on the phase of the construction, level of activity and other factors, the ICAPCD requires feasible mitigation or control measures which can be reasonably implemented to significantly reduce PM10 emissions. Because particulate emissions from construction activities have the potential of leading to adverse health effects as well as nuisance concerns, such as reduced visibility, all projects are required to mitigate construction impacts by regulation.

Another source of construction related emissions comes from the use of diesel powered construction equipment which has been known to produce ozone precursor emissions and combustion related particulate emissions. To help projects address these emissions the ICAPCD also requires standard mitigation measures for construction equipment.

The proposed project is anticipated to generate very little or no NOx, CO, or VOC pollutants during its normal operation. The project would not utilize supplemental gas firing, and would therefore generate very little air pollution. Additional studies regarding air emissions from the proposed project would be conducted to verify exact air emissions and impacts. The Applicant will obtain Authority to Construct (ATC) and Permit to Operate (PTO) from the Imperial County Air Quality Management District (ICAQMD). The Applicant will work with CEC and the ICAQMD to determine any needed mitigation measures.

Construction emissions for the proposed project will be closely evaluated using site- and project-specific data during the project design, permitting and certification process. The main sources of emissions from the proposed project would be short-term emissions during construction. Construction-related emissions will include the exhaust from construction equipment (including vehicles transporting personnel, equipment, and supplies) and fugitive dust and particulate matter (PM10) from grading, earth moving, and equipment/vehicles traveling on paved and unpaved roads.

These impacts would be thoroughly evaluated and mitigation measures would be implemented to ensure that the proposed project would not have a significant adverse impact on air quality.

9.1.6.3 Geologic Hazards and Soils

The site lies in the East Mesa area of the Imperial Valley. The general area has very little development beyond basic infrastructure that includes: I-8, SR-98, the All American Canal, the East Highline Canal, and electrical transmission lines and an electrical substation. This area lies approximately two miles east of the ancient lake deposits (Ancient Lake Cahuilla) that underlie much of the Imperial Valley. This broad low mesa is underlain by alluvial deposits and mantled locally by wind blown dune deposits. Extensive dune deposits are located east of the site in the Algodones Dunes, a long linear belt of sand dunes extending from near the Salton Sea to Baja California, Mexico.

Groundwater is anticipated to be relatively shallow, particularly along the southern portion of the site near the All American Canal. Groundwater has become a contentious issue in the border region as proposed canal water reclamation projects in the United States are perceived as threats to groundwater availability for agricultural users in Mexico.

The site lies approximately 7.5 miles east of the Imperial fault, which is the nearest active fault. The Imperial fault has ruptured twice in the last 70 years. Based on regional probabilistic hazard mapping, the estimated site ground motion for a hazard level associated with a 10% probability of exceedance in 50 years is 0.4g (gravitational force). This level of ground shaking represents a lower hazard level than most of the Imperial Valley because the site is located well to the east of the major fault systems that traverse the central and western portions of the Imperial Valley.

Liquefaction and seismic settlement are geologic hazards that may be encountered within the site given the potential for young, granular geologic deposits and shallow ground water. Proper characterization of the hazard and appropriate engineering design and construction would mitigate these potential geologic hazards. Design level studies would also address the loose granular materials and the potential for windblown sand to affect project elements.

The site lies adjacent and to the southeast of the East Mesa Geothermal Field. Portions of the site lie within the Known Geothermal Resource Area (KGRA). The potential for land use issues associated with the KGRA would be evaluated in supplemental studies.

Geologic maps indicate that alluvium and dune sands underlie the site. These deposits generally consist of unconsolidated materials and that could include clay, silt, sand, and gravel. These materials may possess low shear strength and could be compressible when loaded. Further site evaluation would determine whether project improvements would be sited within areas predominantly underlain by alluvium or dune sands.

Shallow foundations may not be suitable without some form of ground improvement, or alternatively deep foundations (piles) may be needed. However, depending on the loads and settlement tolerances of the improvements, ground improvement to support shallow foundation may consist of local, relatively shallow removal and recompaction of the existing soils. In addition, ground improvement may be needed to mitigate liquefaction and secondary effects. Finally, earthwork to develop the site, whether removal and recompaction for ground improvement or relatively minor site formation, would require significant quantities of water to place and compact fill.

Proposed project design features would include the following:

- The design of the project would be in accordance with all applicable federal, state, and county building and construction ordinances.
- Engineering and construction requirements for the project would incorporate the necessary precautions to successfully operate the project in a seismically active area.
- Site-specific geotechnical assessments to determine the presence or absence of liquefiable deposits and other geotechnical hazards would be conducted. Design-level geotechnical investigations, including test borings at selected locations, as well as an analysis of existing data to assess the possibility of liquefaction and other hazards, would be conducted as part the assessment. Design of the project would include appropriate measures to mitigate for any hazards identified during the assessment.
- An engineering geologist(s), certified by the State of California, would be assigned to the project to carry out the duties required by the California Building Code (CBC), Section 70006 Grading Permit Requirements, including preparation of an Engineering Geologic Report, and to periodically monitor geologic conditions during construction, approve actual design features and mitigation measures used to protect the project from geologic hazards and prepare the final Geologic Grading Report.

9.1.6.4 Mineral and Energy Resources

The proposed project is located in a prime area for energy development due to its location in Imperial County and the potential for development on BLM owned land. Across the country, and particularly in California, renewable energy is moving to the forefront in addressing the public's interest in "green energy." National policies encourage development of renewable energy -- wind, geothermal, solar, and biomass -- on public lands. California has taken a leadership role by requiring acceleration of renewable energy production – the "20 percent by 2010" effort under the State's Renewables Portfolio Standard. As a result, BLM is working cooperatively with California to make additional public lands available to help meet those goals.

Geothermal energy in particular is a prevalent resource in the project area. Geothermal energy is a growing source of renewable energy from the public lands. Currently, six geothermal fields supply 31 power plants and generate 500 megawatts of electricity from 32 leases in California. Two of these fields, East Mesa and Heber, are located in Imperial County. With the increased emphasis on renewable energy, new development proposals are under review and exploration interest has increased. BLM just recently completed the Truckhaven geothermal leasing Environmental Impact Statement and is working with the Navy to initiate leasing in the Superstition Mountain area, both in Imperial County. Plans are underway to begin the leasing process for one other area – the West Chocolate Mountains in Imperial County.

Further study of the mineral resources located both on and near the Site as well the project's impact on energy resources in the region would be contained in future analyses.

9.1.6.5 Noise

The proposed project is located almost entirely in areas that have no permanent residents and few activities that generate substantial sustained noise events. During construction, various types of heavy equipment would be used that could result in a temporary increase in noise levels. Additionally, during operation of the facility, use of pumps, blowers, fans, generators, compressors, and high-pressure steam blows will contribute to noise emissions in the project vicinity.

Further research will be conducted to determine current noise emissions in the project vicinity and the impact of the proposed project on the noise environment. Project design and mitigation measures could include the following:

- The applicant would evaluate plant noise emissions during the design and permitting phase of the project in accordance with BLM and CEC guidelines and local requirements.
- Prior to construction, the applicant would submit a noise control program to BLM and CEC for review and approval. Construction noise would be managed to reduce employee exposure and comply with OSHA and Cal-OSHA standards and County ordinances.
- During the construction and operation phases of the project, the applicant would document, investigate, evaluate, and attempt to resolve all project related noise complaints.

During construction, heavy equipment would be utilized along the proposed right-of-way and could result in temporary increases in noise levels.

9.1.6.6 Water Resources

The Site lies within the Colorado Desert, which is part of the Sonoran Desert. The Sonoran Desert straddles part of the United States (U.S.)-Mexico border and covers large parts of the U.S. states of Arizona and California and the Mexican state of Sonora. It is one of the largest and hottest deserts in North America. The Colorado Desert lies within the Lower Colorado River Valley region of the desert.

Regionally, the Site is located within the southeastern part of the Colorado River Hydrologic Region, south of the Salton Sea, which covers approximately 1,870 square miles in Southern California. More specifically, the Site lies within the Imperial Valley Groundwater Basin (Basin 7-30). To the north, the basins are bounded by the Salton Sea, which is the ultimate discharge point for surface water and groundwater in the basins. The average annual precipitation at the site is approximately 3 inches. There are two existing groundwater wells reported to be located within the proposed site location boundary (Loeltz, et al, 1975).

Approximately 75 square miles of land is tributary to the project location. The topography of the area is very flat (approx. 0.5% slope) and slopes from the northeast to the southwest. There are no 'blueline' streams located on the United States Geological Survey (USGS) topographic map within the Project boundary.

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) panel 0600651050B is not printed at this time. Therefore, further research would be conducted to define the 100-year flood limits through the site and to ensure the Site will not be impacted by floodwaters or have any negative impacts to surface water flooding in the area.

The Imperial Valley Groundwater Basin is described in California Department of Water Resources (DWR) Bulletin 118, Imperial Valley Groundwater Basin. Much of the discussion below is based upon the information in this document.

The Imperial Valley Groundwater Basin is bounded on the east by the Sand Hills and on the west by the impermeable rocks of the Fish Creek and Coyote Mountains. To the north the basin is bounded by the Salton Sea, which is the discharge point for groundwater in the basin. The physical groundwater basin extends across the border into Baja California, where it underlies a contiguous part of the Mexicali Valley (CDPW 1954). However, for the purposes of this analysis, the southern boundary of the Imperial Valley basin is defined politically as the international border with the Republic of Mexico. Major hydrologic features include the New and Alamo Rivers, which flow north toward the Salton Sea. The rivers were formed in the mid to late 1800s, when the Colorado River occasionally escaped its normal channel and flowed northward towards the present day Salton Sea (Setmire 1979). The All-American Canal (three branches) and the Coachella Canal also cross over the basin (DWR 2004).

The basin has two major aquifers, separated at depth by a semi-permeable aquitard that averages 60 feet thick and reaches a maximum thickness of 280 feet. The aquifers consist mostly of alluvial deposits of late Tertiary and Quaternary age. Average thickness of the upper aquifer is 200 feet with a maximum thickness of 450 feet. The lower aquifer averages 380 feet thick with a maximum thickness of 1,500 feet. The lower aquifer is reportedly locally confined due to low-permeability prehistoric lake deposits up to 80 feet thick that have accumulated on the nearly flat valley floor (Montgomery Watson, 1995).

The San Andreas, Algodones, and Imperial faults are present within the basin, but data on whether these faults control groundwater movement is lacking. The only known barriers to groundwater flow are the lake deposits of clay that obstruct downward seepage of surface waters in the central and western part of the basin (Loeltz et al. 1975).

Recharge is primarily from irrigation return. Other recharge sources are deep percolation of rainfall and surface runoff, underflow into the basin, and seepage from unlined canals that traverse the valley (CDPW 1954). Principal areas of recharge from surface runoff are in the East Mesa and West Mesa, where the surface deposits are more permeable than in the Central Valley (Loeltz et al. 1975). Primary underflow into the basin is from Mexicali Valley to the south and through the alluvial section between the Cargo Muchacho Mountains and Pilot Knob (DWR 2004b).

Total seepage from the All-American Canal from 1942 to 1982 is estimated at 2.2 million acre-feet. Seepage from the Coachella Canal between the same years is estimated at 1.2 million acre-feet. However, in 1980, a 49-mile long southern portion of the Coachella Canal was lined, which has decreased the amount of recharge from this source (Montgomery Watson 1995). Another source of groundwater recharge occurs along the lower reaches of the New River, near Calexico (Montgomery Watson 1995).

Groundwater within the basin generally flows toward the axis of the valley and then northwestward toward the Salton Sea (Montgomery Watson 1995). Water levels vary widely within the basin due to differing hydraulic heads and the localized confining clay beds in the area (Brown 1923). Groundwater levels remained stable within the majority of the basin from 1970 to 1990 because of relatively constant recharge and an extensive network of subsurface drains (Montgomery Watson 1995). The depth to water beneath the Site is approximately 35 feet (55 feet above mean sea level) as measured in wells within the site boundaries between 1948 and 1964 (wells 16S/17E-23R and 17S/17E-3C, Loeltz et al., 1975). More recent data are currently not available.

The basin may have saturated sedimentary deposits as thick as 20,000 feet, but a large portion of this groundwater is undesirable because of high total dissolved solids (TDS) concentrations (Montgomery Watson 1995). The total storage capacity for this basin is estimated to be 14.0 million acre-feet (af) (DWR 1975). Actual groundwater in storage for the basin is not provided in DWR Bulletin 118. Montgomery Watson (1995) published a groundwater model utilizing data from 1970 to 1990. Based on this model, recharge comes mostly from imported sources and canal seepage and totals approximately 250,000 acre-feet/year (afy). Losses to streams average 169,342 afy. Groundwater discharge from the basin averages 270,000 acre-feet/year, and subsurface inflow averages 173,000 afy. Thus, the average change in groundwater storage is estimated to be approximately 16,000 afy.

Water quality varies extensively throughout the basin. Total Dissolved Solids (TDS) content ranges from 498 to 7,280 mg/L in the basin (Loeltz et al. 1975). In general, groundwater beneath the basin is unusable for domestic and irrigation purposes without treatment. Groundwater in areas of the basin has higher-than-recommended levels of fluoride and boron (Loeltz et al. 1975). Approximately 7,000 afy of groundwater is estimated to recharge the basin from the New River, which drains the Mexicali Valley (Montgomery Watson 1995). This groundwater is related to surface flow from the highly polluted New River and negatively affects groundwater quality in the basin (Setmire 1979).

Loeltz et al (1975) reported information regarding two wells within the site boundaries. Well 16S/17E-23R is a shallow observation well screened from 155 to 157 feet bgs. One groundwater sample was collected from this well in 1964 and the TDS concentration was 1,270 mg/L. Well 17S/17E-3C is owned by the Imperial Irrigation District and is screened from the ground surface to 105 feet below ground surface (bgs). This well is a 16-inch diameter well used for industrial or mining applications and a discharge rate of 600 gallons per minute was reported (Loeltz et al., 1975). Four groundwater samples have been collected from this well between 1950 and 1961. The TDS concentrations ranged from 678 to 1,210 mg/L. Additional well information including pumping tests, water quality data, water levels and well logs are available in the vicinity and will be evaluated as part of future groundwater supply investigation that will be provided to BLM as a supplemental submittal.

Surface water and groundwater resources and their associated water quality are regulated in California through many different laws, regulations, and ordinances administered by local, state, and federal agencies. Imperial County, California Department of Water Resources (DWR), State Water Resources Control Board (SWRCB), and Colorado River Basin Regional Water Quality Control Board (RWQCB) are the primary agencies responsible for the protection of watersheds, floodplains, and water quality. These agencies ensure that the hydrologic characteristics of surface water and groundwater are considered, so that the existing identified beneficial uses are not impaired. Similarly, water quality regulations are designed to limit the discharge of pollutants to the environment, maintain surface water and groundwater quality, protect fish and wildlife and their habitats, and protect beneficial uses.

Because the facility will utilize dry cooling technology, the total process and operational water demand of the facility is expected to be up to approximately 700 afy (Section 4.8).

The anticipated construction water demand for the project is approximately 1,200 af over the course of the 30-month construction schedule.

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