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Subject: RICE SOLAR ENERGY, LLC'S REVISED FIRE NEEDS ASSESSMENT
RICE SOLAR ENERGY PROJECT
DOCKET NO. (09-AFC-10)

Enclosed for filing with the California Energy Commission is the original of **RICE SOLAR ENERGY, LLC'S REVISED FIRE NEEDS ASSESSMENT** for the Rice Solar Energy Project (09-AFC-10).

Sincerely,

Marie Mills

Rice Solar Energy LLC's Opening Testimony

Part 2 (Biological Resources, Cultural Resources, & Worker Safety-Fire Protection)

Rice Solar Energy Project (09-AFC-10)

October 22, 2010

RICE SOLAR ENERGY PROJECT
REVISED FIRE NEEDS ASSESSMENT

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October 25, 2010

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EXECUTIVE SUMMARY

LOCATION AND SETTING

The Rice Solar Energy Project (RSEP) is located on a 2,560-acre project site in the northeastern portion of unincorporated Riverside County, immediately south and adjacent to State Route (SR) 62 (at milepost 109), approximately 20 miles east of the intersection of SR 62/177, approximately 15 miles west of Vidal Junction, and 3 miles east of the abandoned town of Rice. The Arizona and California Railroad and the Colorado River Aqueduct are located immediately to the north of SR 62. The generating facility would be constructed on privately owned land and connected to the Western Area Power Administration's (Western) Parker-Blythe transmission line. The proposed transmission line corridor would extend southeast for approximately 10 miles, across Bureau of Land Management (BLM) managed public lands and two privately owned parcels, connecting with the Western Parker-Blythe transmission line within an existing BLM right-of-way.

The RSEP is a 150-megawatt (MW) concentrating solar thermal power project with a central receiver tower, sun-tracking heliostat field, and an integral thermal storage system. The power block and solar arrays would cover approximately 1,410 acres of the project site immediately to the south of SR 62. The power block and solar arrays are proposed to be located on the site of the Rice Army Air Field and a portion of Camp Rice, a World War II (WWII) desert training base that was part of the infantry and artillery Desert Training Center, California-Arizona Maneuver Area (DTC-CAMA).

The project site is located in a very sparsely settled portion of the Sonora Desert. The land surrounding the project site is primarily undeveloped desert land with the closest development located in Vidal Junction 15 miles to the east. The topography of the project site is generally flat, with elevations ranging from about 720 feet (220 meters) above sea level (ASL) at the southern boundary to approximately 820 feet (250 meters) ASL in the north, along SR 62. Rainfall amounts are minimal (approximately 3.7 inches annually) and are typically restricted to the winter months; however, amounts may vary from one to five inches per year. Areas may also receive scattered heavy rainfall during summer thunderstorms. Summer temperatures frequently exceed 100 degrees Fahrenheit and night frosts are common in winter months.

The RSEP site and the adjacent area is within a "Non-High Fire Hazard Severity Zone" according to the *Approved Very High Fire Hazard Severity Zones and Local Responsibility Areas* map, dated December 24, 2009, prepared by the State of California Department of Forestry and Fire Protection (CAL FIRE) and adopted by the County of Riverside.

PROJECT TECHNOLOGY

The RSEP is a 150-MW concentrating solar thermal power project with a central receiver tower, sun-tracking heliostat field, and an integral thermal storage system using liquid salt as the heat transfer and storage medium. The RSEP utilizes concentrating solar power (CSP) technology to generate power from sunlight by focusing energy onto a tower-mounted central receiver, using an integral thermal storage system. Because all the solar energy is focused on one central point, central receiver tower technology can achieve high temperatures, resulting in efficient energy collection, thermal storage, and electricity production systems. The thermal storage system allows renewable solar energy to be stored efficiently and used when needed. Since the storage system effectively decouples solar energy collection from electricity generation, a stable electricity supply can be produced.

Another attribute that distinguishes the RSEP's technology is the use of liquid salt as the heat transfer medium in the central receiver tower. The salt, which is only circulated within the power block area, is non-flammable and enclosed within a contained system. In the liquid state, salt has viscosity and appearance similar to that of water and has several highly beneficial properties in solar applications. First, liquid salt has highly efficient heat transfer properties and retains heat for long periods with minimal losses. Second, the salt can be heated to high temperatures without degradation, resulting in efficient energy storage and electricity production systems. Finally, once melted and in the liquid state, the salt does not change phase and will not be subject to the negative operational impacts of intermittent cloud cover. Therefore, the combination of liquid salt as both the heat transfer and storage medium in a central receiver/tower application produces the following benefits:

- Decouples the collection of solar energy from the generation of electricity and hence can generate power at any time of day;
- Maximizes the cost-effectiveness of its storage system by heating the liquid salt to high temperatures with very little thermal loss in storage;
- Achieves high steam-turbine cycle efficiencies; and
- Allows power production to be dispatched during periods of peak demand, reducing the overall cost of power.

PROJECT CHARACTERISTICS

Principal Design Elements

The RSEP includes the following principal design elements:

- Up to 17,500, solar-tracking heliostats, or mirrors, each 672 square feet in area, in a circular array that will reflect solar energy to the solar receiver tower. The

heliostats will be approximately 24 by 28 feet in size, and each will be mounted on a 12-foot-tall pedestal.

- A 538-foot-high concrete solar central receiver tower with a 100-foot-tall solar receiver and 15-foot crane (for a total height of 653 feet).

- A liquid salt circulation and storage system featuring hot (approximately 1,050°F) and "cold" (approximately 550°F) salt storage tanks, capable of storing 70 million pounds (4.4 million gallons) of liquid salt (sodium nitrate/potassium nitrate mixture).

- A net 150-MW single condensing steam turbine generator (STG) system and associated equipment.

- A 20-cell ACC for cooling of the steam turbine exhaust.

- A 10.0-mile-long generation tie-line that will connect with the Western Parker-Blythe transmission line. The new facilities will be constructed to design standards that allow operation at 230 kilovolts (kV) (the design rating of Western's existing system). The new facilities will be operated at the voltage level of Western's system, currently 161 kV, which may be upgraded to 230 kV in the future. The generation tie-line will be constructed partly on federal land and partly on private land and will require construction of 4.6 miles of new unpaved access road and use of 5.4 miles of existing dirt roads.

- A new interconnection substation (currently estimated to be approximately 300 feet by 400 feet) located at the point of interconnection with Western's existing transmission line.

- An on-site switchyard to step up power from the STG for transmittal on the generator tie-line to the interconnection substation.

- Two new on-site wells for industrial water use and a water treatment system to provide water that will be treated for both domestic and process use.

- Three evaporation ponds, approximately 5 acres each, to process wastewater discharge from the water treatment system and oil/water separator.

- Two diesel fire-water pumps and two emergency diesel generator sets for backup emergency power supply.

- Extension of the existing 12-kV electrical distribution line from a location 175 feet east of the project parcel boundary for approximately 1.1 miles to the facility fenceline boundary.

FIRE PROTECTION SYSTEMS

- *Fire Protection Systems* - The fire protection systems would be designed and maintained in accordance with the relevant National Fire Protection Association (NFPA) guidelines and local code requirements as described in the Rice Solar Plant Fire Protection Plan provided as Appendix B to this document.

- *Diesel Fire Pumps* - Two sets of diesel fire pumps would discharge to a dedicated fire-loop piping system consisting of underground piping and aboveground hydrants, sprinklers, and risers. The primary source of fire protection water would be an on-site raw water storage tank.

- *Handheld Fire Extinguishers* - Handheld fire extinguishers, of the appropriate size and rating, would be located throughout the facility in accordance with the NFPA 10 and local requirements.

- *Central Receiver Tower* - The Central Receiver Tower has no flammable or hazardous materials. The central receiver tower would have stairs, an elevator, and a hoist system that can be used during an emergency event. In accordance with the safety plans, a first aid kit and automatic external defibrillator (AED) will be positioned within the upper portion of the tower for use by plant staff in an emergency. All maintenance, testing, or other operations in the Tower would be done after all liquid salt has been evacuated.

- *Packaged Electrical and Electronics Control Cabinet (PEECC) in the Central Receiver Tower* - The PEECC in the Central Receiver Tower would be provided with smoke detection and a Carbon Dioxide Extinguishing System per NFPA 12.

- *Sun-Tracking Heliostat Field* - The heliostats would be powered by three salvo motors that are fully-enclosed, insulated, and protected by a circuit protection device in the event that the motor experiences a failure. The solar array of heliostats would be washed every 10 days by ionized water sprayed from trucks that travel on service roads. The ground surface beneath and around the solar array would be treated with herbicides to control weed growth.

- *Steam Turbine Generator Bearings* - The steam turbine generator bearings automatic preaction spray system would utilize rate compensated heat detectors to actuate the supply valve and fixed temperature closed spray nozzles to limit water discharge to the affected bearings only. The Steam Turbine Bearing protection shall be designed in accordance with NFPA 850 and the Electric Power Research Institute (EPRI) Document – EPRINP-4144, Turbine Generator Fire Protection by Sprinkler System, Project No.1843-2, Final Report 1985.

- *Steam Turbine Under-floor* - Any area under the operating floor would be provided with an automatic dry-pipe sprinkler system.

- *Steam Turbine Lube Oil Reservoir, Conditioner, Piping and Seal Oil Unit* - This area would be provided with an automatic deluge spray system.

- *Control Room, DCS Room, and Tele-Com Room of the Administration or Operations/Control Building* - These areas of the Administration or Operations/Control building would be provided with an automatic preaction sprinkler system.

- *Remainder of Administration or Operations/Control Building* - The rest of the building would be provided with a wet pipe sprinkler system. The system would be designed to provide water at a minimum sprinkler density as required by the occupancy of the area. The entire building would be provided with a Class II standpipe system and manual pull stations.

- *Maintenance/Warehouse Building* - The Maintenance/Warehouse Building would be provided with automatic wet pipe sprinkler system. The system would be designed to provide water at a minimum sprinkler density as required by the occupancy of the area. The entire building would also be provided with a Class II standpipe system and manual pull stations.

- *Generator Step-Up (GSU) Transformer and Unit Auxiliary Transformers (UAT)* - The GSU would be provided with a deluge spray system. The systems would be actuated by dry pilot detection. The UAT would also be provided with a deluge spray system with dry pilot detection.

- *Fire Pump House* - A wet pipe sprinkler system would be provided for the fire pump house

- *Water Treatment Building* - The water treatment building would be provided with an automatic wet pipe sprinkler. The building would be provided with a Class II standpipe and manual pull stations.

- *Power Distribution Center Building* - The Power Distribution Center Building would be provided with smoke detection.

SAFETY AND HEALTH PROGRAMS

Construction Safety and Health Programs

During the construction phase, the RSEP would include the implementation of the Safety and Health Programs listed below. Prior to the start of construction, detailed programs and plans would be provided to the CEC and the RCFD as a Condition of Certification. They are as follows:

- Injury and Illness Prevention Program

- Fire Protection and Prevention Program
- Personal Protective Equipment Program
- First Aid, CPR, and Automated External Defibrillator Program
- Emergency Action Program/Plan
- Construction Safety Programs
  - – Motor Vehicle and Heavy Equipment Safety Program
  - – Forklift Operation Program
  - – Excavation/Trenching Program
  - – Fall Protection Program
  - – Scaffolding/Ladder Safety Program
  - – Articulating Boom Platforms Program
  - – Crane and Material Handling Program
  - – Hazardous Waste Program
  - – Hexavalent Chromium Program (Required for Hot Work on Stainless Steel)
  - – Hot Work Safety Program
  - – Employee Exposure Monitoring Program
  - – Electrical Safety Program
  - – Lock-out/Tag-Out Program
  - – Permit-required Confined-space Entry Program
  - – Hand and Portable Power Tool Safety Program
  - – Powder-actuated Tool Safety Program
  - – Housekeeping and Material Handling and Storage Program
  - – Hearing Conservation Program
  - – Back Injury Prevention Program
  - – Hazard Communication Program

– Respiratory Protection Program

– Heat and Cold Stress Monitoring and Control Program

– Pressure Vessel and Pipeline Safety Program

Operations Safety and Health Programs

After the completion of the construction phase and the commencement of the operation of the RSEP, the construction Safety and Health Programs would transition into an operation-oriented program reflecting the hazards and controls necessary. Detailed programs and plans would be submitted to the CEC and the RCFD as a Condition of Certification. They are as follows:

- Injury and Illness Prevention Program
- First Aid, CPR, and Automated External Defibrillator
- Fire Protection and Prevention Program
- Emergency Action Program/Plan
- Personal Protective Equipment Program
- Plant Operation Safety Program

  – Motor Vehicle and Heavy Equipment Safety Program

  – Forklift Operation Program

  – Excavation/Trenching Program

  – Fall Protection Program

  – Scaffolding/Ladder Safety Program

  – Articulating Boom Platforms Program

  – Crane and Material Handling Program

  – Hot Work Safety Program

  – Workplace Ergonomics Program

  – Employee Exposure Monitoring Program

  – Electrical Safety Program

  – Lock-out/Tag-Out Program

– Permit-required Confined-space Entry Program

– Hand and Portable Power Tool Safety Program

– Housekeeping and Material Handling and Storage Program

– Hearing Conservation Program

– Back Injury Prevention Program

– Hazard Communication Program

– Respiratory Protection Program

– Heat and Cold Stress Monitoring and Control Program

– Pressure Vessel and Pipeline Safety Program

– Safe Driving Program

– Glint & Glare Safety Program

CEC Conditions of Certification During Construction and Operation

In addition to the Safety and Health Programs defined above, the CEC has provided Conditions of Certification that address additional safety issues. They are: the development and implementation of BMPs related to the storage and application of the herbicides used to control weeds beneath and around the solar array (Condition of Certification Worker Safety-2); to further protect worker safety during construction, provide a Construction Safety Supervisor who is knowledgeable of power plant construction activities, the applicable laws, ordinances, regulations, and standards, workplace hazards, and has the authority to take action to assure compliance (Condition of Certification Worker Safety-3); ensure that a portable automatic external defibrillator (AED) is located on-site during construction and operation and implement a program to ensure that workers are properly trained in its use and the equipment is maintained and functioning at all times (Condition of Certification Worker Safety-5); and development and implementation of an enhanced Dust Control Plan to address the potential hazards related to dust particulates, including the potential for Coccidioidomycosis or "Valley Fever" (Condition of Certification Worker Safety-9).

Consultant Recommended Requirements During Construction and Operation

The consultant team for the preparation of this document provides the following recommended requirements to be incorporated into the design of the RSEP and the construction and ongoing operation of the facility:

- Due to the remote location of the RSEP site, the applicant shall provide the following on-site: 1) during any construction activities, the applicant shall have a contract with a Riverside County Emergency Medical Service (RCEMS) certified company to provide Advance Life Support with equipment and supplies; 2) during any construction activities, the applicant shall have on-site a Basic Life Support Ambulance with a California certified driver for use during medical emergency events; and 3) during ongoing operation, the applicant shall have a contract with a RCEMS certified company to provide an Advance Life Support system with equipment and supplies.

- Due to the remote location of the RSEP site, during construction and operation of the RSEP, the applicant shall contract with an air medical service to respond to a service request from an on-site responder which would be a RCEMS certified company. Since the RSEP is located on private property and the on-site responder would be certified by Riverside County, the request for air medical service can be called directly without going through the County's dispatch system.

- During construction activities that require the type of situations addressed by California Department of Safety and Health (Cal/OSHA) Standards Part 1910, Occupational Safety and Health Administration Safety and Health Regulations, the contractor shall be required to provide evidence that a rescue team with NFPA 1670 level of training (Standard on Operations and Training for Technical Search and Rescue Incidents) will be available on-site for the extent of the construction activity.

- During operation, the daily on-site operational and maintenance personnel for the Central Receiver Tower shall be required to have NFPA 1006 level of training (Standard for Technical Rescuer Professional Qualifications).

- During operation, the contractor to perform the annual maintenance for the Central Receiver Tower and other areas that require work in confined space shall be required to provide evidence that their on-site personnel have NFPA 1670 level of training (Standard on Operations and Training for Technical Search and Rescue Incidents).

- The water trucks used to spray ionized water for the maintenance of the solar array of heliostats shall be available for use on wildland fires occurring within the RSEP site boundaries.

FINDINGS OF ANALYSIS

- The incorporation of the fire protection systems into the design of the RSEP and compliance with the Safety and Health Programs defined by the project applicant, CEC Conditions of Certification (Worker Safety-1, -2, -3, -5, -6, and -9), and the consultant recommendations during the construction activities and the ongoing operation of the RSEP would adequately protect workers and the public from health and safety hazards including the accidental release of hazardous materials and fire and explosion hazards. As a result, the potential increase in the demand for fire protection services provided by the RCFD would be considered less than significant.

- The RSEP site is located with the service area for RCFD Battalion 8. The closest RCFD fire stations to the RSEP site are Station No. 49 (Lake Tamarisk), Station No. 43 (Blythe), and Station No. 45 (Blythe Air Base). Based on existing workload capacity (estimated in 2009 to be 16 percent of the maximum workload capacity for the three fire stations), the addition of the RSEP to the RCFD service area would not justify the addition of an engine company, a fire station, or any additional staff.

- Since the RSEP would have a very limited need for fire protection services and the existing workload is well below the estimated maximum capacity for the three responding stations, the RSEP would not interfere with the ability of Station No. 49 (Lake Tamarisk), Station No. 43 (Blythe), and Station No. 45 (Blythe Air Base) to respond to traffic collision calls unrelated to the RSEP that occur in their service area.

- As a result of the additional average daily trips generated by construction worker traffic during the construction phase (30 months) of the RSEP and accident rate data, there is the potential for two additional vehicle accident with injuries to occur per year on the surrounding roadways in Riverside County. An accident with injuries may require a response from the RCFD. In addition, during the ongoing operation of the RSEP, there is no anticipated increase in vehicle accidents on the surrounding roadways in Riverside County. Therefore, the addition of the RSEP to the RCFD service area would result in an insignificant increase in responses from the RCFD due to vehicle accidents on the roadways in the project vicinity.

- The demand for emergency medical services by the RSEP would be eliminated through the incorporation of the consultant recommendations regarding: the provision of a contract with a RCEMS certified company and a Basic Life Support Ambulance with a California certified company during construction activities; the provision of a contract with a RCEMS certified company during ongoing project operation; and contract with an air medical service to respond to a service request from an on-site RCEMS certified responder. Therefore, the

addition of the RSEP to the RCFD service area would not require emergency medical responses from the RCFD.

- The demand for response to a technical rescue incident, including high angle rescue, low angle rescue, and confined space rescue, as a result of the RSEP would be eliminated through the incorporation of the consultant recommendations regarding: the requirement that, during construction activities that require the type of situations addressed by Cal/OSHA Standards Part 1910, Occupational Safety and Health Administration Safety and Health Regulations, the contractor have a rescue team with NFPA 1670 level of training (Standard on Operations and Training for Technical Search and Rescue Incidents) available on-site for the extent of the construction activity; the requirement that, during operation, the daily on-site operational and maintenance personnel for the Central Receiver Tower have NFPA 1006 level of training (Standard for Technical Rescuer Professional Qualifications); and the requirement that, during operation, the contractor to perform the annual maintenance for the Central Receiver Tower provide evidence that their on-site personnel have NFPA 1670 level of training (Standard on Operations and Training for Technical Search and Rescue Incidents). Therefore, the addition of the RSEP to the RCFD service area would not require responses to technical rescue incidents by the RCFD.

- The construction and operation of the RSEP would not contribute to a significant cumulative impact to fire protection services provided by the RCFD. The distance of the RSEP site from the other proposed solar plants in Riverside County suggests that they are not within the same cumulative setting and, due to the different technologies and their different potential for fire-related hazards, the very limited potential for the demand for fire protection services generated by the RSEP does not warrant a similar approach to addressing the incremental increase in services that could occur at those plants. In addition, due to the distance of the RSEP from the existing fire stations and the limited need for fire protection services, it would not be equitable to suggest that the RSEP contribute to an overall solution that would not directly address the RSEP's needs.

1.0 SCOPE OF STUDY

The following provides a summary of the scope of work accomplished in order to prepare this document:

1. Define relevant worker safety and fire protection standards, including the Riverside County Fire Department (RCFD) standards as defined in their Strategic Plan and Fire Master Plan.

2. Review the potential for hazards and risks at the Rice Solar Energy Project (RSEP) and the engineered systems and programs that will address those hazards and risks. This includes fire protection, hazardous materials, and personal injury hazards that could occur during construction and operation.

3. Review the potential for hazards and risks in the area surrounding the RSEP site. This includes the potential effects on adjacent properties and vehicle related accidents on the off-site roadways in Riverside County during construction and operation.

4. Review the construction and operation staffing, training in emergency response, personal protective requirements, operating and maintenance safety procedures, and emergency response procedures for the RSEP. This includes the Safety and Health Programs defined in the Rice Solar Energy Project Application for Certification (09-AFC-10) and identified as typical Conditions of Certification by the California Energy Commission (CEC) in Staff Assessment/Draft Environmental Impact Statement (SA/DEIS).

5. Evaluate the RCFD's resources available to respond to emergency situations in eastern Riverside County and the RSEP site, as well as their current operating level. This includes RCFD's current plans for expansion of service or other improvements in order to improve emergency response without regard for the RSEP.

6. Identify existing facilities that have potential hazards and risks of a similar scope and nature and, based on historical data, describe the level of emergency response services that they have received.

7. Identify the emergency response services anticipated to be provided to the RSEP by the RCFD, the project contractor, and the project operator. This includes a description of the potential frequency, duration, and type of emergency response events based on the RSEP's design and programs and previous experiences at the other facilities.

8. Determine the level of significance of the project impacts and cumulative impacts of the RSEP related to fire protection and other emergency response services. Address the risks to public health and safety that may be related to RCFD response to the RSEP, including being unable to respond to other emergency needs (i.e., resource drawdown). Provide recommendations to address potential hazards and/or minimize risks to public health and safety.

2.0 APPLICABLE FIRE PROTECTION STANDARDS

The following provides a discussion of the fire protection laws, ordinances, regulations, and standards that are applicable to the RSEP and fire personnel safety.

2.1 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

2.1.1 Federal Law

The following federal laws, ordinances, regulations, and standards related to worker safety and fire protection services are applicable to the construction and ongoing operation of the RSEP:

- *Title 29 U.S. Code (USC) section 651 et seq. (Occupational Safety and Health Act of 1970).* This act mandates safety requirements in the workplace with the purpose of "[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources" (29 USC § 651).

- *Title 29 Code of Federal Regulation (CFR) sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations).* These sections define the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector.

- *29 CFR sections 1952.170 to 1952.175.* These sections provide federal approval of California's plan for enforcement of its own Safety and Health requirements, in lieu of most of the federal requirements found in 29 CFR sections 1910.1 to 1910.1500.

2.1.2 State Law

The following State laws, ordinances, regulations, and standards related to worker safety and fire protection services are applicable to the construction and ongoing operation of the RSEP:

- *Title 8 California Code of Regulations (Cal Code Regulations) all applicable sections (Cal/OSHA regulations).* These sections require that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to safety matters during construction, commissioning, and operations of power plants, as well as safety around electrical components, fire safety, and hazardous materials use, storage, and handling.

- *24 Cal Code Regulations. section 3, et seq.* This section incorporates the current addition of the International Building Code.

- *Health and Safety Code section 25500, et seq.* This section presents Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at a facility.

- *Health and Safety Code sections 25500 to 25541.* These sections require a Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at a facility.

2.1.3 Local Ordinances, Regulations, and Standards

The following local ordinances, regulations, and standards related to worker safety and fire protection services are applicable to the construction and ongoing operation of the RSEP:

- *Riverside County Ordinance 457.* Adopts specific building, mechanical, plumbing, and electrical codes from sources such as the California Building Standards Commission with county-specific modifications.

- *Riverside County Ordinance 787.* Adopts the 2007 edition of the California Fire Code and portions of the 2007 edition of the California Building Code with county-specific modifications.

- *Riverside County Ordinance 615.* Establishes requirements for the use, generation, storage and disposal of hazardous materials within the County.

- *Riverside County Department of Environmental Health, Hazardous Materials Releases.* Adopts State requirements and guidelines to govern hazardous materials release response plans and inventories.

- *Chapter 22 of the 2007 California Fire Code.* This section of the California Fire Code addresses requirements for Motor Fuel-Dispensing Facilities and Repair Garages and has been adopted by Riverside County.

- *NFPA 30a.* This is the National Fire Protection Association (NFPA) code for Motor Fuel Dispensing Facilities and Repair Garages (2008 Edition) and is the industry standard for fuel depots.

- *Riverside County Fire Department Strategic Plan 2009-2029.* The Riverside County Board of Supervisors read and filed the Riverside County Fire Department Strategic Plan in February 2010. The Strategic Plan contains the organizational mission, vision, and values; six goals; strategies for each goal; an implementation action plan; and supporting analysis of an organization and performance audit.

- *Riverside County Fire Protection and Emergency Medical Master Plan.* The Riverside County Fire Department (RCFD) adopted the Master Plan in 1987. The Master Plan serves as the general guiding document for the provision of fire protection and emergency medical services in the cities and unincorporated areas of the County protected by the RCFD. The Master Plan established response criteria based on Insurance Services Office (ISO) and NFPA standards for four different land use categories defined for the County. The four land use categories are Category I - Heavy Urban, Category II - Urban, Category III - Rural, and Category IV – Outlying. For each of these land use categories, the Master Plan defines goals and objectives related to: fire station location; suppression initiated; full assignment in operation; and initial attack fire control. There are minute values assigned to each land use designation. Although these values have been adopted, there have been internal adjustments based on new information, operational needs, and advances in technology.

2.1.4 Other Standards

- *National Fire Protection Association No. 1006*. NFPA No. 1006 Standard for Technical Rescue Professional Qualifications, 2008 Edition, specifies the minimum job performance requirements for service rescuers in a technical rescue. This includes the application of special knowledge, skills, and equipment to safely resolve unique and/or complex rescue situations. This includes, but is not limited to, rope rescue, confined space rescue, trench rescue, structural collapse, and vehicle and machinery rescue. Since technical rescue is dangerous and technical rescuers are required to perform dangerous activities, technical rescuers shall complete all activities in the safest way possible and follow the applicable local, regional, and national safety standards.

- *National Fire Protection Association No. 1670*. NFPA No. 1670 Standard on Operations and Training for Technical Search and Rescue Incidents, 2009 Edition, specifies the level of functional capability for conducting operations at technical search and rescue incidents while minimizing risks to rescuers. This includes, but is not limited to, rope rescue, confined space rescue, trench rescue, structural collapse, and vehicle and machinery rescue.

2.2 FIRE PERSONNEL SAFETY

There are no mandatory federal or state regulations that direct the level of fire service staffing, response times, and outcomes to government agencies or private entities. As a result, communities and private facilities have the level of service that they can afford and not necessarily what they desire. However, regulations that address fire service require that, if fire services are provided at all, they must be done so with the safety of the fire fighters and citizens in mind. Therefore, the overall challenge is to design fire services within the context of reasonable risk compared to cost-effective outcome

expectations within the fiscal constraints that set limitations related to the provision of staffing, training, and equipment necessary to provide a safe and effective fire protection and emergency medical response force.

To provide for improved fire personnel safety, there are new State and federal laws and regulations that specifically address the provision of fire protection services. The following provides an overview of these:

- *1999 OSHA Staffing Policies*. Federal OSHA has applied the confined space safety regulations for work inside tanks and underground spaces to firefighters. As a result, in atmospheres which are IDLH (or Immediately Dangerous to Life and Health), it is required that: there be teams of two firefighters inside and two firefighters outside in constant communication; and the outside pair must be equipped and ready to rescue the inside pair. One of the outside "two-out" personnel can also be the incident commander (typically a chief officer) or fire apparatus operator. This situation occurs in building fires where the fire and smoke conditions are serious enough to require the wearing of self-contained breathing apparatus (SCBA). The outside personnel person must be fully suited-up in protective clothing, have a SCBA donned except for the face piece, meet all physical requirements to enter IDLH atmospheres, and be ready to immediately help with the rescue of interior firefighters in trouble. This is commonly called the "2-in/2-out" policy.

- *May 2010 National Staffing Guidelines.* The National Fire Protection Association (NFPA) Standards on Career (No. 1710) and Combination (mix of career and volunteer staff) (No. 1720) Fire Service Deployment were issued seven years ago. While these guidelines are advisory to local governments, as they start to become locally adopted and used, it develops momentum, forcing adoption by neighboring communities due to community of interest.

- *Hazardous Materials Incident Response and Command.* The on-scene Incident Commanders at Hazardous Materials Incidents must have certification compliant with NFPA No. 472, Standard for Emergency Response to Hazardous Materials Incidents. This is also now an OSHA requirement.

- *CAL/OSHA Requirements.* Among the elements required is a safety orientation for new employees, a hazard communications system for employees to communicate hazards to supervisors, the CAL/OSHA process for post-injury reviews, the required annual report of injuries, and a standard for safety work plans. Employers have many different responsibilities under the Occupational Safety and Health Act of 1970 and the Code of Federal Regulations (CFR). Initially, CAL/OSHA focused its efforts on the private sector. However, more recently it has turned its attention to the public sector and specifically fire protection services.

3.0 HAZARDS AND RISKS OF THE PROJECT

3.1 OVERVIEW OF PROJECT

3.1.1 Location and Setting

The RSEP is located on a 2,560-acre project site in the northeastern portion of unincorporated Riverside County, immediately south and adjacent to State Route (SR) 62 (at milepost 109), approximately 20 miles east of the intersection of SR 62/177, approximately 15 miles west of Vidal Junction, and 3 miles east of the abandoned town of Rice. The Arizona and California Railroad and the Colorado River Aqueduct are located immediately to the north of SR 62. The generating facility would be constructed on privately owned land and connected to the Western Area Power Administration's (Western) Parker-Blythe transmission line. The proposed transmission line corridor would extend southeast for approximately 10 miles, across Bureau of Land Management (BLM) managed public lands and two privately owned parcels, connecting with the Western Parker-Blythe transmission line within an existing BLM right-of-way.

The RSEP is a 150-megawatt (MW) concentrating solar thermal power project with a central receiver tower, sun-tracking heliostat field, and an integral thermal storage system. The power block and solar arrays would cover approximately 1,410 acres of the project site immediately to the south of SR 62. The power block and solar arrays are proposed to be located on the site of the Rice Army Air Field and a portion of Camp Rice, a World War II (WWII) desert training base that was part of the infantry and artillery Desert Training Center, California-Arizona Maneuver Area (DTC-CAMA).

The project site is located in a very sparsely settled portion of the Sonora Desert. The land surrounding the project site is primarily undeveloped desert land with the closest development located in Vidal Junction 15 miles to the east. The topography of the project site is generally flat, with elevations ranging from about 720 feet (220 meters) above sea level (ASL) at the southern boundary to approximately 820 feet (250 meters) ASL in the north, along SR 62. Rainfall amounts are minimal (approximately 3.7 inches annually) and are typically restricted to the winter months; however, amounts may vary from one to five inches per year. Areas may also receive scattered heavy rainfall during summer thunderstorms. Summer temperatures frequently exceed 100 degrees Fahrenheit and night frosts are common in winter months.

The RSEP site and the adjacent area is within a "Non-High Fire Hazard Severity Zone" according to the *Approved Very High Fire Hazard Severity Zones and Local Responsibility Areas* map, dated December 24, 2009, prepared by CAL FIRE and adopted by the County of Riverside.

3.1.2 Facility Technology

The RSEP is a 150-MW concentrating solar thermal power project with a central receiver tower, sun-tracking heliostat field, and an integral thermal storage system using liquid salt as the heat transfer and storage medium. The RSEP utilizes concentrating solar power (CSP) technology to generate power from sunlight by focusing energy onto a tower-mounted central receiver, using an integral thermal storage system. Because all the solar energy is focused on one central point, central receiver tower technology can achieve high temperatures, resulting in efficient energy collection, thermal storage, and electricity production systems. The thermal storage system allows renewable solar energy to be stored efficiently and used when needed. Since the storage system effectively decouples solar energy collection from electricity generation, a stable electricity supply can be produced.

Another attribute that distinguishes the RSEP's technology is the use of liquid salt as the heat transfer medium in the receiver. The salt, which is only circulated within the power block area, is non-flammable and enclosed within a contained system. In the liquid state, salt has viscosity and appearance similar to that of water and has several highly beneficial properties in solar applications. First, liquid salt has highly efficient heat transfer properties and retains heat for long periods with minimal losses. Second, the salt can be heated to high temperatures without degradation, resulting in efficient energy storage and electricity production systems. Finally, once melted and in the liquid state, the salt does not change phase and will not be subject to the negative operational impacts of intermittent cloud cover. Therefore, the combination of liquid salt as both the heat transfer and storage medium in a central receiver/tower application produces the following benefits:

- Decouples the collection of solar energy from the generation of electricity and hence can generate power at any time of day;
- Maximizes the cost-effectiveness of its storage system by heating the liquid salt to high temperatures with very little thermal loss in storage;
- Achieves high steam-turbine cycle efficiencies; and
- Allows power production to be dispatched during periods of peak demand, reducing the overall cost of power.

3.1.3 Project Characteristics

Design and Operation

The RSEP's technology generates power from sunlight by focusing energy from a field of mirrors called heliostats onto a central receiver. Liquid salt 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 steam generation system to produce steam. The steam is then used to generate electricity in a conventional steam turbine cycle. After exiting the steam generation system, the salt is sent to the cold salt thermal storage tank and the cycle is repeated.

The RSEP is designed to capture the maximum available solar energy by the collector and receiver systems whenever the sun is shining. The thermal storage system is sized such that the receiver and collector systems are able to continuously capture solar energy on long summer days. The thermal storage aspect of the liquid salt system allows the plant operator to collect solar energy in the morning and to shift power production to the hours in the day when power demand is greatest.

The salt has a melting temperature of approximately 450 degrees Fahrenheit (°F). In the liquid state, the salt has a viscosity and appearance similar to that of 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, continuously circulated through the steam receiver and steam generation systems. The salt does not degrade over time and will be used throughout the life of the facility.

At the start of any given operating day, the cold tank contains an adequate inventory of "cold" salt at 550°F. When sunrise begins, the receiver is filled with 550°F cold salt and is preheated by incremental redirection of small numbers of heliostats onto the receiver panels. The cold salt is returned to the cold tank. As the sun rises above the horizon, the full array of heliostats is directed onto the receiver and the salt temperature begins to rise as salt flow is established through the receiver panels. Salt flow through the receiver is recirculated back to the cold tank until the salt outlet temperature reaches 1,050°F. Salt is then transferred continuously from the cold salt tank, through the receiver, and into the hot salt tank. The quantity of liquid salt in the cold tank decreases while the quantity in the hot tank increases proportionally during solar energy collection.

As a decoupled process, a small amount of cold salt is circulated continuously through the steam generation system to produce small quantities of steam. The steam is continuously applied to the steam seals on the turbine to help keep the turbine warm while it rotates slowly on the turning gear when the steam turbine is not in production. When generation is scheduled, a hot salt pump will gradually send a fraction of the hot salt to mix with the cold salt flow through the steam generation system to increase the temperature of the steam generation equipment.

As steam production continues, salt flow will gradually be drawn more from the hot tank and when the appropriate steam pressure and temperature are achieved, the steam turbine generator is taken off the turning gear and rolled with steam. At this point, the hot salt pumps are brought to full flow. Salt flow through the steam generator system is then returned to the cold tank. Once the steam turbine is at full speed and heated to operating temperature, the turbine generator output breaker is closed and the generator is brought to full power. Throughout the day, cold salt flow is throttled to maintain receiver outlet temperature at the maximum temperature of 1,050°F.

Normally by late afternoon, salt inventory in the hot tank will have reached its peak, cold tank inventory will be near depletion, heat energy from the receiver will have greatly decreased, and cold salt flow will be further reduced by throttling flow to maintain receiver outlet temperature. Once the sun has dropped below the horizon, solar energy collection will cease, the receiver will be shut down, and the liquid salt will be drained back to the cold salt tank. The turbine generator, however, continues to operate until its scheduled shutdown or when hot salt inventory reaches its minimum preset level. Once the steam turbine generator is disengaged, the steam generator system is reduced in temperature and pressure at a controlled rate by gradually reducing hot salt flow. For overnight hold, the steam generation modules will be kept warm with a small flow of cold salt until ready for start-up the following morning. The turbine is also kept warm with auxiliary steam on its steam seals and on the turning gear with condenser vacuum maintained until the next operating cycle.

A primary advantage of the central receiver tower/liquid salt technology is that the salt can be heated to and stored at high temperatures. Steam can be generated at utility-standard temperatures and pressures, allowing the use of highly efficient steam turbines. The solar receiver tower is sized to ensure that the reflected energy from the heliostats at the outermost edge of the solar array will reach the receiver on top of the tower without being blocked or shaded by other heliostats located closer to the tower. The tower height and field size represent an economically optimized tower and solar array combination. In addition, aside from initial melting and conditioning of the salt prior to plant commissioning, no fossil fuels are required by RSEP technology.

Daily operating hours for the RSEP facility will vary based on the solar potential available daily and by season. Because the thermal storage system allows electricity generation to be scheduled independently from the collection of solar energy, the plant will be capable of producing power at a consistent output of 150 MW (net) annually. Thus, the plant will operate for longer periods during the summer months, when solar insolation is at its peak, and for shorter periods during the winter months when less solar energy is available for collection.

Principal Design Elements

The RSEP includes the following principal design elements:

- Up to 17,500, solar-tracking heliostats, or mirrors, each 672 square feet in area, in a circular array that will reflect solar energy to the solar receiver tower. The heliostats will be approximately 24 by 28 feet in size, and each will be mounted on a 12-foot-tall pedestal.

- A 538-foot-high concrete solar receiver tower with a 100-foot-tall solar receiver and 15-foot crane (for a total height of 653 feet).

- A liquid salt circulation and storage system featuring hot (approximately 1,050°F) and "cold" (approximately 550°F) salt storage tanks, capable of storing 70 million pounds (4.4 million gallons) of liquid salt (sodium nitrate/potassium nitrate mixture).

- A net 150-MW single condensing steam turbine generator (STG) system and associated equipment.

- A 20-cell ACC for cooling of the steam turbine exhaust.

- A 10.0-mile-long generation tie-line that will connect with the Western Parker-Blythe transmission line. The new facilities will be constructed to design standards that allow operation at 230 kilovolts (kV) (the design rating of Western's existing system). The new facilities will be operated at the voltage level of Western's system, currently 161 kV, which may be upgraded to 230 kV in the future. The generation tie-line will be constructed partly on federal land and partly on private land and will require construction of 4.6 miles of new unpaved access road and use of 5.4 miles of existing dirt roads.

- A new interconnection substation (currently estimated to be approximately 300 feet by 400 feet) located at the point of interconnection with Western's existing transmission line.

- An on-site switchyard to step up power from the STG for transmittal on the generator tie-line to the interconnection substation.

- Two new on-site wells for industrial water use and a water treatment system to provide water that will be treated for both domestic and process use.

- Three evaporation ponds, approximately 5 acres each, to process wastewater discharge from the water treatment system and oil/water separator.

- Two diesel fire-water pumps and two emergency diesel generator sets for backup emergency power supply.

- Extension of the existing 12-kV electrical distribution line from a location 175 feet east of the project parcel boundary for approximately 1.1 miles to the facility fenceline boundary.

Refer to Appendix A for a figure of the overall site plan and the arrangement of the power block area.

Facility Infrastructure

The entire facility, including heliostat fields, would be surrounded by a security fence, with a controlled access gate at the entry point from SR 62.

Raw water would be drawn from an existing on-site well and two new on-site wells and would be used for plant operations and as the source of potable water for construction activities. The well pumps would deliver water to a large raw water storage tank with a capacity of up to 840,000 gallons. The plant may include a potable water treatment system to treat raw water to potable quality water for personnel health, safety, and sanitary uses by operational staff around the facility.

Treatment of the sanitary wastewater generated during construction would be accomplished via an on-site septic system (appropriately sized septic tank and leach field) or contract pumping of the holding tanks by a licensed service company. Once construction is completed, the holding tanks would be removed and septic tank/leach field, if installed, would be removed or abandoned in place. Wastewater treatment for the RSEP during plant operations (kitchen and sanitary facilities) would include a septic tank and leach field. Solid wastes during both construction and plant operations would be trucked off-site for recycling and disposal.

Construction Activities

During construction, several areas on either side of the RSEP entrance road off SR 62 and within the project site boundaries, would be used as construction laydown areas and parking areas. Trucks transporting construction equipment and materials would use this entrance road for all deliveries. Access and deliveries along the transmission line route would use the existing or proposed extension to Rice Valley Road. All laydown and parking for transmission line and substation construction would occur within the proposed substation footprint, recorded easements, or BLM right-of way.

Construction of the generating facility is expected to begin in the first quarter of 2011 and continue for approximately 30 months, with as many as 438 workers on-site between months 8 and 20. The construction activities would generally occur from 5 a.m. until 7 p.m., six days a week, but could be extended to a 24-hour, 7-day schedule to meet scheduling demands or accommodate weather or worker availability.

Temporary construction facilities would include construction staging areas; employee parking areas; shop buildings, including an office trailer with electrical, telephone, and internet service; sanitary facilities; guard shack; portable batch plant; on-site dumpsters; fencing; and a temporary 10,000 gallon above-ground storage tank to supply diesel during construction of the facility. The temporary batch plant would include cement storage and a batching operation where the cement, water, and aggregate would be proportioned and mixed and would be located in the temporary laydown area or in the heliostat field on the existing concrete pad. Construction equipment would be staged near the location of active work and several areas within the footprint of the solar field

would also be used to store materials during the construction process. Temporary sanitary facilities for use by construction personnel would be located throughout the project site.

Project Operation

RSEP plans to begin operations during the third quarter of 2013. The RSEP is expected to employ up to 47 full-time employees and would operate year-round, seven days a week, 24 hours a day.

3.2 HAZARDS AND RISKS

3.2.1 Hazardous Materials Use

The RSEP would use hazardous materials during construction and project operation. Most of the hazardous materials that would be used for the project are required for facility maintenance (e.g., equipment lubrication) or water treatment, or would be in transformers and electrical switches. The project would comply with applicable laws and regulations for the storage of these materials to minimize the potential for a release of hazardous materials and emergency response planning would be conducted to address public health concerns regarding hazardous materials storage and use. The following provides a summary discussion of the hazardous materials used during the construction and operation phases of the RSEP. Refer to Section 5.5 of the RSEP AFC for a more detailed discussion.

Construction Phase

During the construction phase, with the exception of the salt, limited quantities of hazardous materials would be transported to and used on-site. These would be limited to gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. In addition, propane would be used to melt the sodium nitrate/potassium nitrate salt mixture and to condition the salt once it is melted. The storage of these materials would be carefully contained in designated hazardous materials storage areas and their use would be carefully prescribed in terms of hazardous materials handling plans, facility Safety and Health Programs, and the Hazardous Materials Business Plan (HMBP). As a result, defined Best Management Practices (BMPs) would be implemented by the contractor personnel.

In addition, the RSEP would be required to prepare a Risk Management Plan (RMP) in accordance with the California Accidental Release Program (CalARP). The CalARP program is designed to minimize the risk that extremely hazardous substances will cause immediate harm to the public and the environment. It requires that an owner or operator of a business handling more than the threshold quantity (TQ) of a listed regulated substance evaluate the use of the substance to determine the potential for and impacts of an accidental release. For the non-CalARP regulated materials, the risk of public exposure and serious hazard is low and would not be significant.

The only substance regulated under CalARP that may be used for the project in quantities larger than the federal TQ is aqueous ammonia. Therefore, the following discussion focuses on the potential hazards in the event of an accidental release of this substance. Due to its hazardous properties, ammonia is classified as a regulated substances and an accidental release of aqueous ammonia could present a human health hazard. The RSEP may utilize aqueous ammonia (19 percent NH_3) as an option for emissions control of the salt melting and conditioning equipment during plant commissioning activities. The ammonia would be brought on-site by a licensed contractor in tanker trucks. Liquid ammonia tanker trucks have capacities of up to 11,400 gallons. The capacity of the tanker trucks expected to be used for the RSEP is 7,500 gallons. A maximum of two tanker trucks would be on-site at any time; therefore, the maximum amount of ammonia on-site at the RSEP will be 15,000 gallons. The trucks would stay on-site until empty and no permanent ammonia storage tanks would be built for the RSEP. This is anticipated to occur for a period of three months during the conditioning of the salt.

In addition to CalARP, the storage and use of ammonia would be subject to the requirements of the California Fire Code, Article 80. Article 80 of the California Fire Code contains specific requirements for control of liquid and gaseous releases of hazardous materials. In response to this, the RSEP would provide secondary containment in the form of a bermed containment structure in the loading area that would be capable of holding the full contents of the truck tank and accumulated precipitation.

The potential hazards to facility workers at the RSEP would be mitigated by facility safety equipment, hazardous materials training, and emergency response planning. In a catastrophic accident, although the toxic ammonia gas could migrate offsite, due to the remoteness and isolated location of the RSEP site, it is unlikely to cause harm to the public. In addition, the RSEP power block, where the ammonia would be used during the liquid salt melting and conditioning process, is approximately 1 mile from SR 62, the nearest area with public use.

Related to the potential for fire and explosion hazards, under normal storage conditions, aqueous ammonia would not evaporate to the atmosphere because it is contained in a sealed tank that maintains the ammonia in a state that precludes evaporation. In the unlikely event that a release were to occur, ammonia could evaporate directly into the atmosphere. Ammonia vapor is combustible only within a narrow range of concentrations in air. It will ignite at a temperature of 1,204°F within vapor concentration limits between 15 percent and 28 percent and the presence of a strong ignition source. Outside conditions that would support these vapor concentrations are rare. The evaporation rate of ammonia is similar to water, which is sufficiently low that the lower explosive limit of 15 percent (or 15,000 ppm) would not be reached.

Operations Phase

Table 3-1 provides a summary of health hazards and flammability data for the hazardous materials that would be used and stored on-site during the project operation. During the ongoing operation of the RSEP, most of the hazardous substances that would be used are required for facility maintenance and lubrication of equipment or would be contained in transformers and electrical switches. Their storage would be contained in the designated hazardous materials storage areas and their use would be carefully prescribed in terms of hazardous materials handling plans, facility Health and Safety Plans, and the HMBP. For the non-CalARP regulated materials, the risk of public exposure and serious hazard is low and would not be significant.

It should be noted that the salt would remain in heated liquid form for the life of the RSEP. No solid sodium nitrate or potassium nitrate would be stored on-site and no makeup additional salt requirements are anticipated. The salt circulation and storage system is a closed loop system and, therefore, no salt handling operations would be required.

3.2.2 Accidental Release Hazards

The California Fire Code, Articles 79 and 80, includes specific requirements for the safe storage and handling of hazardous materials that would reduce the potential for a release or for mixing of incompatible materials. The design of the RSEP would incorporate state-of-the-art chemical storage and handling facilities in compliance with the current California Fire Code and other applicable federal, state, and local regulations. With the implementation of these measures, hazards related to the accidental release of hazardous materials would be less than significant.

3.2.3 Fire and Explosion Hazards

Table 3-1 describes the flammability for the hazardous materials that would be used and stored on-site. Article 80 of the California Fire Code requires all hazardous materials storage areas to be equipped with a fire extinguishing system and also requires ventilation for all enclosed hazardous material storage areas.

As indicated in Table 3-1, there are some flammable substances that would be used and stored on site. Diesel No. 2 would be used on-site as fuel for emergency and fire generators and pumps in a closed system. In addition, diesel would be used as a motor fuel consistent with motor fueling standards. Appropriate fire protection measures would be installed with the diesel tanks to prevent fires and spills. With proper storage and handling in accordance with the California Fire Code and the HMBP, the risk of fire and explosion as a result of diesel at the RSEP would be minimal.

The plant machinery lubrication oil used at the RSEP is flammable. In accordance with Article 80 of the California Fire Code, the storage area for the lubrication oil would be equipped with a fire extinguishing system and the lubrication oil would be handled in accordance with an HMBP approved by the Hazardous Materials Management Division

TABLE 3-1
TOXICITY, REACTIVITY, AND FLAMMABILITY OF HAZARDOUS SUBSTANCES STORED ON-SITE

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatible Substances	Flammability*
Potassium nitrate	Solid, white crystals (prior to salt melting); Liquid (during operations)	May irritate skin, eyes, digestive tract and respiratory tract. May be harmful if inhaled or swallowed.	Moisture, strong reducing agents, finely powdered metals, strong acids, organic materials, combustible materials, heat, sparks, and open flame	Non-flammable. Contact with combustible material may cause fire.
Sodium nitrate	Solid, white crystals (prior to salt melting); Liquid (during operations)	May irritate skin, eyes, digestive tract and respiratory tract. May be harmful if inhaled. Harmful if swallowed.	Strong acids, strong reducing agents, powdered metals, organic materials, alkali metals, alkaline earth metals, cyanides, thiocyanates, sources of ignition and combustible materials	Non-flammable. Contact with combustible material may cause fire.
Antiscalant	Liquid	Irritant to eyes and skin	Strong acids	Non-flammable
Aqueous ammonia (19% NH_3)	Colorless gas with pungent odor	Corrosive: Irritation to permanent damage from inhalation, ingestion, and skin contact	Acids, halogens (e.g., chlorine), strong oxidizers, salts of silver and zinc	Combustible, but difficult to burn
Cleaning chemicals/detergents	Liquid	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels
Diesel No. 2	Oily, light liquid	May be carcinogenic	Sodium hypochlorite, oxidizers.	Flammable
Hydraulic oil	Oily, dark liquid	Hazardous if ingested	Sodium hypochlorite, oxidizers.	Combustible
Lubrication oil	Oily, dark liquid	Hazardous if ingested	Sodium hypochlorite, oxidizers.	Flammable
Mineral insulating oil	Oily, clear liquid	Minor health hazard	Sodium hypochlorite, oxidizers	Can be combustible, depending on manufacturer
Oxygen scavenger	Colorless liquid	Irritant to eyes and skin	Strong oxidizers	Non-flammable
Phosphate treatment	Colorless liquid	Corrosive to eyes; moderate irritant to skin; respiratory tract irritant	Strong oxidizers, acids	Non-flammable

TABLE 3-1 (CONTINUED)
TOXICITY, REACTIVITY, AND FLAMMABILITY OF HAZARDOUS SUBSTANCES STORED ON-SITE

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatible Substances	Flammability*
Sodium hydroxide solution	Clear odorless liquid	Corrosive to skin, eyes, and digestive tract; respiratory tract irritant	Strong acids, metals	Non-flammable
Sodium hypochlorite solution	Colorless liquid with strong odor	Harmful by ingestion and inhalation, and through skin contact	Incompatible with strong acids, amines, ammonia, ammonium salts, reducing agents, metals, aziridine, methanol, formic acid, phenylacetonitrile	Non-flammable
Sodium hydrosulfide solution	Yellow to amber liquid	Corrosive. Chemical burns from contact with liquid or mist. Gas exposure causes eye irritation, headache, and dizziness.	Acids, strong oxidizers, strong alkalis, and excessive heat	Non-flammable
Steam condensate treatment	Colorless liquid	Corrosive to skin and eyes; toxic if ingested; respiratory tract irritant	May react with acids	Non-flammable
Amine	Clear, pale yellow liquid with phenolic-amine odor	Harmful if swallowed; causes irreversible eye damage	Hazardous polymerization will not occur	Non-flammable
Bromine	Dark red-brown	Causes eye and skin burns; may cause severe respiratory tract irritation with possible burns; may cause severe digestive tract irritation with possible burns; lachrymator (substance that increases the flow of tears); may cause central nervous system effects; may cause cardiac disturbances; may cause liver and kidney damage	Strong oxidizer	Contact with other material may cause fire

TABLE 3-1 (CONTINUED)
TOXICITY, REACTIVITY, AND FLAMMABILITY OF HAZARDOUS SUBSTANCES STORED ON-SITE

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatible Substances	Flammability*
Ferric chloride	Yellow-brown liquid	May cause irritation to the upper respiratory tract, skin, and eyes; repeated or prolonged exposure may cause conjunctivitis; material is toxic by ingestion	Most common metals, aluminum strong bases, strong oxidizing agents, potassium	N/A
Magnesium chloride	Deliquescent crystals solid	Slightly hazardous in case of skin contact (irritant, permeator), eye contact (irritant), ingestion, or inhalation	Reactive with oxidizing agents; non-reactive with moisture	Non-flammable
Sodium bisulfite	Yellow liquid	Corrosive: Irritation to eyes, skin, and lungs; may be harmful if digested	Strong acids and strong oxidizing agents	Non-flammable
Sodium carbonate	White solid (solid powder) and odorless	Hazardous in case of skin contact (irritant), eye contact (irritant), ingestion, or inhalation (lung irritant)	Reactive with acids; slightly reactive to reactive with moisture	Non-flammable
Sodium hydroxide	Solid, white, and odorless	Causes eye and skin burns; hygroscopic; may cause severe respiratory tract irritation with possible burns; may cause severe digestive tract irritation with possible burns	Incompatible with acids, water, flammable liquids, organic halogens, metals, aluminum, zinc, tin, leather, wool, and nitromethane	Non-flammable
Sodium hypochlorite	Colorless liquid with strong odor	Harmful by ingestion and inhalation, and through skin contact	Incompatible with strong acids, amines, ammonia, ammonium salts, reducing agents, metals, aziridine, methanol, formic acid, phenylacetonitrile	Non-flammable

TABLE 3-1 (CONTINUED)
TOXICITY, REACTIVITY, AND FLAMMABILITY OF HAZARDOUS SUBSTANCES STORED ON-SITE

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatible Substances	Flammability*
Sodium nitrite	White to slightly yellowish. Solid (powdered solid), odorless	Very hazardous in case of eye contact (irritant), ingestion, or inhalation; hazardous in case of skin contact (irritant); prolonged exposure may result in skin burns and ulcerations; overexposure by inhalation may cause respiratory irritation; severe overexposure can result in death; inflammation of the eye is characterized by redness, watering, and itching	Highly reactive with combustible materials, organic materials; reactive with reducing agents, metals, and acids; slightly reactive to reactive with moisture	Non-flammable
Stabilized bromine	Clear, light yellow liquid	Corrosive: Irritant to eyes and skin; harmful if ingested or inhaled	Strong acids, organic materials, sodium hypochlorite	Non-flammable
Sulfuric acid	Oily, colorless to slightly yellow, clear to turbid liquid; odorless	Causes severe eye and skin burns; causes burns of the mouth, throat, and stomach	Nitro compounds, carbides, dienes, alcohols (when heated): causes explosions Oxidizing agents, such as chlorates and permanganates: causes fires and possible explosions Allyl compounds and aldehydes: undergoes polymerization, possibly violent Alkalies, amines, water, hydrated salts, carboxylic acid anhydrides, nitriles, olefinic organics, glycols, aqueous acids: causes strong exothermic reactions	Non-flammable

TABLE 3-1 (CONTINUED)
TOXICITY, REACTIVITY, AND FLAMMABILITY OF HAZARDOUS SUBSTANCES STORED ON-SITE

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatible Substances	Flammability*
Trisodium phosphate	White crystal	Severe irritant; causes pain and redness; prolonged or repeated contact may cause mild burn	Strong acids	Non-flammable
Propylene glycol	Colorless, clear liquid	Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant, permeator), eye contact (irritant), or inhalation.	Reactive with oxidizing agents, reducing agents, acids, alkalis Hygroscopic: Container must be kept tightly closed Incompatible with chloroformates, strong acids (nitric acid, hydrofluloric acid), caustics, aliphatic amines, isocyanates, strong oxidizers, acid anhydrides, silver nitrate, reducing agents	May be combustible at high temperature
Cleaning chemicals/detergents	Liquid	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels
Laboratory reagents	Liquid and solid	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels
Acetylene	Colorless gas	Asphyxiant gas	Oxygen and other oxidizers including all halogens and halogen compounds; forms explosive acetylide compounds with copper, mercury, silver, brasses containing >66 percent copper and brazing materials containing silver or copper	Flammable
Argon	Colorless, odorless gas	Asphyxiant gas	None	Non-flammable

TABLE 3-1 (CONTINUED)
TOXICITY, REACTIVITY, AND FLAMMABILITY OF HAZARDOUS SUBSTANCES STORED ON-SITE

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatible Substances	Flammability*
Carbon dioxide	Colorless, odorless gas	Exposure can cause nausea and respiratory problems; oxygen levels below 19.5% may cause asphyxia; high concentrations may cause vasodilation leading to circulatory collapse	Certain reactive metals, hydrides, moist cesium monoxide, or lithium acetylene carbide diammino may ignite Passing carbon dioxide over a mixture of sodium peroxide and aluminum or magnesium may cause explosion	Non-flammable
Hydrogen	Colorless, odorless, flammable gas or a colorless, odorless, cryogenic liquid	Asphyxiation, by displacement of oxygen	Strong oxidizers (e.g., chlorine, bromine, oxygen, oxygen difluoride, and nitrogen trifluoride); oxygen/hydrogen mixtures can explode on contact with a catalyst such as platinum	Flammable
Oxygen	Colorless, odorless, tasteless gas	Therapeutic overdoses can cause convulsions; liquid oxygen is an irritant to skin.	Hydrocarbons, organic materials	Oxidizing agent; actively supports combustion
Nitrogen	Nontoxic, colorless, odorless gas	Can cause rapid suffocation when concentrations are sufficient to reduce oxygen levels below 19.5%	None	Non-flammable
Propane	Propane gas (odorant added to provide odor)	Asphyxiant gas; causes frostbite to area of contact	Strong oxidizing agents and high heat	Flammable
EPA protocol gases	Gas	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels
Cleaning chemicals	Liquid	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels

TABLE 3-1 (CONTINUED)
TOXICITY, REACTIVITY, AND FLAMMABILITY OF HAZARDOUS SUBSTANCES STORED ON-SITE

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatible Substances	Flammability*
Paint	Various colored liquid	Refer to individual container labels	Refer to individual container labels	Refer to individual container labels

*Per Department of Transportation regulations, under 49 CFR 173: "Flammable" liquids have a flash point less than or equal to 141 degrees Fahrenheit; "Combustible" liquids have a flash point greater than 141° F.

Note: Data were obtained from Material Safety Data Sheets (MSDSs) and Lewis, 1991.

Source: Rice Solar Energy Project, Application for Certification, October 21, 2009.

(HMMD) of the Riverside County Department of Environmental Health (RCDEH), the RCFD, and the CEC. With proper storage and handling of flammable materials in accordance with the California Fire Code and the HMBP, the risk of fire and explosion at the RSEP would be minimal.

Acetylene would be used for welding. It would be stored and used in the shop areas protected with automatic fire protection systems. With proper storage and handling of flammable materials in accordance with the California Fire Code and the HMBP, the risk of fire and explosion at the RSEP would be minimal.

Although Table 3-1 indicates the use of hydrogen, since the preparation of the table, it was determined that the size of the plant did not warrant its use. Therefore, there would be no risk of fire or explosion related to the use of hydrogen.

The propane fuel used at the RSEP is flammable and could leak from the storage tanks or tanker trucks that bring the fuel. Propane is a colorless gas, with a slightly sweet odor (odorant gases are added to give propane a strong unpleasant odor for safety reasons), and it is heavier than air. It is flammable when mixed in air at concentrations of 2.2 to 9.5 percent. Although propane, would pose a risk of fire and explosion if an accidental release were to occur, this risk would be reduced through compliance with applicable codes, regulations, and industry design/construction standards.

3.2.4 Other Worker Safety Hazards

During construction activities, ongoing daily operation and maintenance, and annual maintenance of the Central Receiver Tower and other facilities, there would be the potential for other hazards to worker safety related to a technical rescue situation. The Central Receiver Tower is a 538-foot high concrete tower with a 100-foot tall solar receiver and a 15-foot crane (for a total of 653 feet). There would be a strict operating policy that, during daily operations, no operating or maintenance personnel would be allowed inside the tower while the receiver is on line, capturing the energy of the sun. All maintenance, testing, or other operations in the tower would be done after all liquid salt has been evacuated. The tower, which has no flammable or hazardous materials, would have stairs, an elevator, and a hoist system that can be used during an emergency event. In accordance with the safety plans defined by the project applicant, a first aid kit and automatic external defibrillator (AED) would be positioned within the upper portion of the tower for use by RSEP personnel during an emergency.

All construction, operation, and maintenance on the RSEP site would occur consistent with the California Department of Safety and Health (CAL/OSHA) Standards Part 1910, Occupational Safety and Health Administration Safety and Health Regulations. Due to the height of the tower and the confined space in the interior, the daily operations and maintenance personnel for the Central Receiver Tower as well as other facilities with potential technical rescue conditions would have NFPA 1006 level of training (Standard for Technical Rescuer Professional Qualifications). Major maintenance activity for the Central Receiver Tower, including to the exterior of the tower and the solar receiver as well as other facilities with potential technical rescue conditions, would occur on an

annual basis by a contractor with personnel that would have NFPA 1670 level of training (Standard on Operations and Training for Technical Search and Rescue Incidents). These requirements are further reinforced through the consultant recommendations provided in Section 4.0 of this FNA document. Upon compliance with CAL/OSHA Standards Part 1910 and the implementation of the consultant recommended requirements related to NFPA 1006 and NFPA 1670 level of training, the hazards related to other worker safety hazards during construction, operation, and maintenance of the RSEP would be less than significant.

3.2.5 Off-site Vehicle Accidents in Vicinity of RSEP Site

During construction activities and ongoing operation of the RSEP, there would be the potential for vehicle hazards with injuries to occur on the Riverside County roadways in the vicinity of the project site. To provide an evaluation of this potential off-site hazard, the accident rates of these roadways were determined based on historical data obtained from the California Department of Transportation (Caltrans) and the Statewide Integrated Traffic Records System which compiles incidents reported by the California Highway Patrol. Table 3-2 provides a summary of the accidents (injury and non-injury) and the corresponding accident rates for the years 2007, 2008, and 2009 that occurred on the Riverside County roadways in the vicinity of the project site. Table 3-3 provides a summary of the injury-only accidents (ones which may require emergency response by the RCFD) and the corresponding accident rates for the years 2007, 2008, and 2009 that occurred on the Riverside County roadways in the vicinity of the project site.

Utilizing the estimated accident rates and the additional traffic that would be added to these roadways as a result of the RSEP, the potential accidents that could occur during the construction and ongoing operation of the RSEP were estimated. Table 3-4 provides an estimate of the accidents (injury and non-injury) that could occur on the Riverside County roadways in the vicinity of the project site. Table 3-5 provides an estimate of the injury accidents (ones which may require emergency response by the RCFD) that could occur on the Riverside County roadways in the vicinity of the project site.

As indicated in Table 3-5, with the additional average daily trips generated by construction worker traffic during the construction phase (30 months) of the RSEP and accident rate data, there is the potential for two additional vehicle accident with injuries to occur per year on the surrounding roadways in Riverside County. An accident with injuries may require a response from the RCFD. In addition, during the ongoing operation of the RSEP, there is no anticipated increase in vehicle accidents on the surrounding roadways in Riverside County. Therefore, hazards to worker safety due to off-site vehicle accidents on the roadways in the project vicinity would be less than significant.

TABLE 3-2
ACCIDENTS (INJURY AND NON-INJURY) ON ROADWAYS IN RIVERSIDE COUNTY WITHIN VICINITY OF RSEP SITE

Roadway Link	Existing ADT[1]	No. of Reported Accidents[2]			Highest No. of Accidents Over Period	Accident Rate[3]
		2007	2008	2009		
Hwy. 62 west of Hwy. 177	500	0	7	2	7	0.0140
Hwy. 62 east of Hwy. 177, west of Rice	1,600	2	4	4	4	0.0025
Hwy. 62 east of Rice, west of Hwy. 95	1,600	0	0	0	0	0.0000
Hwy. 62 east of Hwy. 95	9,700	0	0	0	0	0.0000
Hwy. 95 between Hwy. 62 and Interstate 10	1,900	0	0	0	0	0.0000
Hwy. 177 between Interstate 10 and Hwy. 62	1,300	7	16	18	18	0.0138

Notes:

[1] Source: Caltrans Traffic and Vehicle Data Systems Unit, Webpage Name: 2008 All Traffic on CSHS (California State Highway System), URL Address: http://traffic-counts.dot.ca.gov/2008all.htm.

[2] Source: Statewide Integrated Traffic Records System, Data Run Date October 12, 2010.

[3] Gross number of accidents per ADT per year for each roadway link, based on highest number of accidents during 2007-2009 divided by existing ADT.

TABLE 3-3
ACCIDENTS INVOLVING INJURIES ON ROADWAYS IN RIVERSIDE COUNTY WITHIN VICINITY OF RSEP SITE

Roadway Link	Existing ADT[1]	No. of Reported Accidents[2]			Highest No. of Accidents Over Period	Accident Rate[3]
		2007	2008	2009		
Hwy. 62 west of Hwy. 177	500	0	4	2	4	0.0080
Hwy. 62 east of Hwy. 177, west of Rice	1,600	2	3	1	3	0.0019
Hwy. 62 east of Rice, west of Hwy. 95	1,600	0	0	0	0	0.0000
Hwy. 62 east of Hwy. 95	9,700	0	0	0	0	0.0000
Hwy. 95 between Hwy. 62 and Interstate 10	1,900	0	0	0	0	0.0000
Hwy. 177 between Interstate 10 and Hwy. 62	1,300	7	11	12	12	0.0092

Notes:

[1] Source: Caltrans Traffic and Vehicle Data Systems Unit, Webpage Name: 2008 All Traffic on CSHS (California State Highway System), URL Address: http://traffic-counts.dot.ca.gov/2008all.htm.

[2] Source: Statewide Integrated Traffic Records System, Data Run Date October 12, 2010.

[3] Number of accidents involving injuries per ADT per year for each roadway link, based on highest number of accidents during 2007-2009 divided by existing ADT.

TABLE 3-4
POTENTIAL ADDITIONAL ACCIDENTS (INJURY AND NON-INJURY) ON ROADWAYS IN RIVERSIDE COUNTY WITHIN VICINITY OF RSEP SITE WITH CONSTRUCTION AND OPERATION OF RSEP

Roadway Link	Existing ADT[1]	Additional ADT Due to Project[2]		Accident Rate[3]	Potential Additional Accidents	
		During Construction	During Operation		During Construction	During Operation
Hwy. 62 west of Hwy. 177	500	87	10	0.0140	1.2	0.1
Hwy. 62 east of Hwy. 177, west of Rice	1,600	139	15	0.0025	0.3	0.0
Hwy. 62 east of Rice, west of Hwy. 95	1,600	387	36	0.0000	0.0	0.0
Hwy. 62 east of Hwy. 95	9,700	153	18	0.0000	0.0	0.0
Hwy. 95 between Hwy. 62 and Interstate 10	1,900	207	18	0.0000	0.0	0.0
Hwy. 177 between Interstate 10 and Hwy. 62	1,300	52	5	0.0138	0.7	0.1

Notes:

[1] Source: Caltrans Traffic and Vehicle Data Systems Unit, Webpage Name: 2008 All Traffic on CSHS (California State Highway System), URL Address: http://traffic-counts.dot.ca.gov/2008all.htm.

[2] Source: Rice Solar Energy Project Application for Certification, Section 5.12, Traffic and Transportation, October 2009.

[3] Gross number of accidents per ADT per year for each roadway link (see Table 1).

TABLE 3-5
POTENTIAL ADDITIONAL ACCIDENTS INVOLVING INJURIES ON ROADWAYS IN RIVERSIDE COUNTY WITHIN VICINITY OF RSEP SITE WITH CONSTRUCTION AND OPERATION OF RSEP

Roadway Link	Existing ADT[1]	Additional ADT Due to Project[2]		Accident Rate[3]	Potential Additional Accidents	
		During Construction	During Operation		During Construction	During Operation
Hwy. 62 west of Hwy. 177	500	87	10	0.0080	0.7	0.1
Hwy. 62 east of Hwy. 177, west of Rice	1,600	139	15	0.0019	0.3	0.0
Hwy. 62 east of Rice, west of Hwy. 95	1,600	387	36	0.0000	0.0	0.0
Hwy. 62 east of Hwy. 95	9,700	153	18	0.0000	0.0	0.0
Hwy. 95 between Hwy. 62 and Interstate 10	1,900	207	18	0.0000	0.0	0.0
Hwy. 177 between Interstate 10 and Hwy. 62	1,300	52	5	0.0092	0.5	0.0

Notes:

[1] Source: Caltrans Traffic and Vehicle Data Systems Unit, Webpage Name: 2008 All Traffic on CSHS (California State Highway System), URL Address: http://traffic-counts.dot.ca.gov/2008all.htm.

[2] Source: Rice Solar Energy Project Application for Certification, Section 5.12, Traffic and Transportation, October 2009.

[3] Number of accidents involving injuries per ADT per year for each roadway link (see Table 1).

4.0 FIRE PROTECTION SYSTEMS AND SAFETY AND HEALTH PROGRAMS

The following provides a summary discussion of the fire protection systems incorporated into the design of the RSEP and the Safety and Health Programs that address the potential hazards and risks with the construction and operation of the RSEP. Refer to Section 5.16, Worker Health and Safety, of the RSEP AFC for a detailed discussion.

4.1 FIRE PROTECTION SYSTEMS

Refer to Section 3.0 of this document for a discussion of the technology and components of the RSEP. The fire protection systems for the RSEP are designed to protect personnel and limit property loss and plant downtime in the event of a fire.

Refer to Appendix B for the Rice Solar Energy Project Fire Protection Plan. The Plan defines the fire protection design including the fire protection water supply for the buildings and the site, the fire protection systems, the functional requirements, and the applicable codes and standards. The following describes the key components of the Plan.

4.1.1 Water Distribution System for Fire Protection

The primary source of fire protection water for the RSEP would be the raw water storage tank. Two sets of diesel fire pumps would be used at the RSEP in accordance with relevant National Fire Protection Association (NFPA) guidelines (NFPA-22, 850, etc.). Each set of fire pumps would be provided with an electric jockey pump and electric motor-driven main fire pump to increase the water pressure in the plant fire main to the level required to serve all fire fighting systems. In addition, each fire pump would have a back-up diesel-engine-driven fire pump to pressurize the fire loop if the power supply to the electric-motor-driven main fire pump fails. A fire pump controller would be provided for each fire pump. One fire pump set would serve the fire needs within the power block and the central receiver tower and the second fire pump set would serve the needs at the administration/shop areas outside the perimeter of the heliostat field.

Each set of fire pumps would discharge to a dedicated fire-water loop piping system consisting of both underground piping and aboveground hydrants, sprinklers, and risers. Fire hydrants will be spaced approximately 250 feet apart around the loop piping in the main plant area. A minimum of two dry type fire hydrants will be installed at strategic locations near each major plant building or structure. During normal service, the jockey pump would operate randomly in order to maintain normal pressure within the fire-water loop. Both the fire hydrants and the fixed suppression systems would be supplied from the main fire-water loop. Fixed fire-suppression systems would be installed at determined fire risk areas such as the steam turbine lube oil and hydraulic oil equipment (see discussion below). In addition, sprinkler systems would be installed in the administration building, shop maintenance building, water treatment building, and fire pump enclosures as required by NFPA and local code requirements. Handheld fire

extinguishers of the appropriate size and rating would be located throughout the facility in accordance with NFPA 10 and subject to detail design and requirements established by local authorities.

4.1.2 Fire Protection Systems for Individual Plant Components

The following describes the fire protection systems that would be provided for the individual components of the RSEP:

- *Central Receiver Tower* - The Central Receiver Tower has no flammable or hazardous materials. The Central Receiver Tower would have stairs, an elevator, and a hoist system that can be used during an emergency event. In accordance with the safety plans, a first aid kit and automatic external defibrillator (AED) would be positioned within the upper portion of the tower for use by plant staff in an emergency. Prior to operation, the tower would be closed and a staff accountability check would be conducted to ensure that no personnel remain within it. During the daily operations, no operating or maintenance personnel would be allowed inside the tower while the receiver is on line, capturing the energy of the sun. All maintenance, testing, or other operations in the tower would be done after all liquid salt has been evacuated.

- *Packaged Electrical and Electronics Control Cabinet (PEECC) in the Central Receiver Tower* - The PEECC in the Central Receiver Tower would be provided with smoke detection and a Carbon Dioxide Extinguishing System per NFPA 12.

- *Sun-Tracking Heliostat Field* - The heliostats would be powered by three salvo motors that are fully-enclosed, insulated, and protected by a circuit protection device in the event that the motor experiences a failure. The solar array of heliostats would be washed every 10 days by ionized water sprayed from trucks that travel on service roads. The ground surface beneath and around the solar array would be treated with herbicides to control weed growth.

- *Steam Turbine Generator Bearings* - The steam turbine generator bearings automatic preaction spray system would utilize rate compensated heat detectors to actuate the supply valve and fixed temperature closed spray nozzles to limit water discharge to the affected bearings only. The Steam Turbine Bearing protection shall be designed in accordance with NFPA 850 and the Electric Power Research Institute (EPRI) Document – EPRINP-4144, Turbine Generator Fire Protection by Sprinkler System, Project No.1843-2, Final Report 1985.

- *Steam Turbine Under-floor* - Any area under the operating floor of the steam turbine would be provided with an automatic dry-pipe sprinkler system.

- *Steam Turbine Lube Oil Reservoir, Conditioner, Piping and Seal Oil Unit* - This area would be provided with an automatic deluge spray system.

- *Control Room, DCS Room, and Tele-Com Room of the Administration or Operations/Control Building* - These areas of the Administration or Operations/Control building would be provided with an automatic preaction sprinkler system.

- *Remainder of Administration or Operations/Control Building* - The rest of the building would be provided with a wet pipe sprinkler system. The system would be designed to provide water at a minimum sprinkler density as required by the occupancy of the area. The entire building would be provided with a Class II standpipe system and manual pull stations.

- *Maintenance/Warehouse Building* - The Maintenance/Warehouse Building would be provided with automatic wet pipe sprinkler system. The system would be designed to provide water at a minimum sprinkler density as required by the occupancy of the area. The entire building would also be provided with a Class II standpipe system and manual pull stations.

- *Generator Step-Up (GSU) Transformer and Unit Auxiliary Transformers (UAT)* - The GSU will be provided with a deluge spray system. The systems would be actuated by dry pilot detection. The UAT would also be provided with a deluge spray system with dry pilot detection.

- *Fire Pump House* - A wet pipe sprinkler system would be provided for the fire pump house

- *Water Treatment Building* - The water treatment building would be provided with an automatic wet pipe sprinkler. The building will be provided with a Class II standpipe and manual pull stations.

- *Power Distribution Center Building* - The Power Distribution Center Building would be provided with smoke detection.

4.2 SAFETY AND HEALTH PROGRAMS

4.2.1 Construction Safety and Health Programs

During the construction phase, the RSEP would include the implementation of the Safety and Health Programs listed below. Prior to the start of construction, detailed programs and plans would be provided to the CEC and the RCFD as a Condition of Certification. They are as follows:

- Injury and Illness Prevention Program

- Fire Protection and Prevention Program

- Personal Protective Equipment Program

- First Aid, CPR, and Automated External Defibrillator Program
- Emergency Action Program/Plan
- Construction Safety Programs
  - – Motor Vehicle and Heavy Equipment Safety Program
  - – Forklift Operation Program
  - – Excavation/Trenching Program
  - – Fall Protection Program
  - – Scaffolding/Ladder Safety Program
  - – Articulating Boom Platforms Program
  - – Crane and Material Handling Program
  - – Hazardous Waste Program
  - – Hexavalent Chromium Program (Required for Hot Work on Stainless Steel)
  - – Hot Work Safety Program
  - – Employee Exposure Monitoring Program
  - – Electrical Safety Program
  - – Lock-out/Tag-Out Program
  - – Permit-required Confined-space Entry Program
  - – Hand and Portable Power Tool Safety Program
  - – Powder-actuated Tool Safety Program
  - – Housekeeping and Material Handling and Storage Program
  - – Hearing Conservation Program
  - – Back Injury Prevention Program
  - – Hazard Communication Program
  - – Respiratory Protection Program
  - – Heat and Cold Stress Monitoring and Control Program
  - – Pressure Vessel and Pipeline Safety Program

4.2.2 Operation Safety and Health Programs

After the completion of the construction phase and the commencement of the operation of the RSEP, the construction Safety and Health Programs would transition into an operation-oriented program reflecting the hazards and controls necessary. Detailed programs and plans would be submitted to the CEC and the RCFD as a Condition of Certification. They are as follows:

- Injury and Illness Prevention Program
- First Aid, CPR, and Automated External Defibrillator Program
- Fire Protection and Prevention Program
- Emergency Action Program/Plan
- Personal Protective Equipment Program
- Plant Operation Safety Program
  - – Motor Vehicle and Heavy Equipment Safety Program
  - – Forklift Operation Program
  - – Excavation/Trenching Program
  - – Fall Protection Program
  - – Scaffolding/Ladder Safety Program
  - – Articulating Boom Platforms Program
  - – Crane and Material Handling Program
  - – Hot Work Safety Program
  - – Workplace Ergonomics Program
  - – Employee Exposure Monitoring Program
  - – Electrical Safety Program
  - – Lock-out/Tag-Out Program
  - – Permit-required Confined-space Entry Program
  - – Hand and Portable Power Tool Safety Program
  - – Housekeeping and Material Handling and Storage Program
  - – Hearing Conservation Program

– Back Injury Prevention Program

– Hazard Communication Program

– Respiratory Protection Program

– Heat and Cold Stress Monitoring and Control Program

– Pressure Vessel and Pipeline Safety Program

– Safe Driving Program

– Glint & Glare Safety Program

4.2.3 CEC Conditions of Certification During Construction and Operation

In addition to the Safety and Health Programs defined above, the CEC has provided Conditions of Certification that address additional safety issues. They are: the development and implementation of BMPs related to the storage and application of the herbicides used to control weeds beneath and around the solar array (Condition of Certification Worker Safety-2); to further protect worker safety during construction, provide a Construction Safety Supervisor who is knowledgeable of power plant construction activities, the applicable laws, ordinances, regulations, and standards, workplace hazards, and has the authority to take action to assure compliance (Condition of Certification Worker Safety-3); ensure that a portable automatic external defibrillator (AED) is located onsite during construction and operation and implement a program to ensure that workers are properly trained in its use and the equipment is maintained and functioning at all times (Condition of Certification Worker Safety-5); and development and implementation of an enhanced Dust Control Plan to address the potential hazards related to dust particulates, including the potential for Coccidioidomycosis or "Valley Fever" (Condition of Certification Worker Safety-9).

4.3 CONSULTANT RECOMMENDED REQUIREMENTS DURING CONSTRUCTION AND OPERATION

The consultant team for the preparation of this document provides the following recommended requirements to be incorporated into the design of the RSEP and the construction and ongoing operation of the facility:

- Due to the remote location of the RSEP site, the applicant shall provide the following on-site: 1) during any construction activities, the applicant shall have a contract with a Riverside County Emergency Medical Service (RCEMS) certified company to provide Advance Life Support with equipment and supplies; 2) during any construction activities, the applicant shall have on-site a Basic Life Support Ambulance with a California certified driver for use during medical emergency events; and 3) during ongoing operation, the applicant shall have a contract with a RCEMS certified company to provide an Advance Life Support system with equipment and supplies.

- Due to the remote location of the RSEP site, during construction and operation of the RSEP, the applicant shall contract with an air medical service to respond to a service request from an on-site responder which would be a RCEMS certified company. Since the RSEP is located on private property and the on-site responder would be certified by Riverside County, the request for air medical service can be called directly without going through the County's dispatch system.

- During construction activities that require the type of situations addressed by California Department of Safety and Health (Cal/OSHA) Standards Part 1910, Occupational Safety and Health Administration Safety and Health Regulations, the contractor shall be required to provide evidence that a rescue team with NFPA 1670 level of training (Standard on Operations and Training for Technical Search and Rescue Incidents) will be available on-site for the extent of the construction activity.

- During operation, the daily on-site operational and maintenance personnel for the Central Receiver Tower shall be required to have NFPA 1006 level of training (Standard for Technical Rescuer Professional Qualifications).

- During operation, the contractor to perform the annual maintenance for the Central Receiver Tower and other areas that require work in confined space shall be required to provide evidence that their on-site personnel have NFPA 1670 level of training (Standard on Operations and Training for Technical Search and Rescue Incidents).

- The water trucks used to spray ionized water for the maintenance of the solar array of heliostats shall be available for use on wildland fires occurring within the RSEP site boundaries.

5.0 RIVERSIDE COUNTY FIRE DEPARTMENT RESOURCES

5.1 FIRE DEPARTMENT RESOURCES

The Riverside County Fire Department (RCFD) is one of the largest regional fire service organizations in California. According to the *Riverside County Fire Department Strategic Plan 2009-2029*, the County supplements its fire staff of 175 by contracting with the State of California Department of Forestry and Fire Protection (CAL FIRE) for an additional 1,077 employees to provide fire protections services, resulting in a total of 1,252 personnel. Through their partnership with CAL FIRE, the RCFD serves 19 partner agencies and has approximately 700 volunteers. They serve an area of 7,004 square miles with approximately 1.3 million residents.

The RCFD responds to both urban and wildfire emergencies. According to the *Riverside County Fire Department/CAL FIRE 2009 Yearly Emergency Incident Statistics* report, in 2009, the RCFD responded to 115,718 total incidents with a daily average of 317 calls for service.

The RCFD operates 93 fire stations in six divisions. These divisions are comprised of 17 line battalions providing fire suppression, emergency medical, technical rescue, fire prevention, and related services. The RSEP site is located within the East Desert Division which encompasses the lower Coachella Valley and extends east out to the Arizona State line. There are two battalions (Battalions 6 and 8), nine permanent staffed fire stations, and two all-volunteer fire stations within the East Desert Division. The RSEP site is located within Battalion 8.

Table 5-1 provides the fire stations that are the closest to the RSEP site and their respective distances and response times to the site. These stations are staffed full-time, 24 hours seven days per week, with a minimum three person crew including Paramedics operating a "Type-1" structural fire fighting apparatus.

Table 5-2 provides the annual emergency incident statistics for the year 2009 for the three RCFD stations closest to the RSEP site. As indicated in Table 5-2, these three stations responded to a total of 1,092 calls in the year 2009; none of which were to a fire at a commercial land use. In addition, these three fire stations responded to a total of 615 emergency medical calls and 198 traffic collisions (typically requiring emergency medical aid) in the year 2009 and, therefore, 74 percent of the total calls received by the three stations were for emergency medical aid and not fire-related.

Based on a "reasonable standard" for an engine company workload of 6.5 calls per day (or 2,190 calls on an annual basis), the three fire stations closest to the RSEP site have the capability of responding to a total of 6,570 calls per year. The total of 1,092 annual calls in the year 2009 represents 16 percent of the maximum workload capacity for these three

TABLE 5-1
CLOSEST FIRE STATIONS TO RSEP

Station No.	Station Address	Distance From Project Site (Miles)	Est. Response Time (Hours After Dispatch)
RCFD Station No. 49 (Lake Tamarisk)	43880 Lake Tamarisk, Desert Center, CA 92239	60	1:00 to 1:15
RCFD Station No. 43 (Blythe)	140 West Barnard Street, Blythe, CA 92225	75	1:30
RCFD Station No. 45 (Blythe Air Base)	17280 W. Hobson Way, Blythe, CA 92225	77	1:30

Source: Riverside County LMS Conditions of Approval, September 1, 2010. Based on letter from Captain Jason Neuman, Strategic Planning Bureau, Riverside County Fire Department, August 4, 2010.

TABLE 5-2
CLOSEST FIRE STATIONS TO RSEP
ANNUAL EMERGENCY INCIDENT STATISTICS FOR 2009

Station No.	Commercial Fire	False Alarm	Hazardous Material	Medical	Multi-Family Dwelling Fire	Other Fire	Other Miscellaneous	Public Service Assistance	Residential Fire	Rescue	Standby	Traffic Collision	Vehicle Fire	Wildland Fire	TOTAL
RCFD Station No. 43 (Blythe)	0	39	2	402	0	50	8	15	5	2	17	35	5	14	594
RCFD Station No. 45 (Blythe Air Base)	0	22	1	112	0	8	3	23	1	0	2	44	1	1	218
RCFD Station No. 49 (Lake Tamarisk)	0	24	2	101	0	4	1	4	1	0	8	119	14	2	280
TOTAL	**0**	**85**	**5**	**615**	**0**	**62**	**12**	**42**	**7**	**2**	**27**	**198**	**20**	**17**	**1,092**

Source: Riverside County Fire Department/CAL FIRE 2009 Yearly Emergency Incident Statistics.

fire stations. Therefore, based on workload capacity, the addition of the RSEP to their service area would not justify the addition of an engine company, a fire station, or any additional staff.

The closest fire station to the RSEP site is San Bernardino County Fire Department (SBCFD) fire station Big River Station No. 17 located 32 miles to the north. This station consists of two-paid staff that provide Basic Life Support (BSL) services. According to the RCFD, although SBCFD Station No. 17 is located closer to the RSEP site and the SBCFD works under mutual and/or automatic aid agreements, this would not guarantee that Station No. 17 would have equipment available to respond or that these agreements require SBCFD to release the resources to respond. Furthermore, RCFD has indicated that, if SBCFD Station No. 17 is dispatched and the request is honored, RCFD Station No. 49 would also respond since the RCFD is the Authority Having Jurisdiction (AHJ). RCFD uses a computer aided dispatch system. This dispatch system can be modified to include SBCFD Station No. 17.

5.2 FIRE MASTER PLAN

The RCFD adopted the *Riverside County Fire Protection and Emergency Medical Master Plan* (Master Plan) in 1987. The Master Plan serves as the general guiding document for the provision of fire protection and emergency medical services in the cities and unincorporated areas of the County protected by the RCFD. The Master Plan established response criteria based on Insurance Services Office (ISO) and NFPA standards for four different land use categories defined for the County. The four land use categories are Category I - Heavy Urban, Category II - Urban, Category III - Rural, and Category IV – Outlying. For each of these land use categories, the Master Plan defines goals and objectives related to: fire station location; suppression initiated; full assignment in operation; and initial attack fire control. There are minute values assigned to each land use designation. Although these values have been adopted, there have been internal adjustments based on new information, operational needs, and advances in technology.

The RSEP site falls within land use category "Category IV – Outlying" in the Master Plan. The Master Plan provides the objective to "Apply extinguishing agent to structure and vegetation fires within 20 minutes of dispatch, full assignment within 30 minutes (Fire Station located within 8 miles)" and "Initiate suppression within 15 minutes of receipt of alarm for 90% of all fires." Furthermore, the Master Plan provides the objective to "Control 80% of all outlying fires with initial attack assignment." The intent of these objectives is to address the portions of Riverside County that are remotely located away from urban development and do not generate the same level of demand for fire protection services as an area of the County with more intensified development. As indicated in the Master Plan, the provision of "an equitable level [of service] is not necessarily an identical level of service."

In addition, the Master Plan provides the standard that one new fire station and/or engine company is recommended for every 3.5 million square feet of industrial occupancy. Based on this, the RSEP would not require a new fire station.

5.3 RIVERSIDE COUNTY FIRE SEVERITY MAP

The RSEP site is within a "Non-High Fire Hazard Severity Zone" according to the *Approved Very High Fire Hazard Severity Zones and Local Responsibility Areas* map, dated December 24, 2009, prepared by CAL FIRE and adopted by the County of Riverside.

6.0 FIRE PROTECTION SERVICES IMPACT ANALYSIS

6.1 POTENTIAL IMPACTS RELATED TO CONSTRUCTION AND OPERATION

The construction and operation of the RSEP would result in the addition of a solar thermal power plant within the service area for the RCFD. Of the project site, approximately 11 acres would be occupied by structures consisting of the Central Receiver Tower, power generation building, administration building, shop maintenance building, and water treatment building. The remainder of the project site would consist of 1,399 acres for the field of solar-tracking heliostats (mirrors mounted on 12-foot-tall pedestals in a circular array around the Central Receiving Tower), internal service roads, perimeter access road and fence, three evaporation ponds totaling 15 acres, and a surrounding area of vacant land. Refer to Section 3.0 of this document for an overview of the project including the facility technology, project characteristics, and the number of employees on the project site during the construction activities and the ongoing operation of the RSEP.

The RSEP site is located at the former Rice Army Air Field Station and a portion of Camp Rice. The land surrounding the RSEP site is primarily undeveloped desert land with the closest development located in Vidal Junction 15 miles to the east. The RSEP site and the adjacent area is within a "Non-High Fire Hazard Severity Zone" according to the *Approved Very High Fire Hazard Severity Zones and Local Responsibility Areas* map, dated December 24, 2009, prepared by CAL FIRE and adopted by the County of Riverside.

As discussed in Section 3.0 of this document, although the RSEP would use a minimal amount of hazardous materials during construction and project operation, the project would comply with the applicable laws, ordinances, regulations, and standards for the storage, use, and disposal of the hazardous materials. This would include the provision of state-of-the-art chemical storage and handling facilities in compliance with the current California Fire Code and other applicable federal, state, and local regulations. In addition, the contractor and plant operator would conduct emergency response planning to address public health concerns. Therefore, during construction and project operation, the risk to workers or public exposure to accidental release hazards and/or fire and explosion hazards would be less than significant.

As discussed in Section 4.0 of this document, extensive fire protection systems are incorporated into the design of the RSEP. The fire protection systems would be designed and maintained in accordance with the relevant NFPA guidelines and local code requirements as described in the Rice Solar Plant Fire Protection Plan provided as Appendix B to this document. This would include the provision of two sets of diesel fire pumps that discharge to a dedicated fire-loop piping system consisting of underground

piping and aboveground hydrants, sprinklers, and risers. In addition, fixed fire-suppression systems would be installed at determined fire risk areas within the power generation building and sprinkler systems would be installed in the administration building, shop maintenance building, and fire pump enclosures. The Central Receiver Tower, which has no flammable or hazardous materials, would be have a strict operating policy that, during daily operations, no operating or maintenance personnel would be allowed inside the tower while the receiver is on line, capturing the energy of the sun. All maintenance, testing, or other operations in the Tower would be done after all liquid salt has been evacuated.

The Safety and Health Programs discussed in Section 4.0 of this document would be implemented during construction activities and the ongoing operation of the RSEP. In addition, to the Safety and Health Programs defined by the applicant and typical Conditions of Certification, the CEC provided Conditions of Certification that address additional safety issues including: the development and implementation of BMPs related to the storage and application of the herbicides used to control weeds beneath and around the solar array (Condition of Certification Worker Safety-2); to further protect worker safety during construction, provide a Construction Safety Supervisor who is knowledgeable of power plant construction activities, the applicable laws, ordinances, regulations, standards, workplace hazards, and has the authority to take action to assure compliance (Condition of Certification Worker Safety-3); ensure that a portable automatic external defibrillator (AED) is located onsite during construction and operation and implement a program to ensure that workers are properly trained in its use and the equipment is maintained and functioning at all times (Condition of Certification Worker Safety-5); and development and implementation of an enhanced Dust Control Plan to address the potential hazards related to dust particulates, including the potential for Coccidioidomycosis or "Valley Fever" (Condition of Certification Worker Safety-9).

Furthermore, the consultant team for the preparation of this document provides the following recommended requirements to be incorporated into the design of the RSEP and the construction and ongoing operation of the facility:

- Due to the remote location of the RSEP site, the applicant shall provide the following on-site: 1) during any construction activities, the applicant shall have a contract with a Riverside County Emergency Medical Service (RCEMS) certified company to provide Advance Life Support with equipment and supplies; 2) during any construction activities, the applicant shall have on-site a Basic Life Support Ambulance with a California certified driver for use during medical emergency events; and 3) during ongoing operation, the applicant shall have a contract with a RCEMS certified company to provide an Advance Life Support system with equipment and supplies.

- Due to the remote location of the RSEP site, during construction and operation of the RSEP, the applicant shall contract with an air medical service to respond to a service request from an on-site responder which would be a RCEMS certified company. Since the RSEP is located on private property and the on-site responder would be certified by Riverside County, the request for air medical service can be called directly without going through the County's dispatch system.

- During construction activities that require the type of situations addressed by California Department of Safety and Health (Cal/OSHA) Standards Part 1910, Occupational Safety and Health Administration Safety and Health Regulations, the contractor shall be required to provide evidence that a rescue team with NFPA 1670 level of training (Standard on Operations and Training for Technical Search and Rescue Incidents) will be available on-site for the extent of the construction activity.

- During operation, the daily on-site operational and maintenance personnel for the Central Receiver Tower shall be required to have NFPA 1006 level of training (Standard for Technical Rescuer Professional Qualifications).

- During operation, the contractor to perform the annual maintenance for the Central Receiver Tower and other areas that require work in confined space shall be required to provide evidence that their on-site personnel have NFPA 1670 level of training (Standard on Operations and Training for Technical Search and Rescue Incidents).

- The water trucks used to spray ionized water for the maintenance of the solar array of heliostats shall be available for use on wildland fires occurring within the RSEP site boundaries.

The incorporation of the fire protection systems into the design of the RSEP and compliance with the Safety and Health Programs defined by the project applicant, CEC Conditions of Certification (Worker Safety-1, -2, -3, -4, -5, -6, and -9), and the consultant recommendations during the construction activities and the ongoing operation of the RSEP would adequately protect workers and the public from health and safety hazards including accidental release of hazardous materials and fire and explosion. As a result, the potential increase in the demand for fire protection services would be considered less than significant.

6.2 POTENTIAL IMPACTS TO RIVERSIDE COUNTY FIRE DEPARTMENT RESOURCES

The RSEP site is located within RCFD Battalion 8. Table 5-1 in Section 5.0 of this document, provides information regarding the distance and response times for the RCFD stations closest to the project site. These stations are staffed full-time, 24 hours seven days per week, with a minimum three person crew including Paramedics operating a "Type-1" structural fire fighting apparatus. In addition, SBCFD Station No. 17, is located 32 miles to the north of the project site. As discussed in Section 5.0, according to the RCFD, although SBCFD Station No. 17 is located closer to the RSEP site and the SBCFD works under mutual and/or automatic aid agreements, this would not guarantee that Station No. 17 would have equipment available to respond or that these agreements require SBCFD to release the resources to respond. Furthermore, RCFD has indicated that, if SBCFD Station No. 17 is dispatched and the request is honored, RCFD Station No. 49 would also respond since the RCFD is the Authority Having Jurisdiction (AHJ).

Table 5-2 provides the annual emergency incident statistics for the year 2009 for the three RCFD stations closest to the RSEP site. As indicated in Table 5-2, these three stations responded to a total of 1,092 calls in the year 2009; none of which were to a fire at a commercial land use. In addition, these three fire stations responded to a total of 615 emergency medical calls and 198 traffic collisions (typically requiring emergency medical aid) in the year 2009 and, therefore, 74 percent of the total calls received by the three stations were for emergency medical aid and not fire-related. Based on a "reasonable standard" for an engine company workload of 6.5 calls per day (or 2,190 calls on an annual basis), the three fire stations closest to the RSEP site have the capability of responding to a total of 6,570 calls per year. The total of 1,092 annual calls in the year 2009 represents 16 percent of the maximum workload capacity for these three fire stations. Therefore, based on existing workload capacity, the addition of the RSEP to the RCFD service area would not justify the addition of an engine company, a fire station, or any additional staff. Furthermore, since the RSEP would have a very limited need for fire protection services and the existing workload is well below the estimated maximum capacity for the three responding stations, the RSEP would not interfere with the ability of Station No. 49 (Lake Tamarisk), Station No. 43 (Blythe), and Station No. 45 (Blythe Air Base) to respond to traffic collision calls unrelated to the RSEP that occur in their service area.

Table 3-5 provides the potential additional accidents involving injuries on roadways in Riverside County within the vicinity of the project site with construction and operation of the RSEP. As a result of the additional average daily trips generated by construction worker traffic during the construction phase (30 months) of the RSEP and accident rate data, there is the potential for two additional vehicle accident with injuries to occur per year on the surrounding roadways in Riverside County. An accident with injuries may require a response from the RCFD. In addition, during the ongoing operation of the RSEP, there is no anticipated increase in vehicle accidents on the surrounding roadways in Riverside County. Therefore, the addition of the RSEP to the RCFD service area

would result in an insignificant increase in responses from the RCFD due to vehicle accidents on the roadways in the project vicinity.

The demand for emergency medical services by the RSEP would be eliminated through the incorporation of the consultant recommendations regarding: the provision of a contract with a RCEMS certified company and a Basic Life Support Ambulance with a California certified company during construction activities; the provision of a contract with a RCEMS certified company during ongoing project operation; and contract with an air medical service to respond to a service request from an on-site RCEMS certified responder. Therefore, the addition of the RSEP to the RCFD service area would not require emergency medical responses from the RCFD.

The demand for response to a technical rescue incident, including high angle rescue, low angle rescue, and confined space rescue, as a result of the RSEP would be eliminated through the incorporation of the consultant recommendations regarding: the requirement that, during construction activities that require the type of situations addressed by Cal/OSHA Standards Part 1910, Occupational Safety and Health Administration Safety and Health Regulations, the contractor have a rescue team with NFPA 1670 level of training (Standard on Operations and Training for Technical Search and Rescue Incidents) available on-site for the extent of the construction activity; the requirement that, during operation, the daily on-site operational and maintenance personnel for the Central Receiver Tower have NFPA 1006 level of training (Standard for Technical Rescuer Professional Qualifications); and the requirement that, during operation, the contractor to perform the annual maintenance for the Central Receiver Tower provide evidence that their on-site personnel have NFPA 1670 level of training (Standard on Operations and Training for Technical Search and Rescue Incidents). Therefore, the addition of the RSEP to the RCFD service area would not require responses to technical rescue incidents by the RCFD.

Based on the above discussion, the potential increase in the demand for fire protection services by the RCFD would be considered less than significant.

6.3 POTENTIAL IMPACTS RELATED TO RIVERSIDE COUNTY FIRE PROTECTION AND EMERGENCY MEDICAL MASTER PLAN

The RSEP site falls within land use category "Category IV – Outlying" in the Riverside County Fire Protection and Emergency Medical Master Plan (Master Plan). The Master Plan provides the objectives to "Apply extinguishing agent to structure and vegetation fires within 20 minutes of dispatch, full assignment within 30 minutes (Fire Station located within 8 miles)" and "Initiate suppression within 15 minutes of receipt of alarm for 90% of all fires." Furthermore, the Master Plan provides the objective to "Control 80% of all outlying fires with initial attack assignment." However, to qualify these objectives in order to address the portions of Riverside County that are remotely located away from urban development and do not generate the same level of demand for fire protection services as an area of the County with more intensified development, the

Master Plan states that "In a Jurisdiction as large and complex as that served by the RCFD, it is not practical to meet these response time/distance requirements for all land use categories. Therefore, the corresponding goals and objectives represent a compromise between "ideal" requirements and community needs and the availability of resources."

As discussed above, with the design of the RSEP fire protection systems and implementation of the Safety and Health Programs, the CEC Conditions of Certification, and the consultant recommendations during construction and the ongoing operation of the plant, there would be a very limited need for fire protection services from the RCFD. With the acknowledgement that the RSEP site falls within the area represented by the 10 percent of the County that would not have a 20-minute dispatch time (or a fire station within 8 miles) and, as stated in the Master Plan, it is not practical to meet these response time/distance requirement, the RSEP project would not be inconsistent with the Master Plan goals and objectives for "Category IV – Outlying."

6.4 CUMULATIVE EFFECTS

As indicated in the Master Plan, the provision of "an equitable level [of service] is not necessarily an identical level of service." This logic can be applied to the determination of the RSEP's potential contribution to the cumulative effect on fire protection services provided by the RCFD. As demonstrated in the analysis provided in this document, the design of the RSEP fire protection systems and the implementation of the Safety and Health Programs, the CEC Conditions of Certification, and the consultant recommendations during construction and the ongoing operation of the plant, would result in a very limited need for fire protection services and eliminate the need for emergency medical services. Unlike the other existing solar plants in San Bernardino County and the proposed solar plants in Riverside County, the RSEP has been designed for concentrating solar thermal power technology utilizing liquid salt as the heat transfer medium in the receiver. The salt is non-flammable and enclosed within a contained system. In contrast, the existing and proposed solar plants utilize flammable and hazardous materials as the heat transfer medium that is used over the entire plant's site and present a much greater risk of fire-related hazards.

The construction and operation of the RSEP would not contribute to a significant cumulative impact to fire protection services provided by the RCFD. The distance of the RSEP site from the other proposed solar plants in Riverside County suggests that they are not within the same cumulative setting and, due to the different technologies and their different potential for fire-related hazards, the very limited potential for the demand for fire protection services generated by the RSEP does not warrant a similar approach to addressing the incremental increase in services that could occur at those plants. In addition, due to the distance of the RSEP from the existing fire stations and the limited need for fire protection services, it would not be equitable to suggest that the RSEP contribute to an overall solution that would not directly address the RSEP's needs.

Appendix A

SITE PLAN

LEGEND

CHAIN LINK FENCING

E ELECTRICAL TRANSMISSION LINE

OWNERSHIP BOUNDARY

NOTES

1. NORTHING AND EASTING COORDINATES BASED ON CALIFORNIA NAD83 ZONE VI COORDINATE SYSTEM.
2. THE PARKING AND LAYDOWN AREAS SHOWN ARE LABELED "OFF-SITE" BECASUE THEY ARE LOCATED OUTSIDE THE PERMANENT FENCE LINE AND THE PERMANENT FACILITIES. ADDITIONAL PARKING AND LAYDOWN WILL BE USED WITHIN THE HELIOSTAT FIELD AND POWER BLOCK AREA, BUT ARE NOT SHOWN.

MAIN ENTRANCE ACCESS (PAVED)

HELIOSTAT BLDG/AREA

OFF-SITE TEMP LAYDOWN / CONST. AREA & CONSTRUCTION TRAILERS (PRIMARY)

SECONDARY ENTRANCE (NOT PAVED)

EXISTING BERMS

OFF-SITE CONST. PARKING (AS REQUIRED SEE NOTE #2)

ADMIN/SHOPS

EXISTING ARIZONA-CALIFORNIA RAILWAY

CA STATE ROUTE 62

EXISTING 12KV POLE

TEMP. CONST. POWER

OFF-SITE TEMP LAYDOWN / CONST. AREA & CONSTRUCTION TRAILERS (SECONDARY)

PROPOSED PUBLIC USE AREA

1200'

RICE WELLS NO. 1 & 2

HELIOSTAT FIELD

Y=2337378.29

PERIMETER ACCESS ROAD, FENCE, AND PROJECT SITE BOUNDARY

EXISTING CONCRETE PAD

Y=2334878.29

Y=2334472.18

℄ COLLECTOR FIELD

Y=2333708.09

℄ POWER BLOCK

ACCESS ROAD

POWER BLOCK/RECEIVER

ACCESS ROAD

Y=2332378.29

PERIMETER ACCESS ROAD, FENCE, AND PROJECT SITE BOUNDARY

PARCEL BOUNDARY

SEE SHEET SRRC-1-SK-111-002-001 FOR POWER BLOCK GENERAL ARRANGEMENT

OWNERSHIP BOUNDARY

30 AC-FT DETENTION BASIN AREA

Y=2329878.29

EVAPORATION PONDS 3 AT APPROXIMATELY 5 ACRES EACH

ELECTRICAL TRANSMISSION LINE

X=6994779.92

X=6997279.92

X=6998542.40

℄ POWER BLOCK

X=6999779.92

X=7002279.92

N

0 1600 3200

1" = 1600 FT

PRELIMINARY
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD DESIGNER	ENGINEER/ TECH. SPEC.	ENGINEERING MANAGER	PROJECT MANAGER
I	09/30/10	ISSUED FOR REVIEW	AP	JD	PL	JD	BA	BA
H	09/07/10	ISSUED FOR REVIEW	PM	JD	PL	JD	BA	BA
G	08/06/10	ISSUED FOR REVIEW	AP	JD	PL	JD	BA	BA
F	08/30/09	ISSUED FOR REVIEW	CM	JD	CM	JD	BA	BA
E	08/24/09	EVAP. POND/2ND ACCESS	CM	JD	CM	JD	BA	BA
D	08/03/09	ISSUED FOR REVIEW	CM	JD	CM	JD	BA	BA
C	06/30/09	ISSUED FOR REVIEW	CM	JD	CM	JD	BA	BA
B	06/23/09	ISSUED FOR REVIEW	CM	JD	CM	JD	BA	BA
A	02/11/09	ISSUED FOR REVIEW	CM	JD	CM	JD	BA	BA

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.

LDF

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.

LDF

ORIGINATING PERSONNEL

DRAWN BY: C. MAHER

CHECKED BY: J. DAHLGREN

LEAD DESIGNER: C. MAHER

ENGINEER/TECH SPECIALIST: J. DAHLGREN

PROJECT ENGINEERING MANAGER: B. ANDERS

PROJECT MANAGER: B. ANDERS

PROFESSIONAL ENGINEER'S SEAL

Zero Harm Leadership No Incidents Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

Worley Parsons resources & energy

SolarReserve

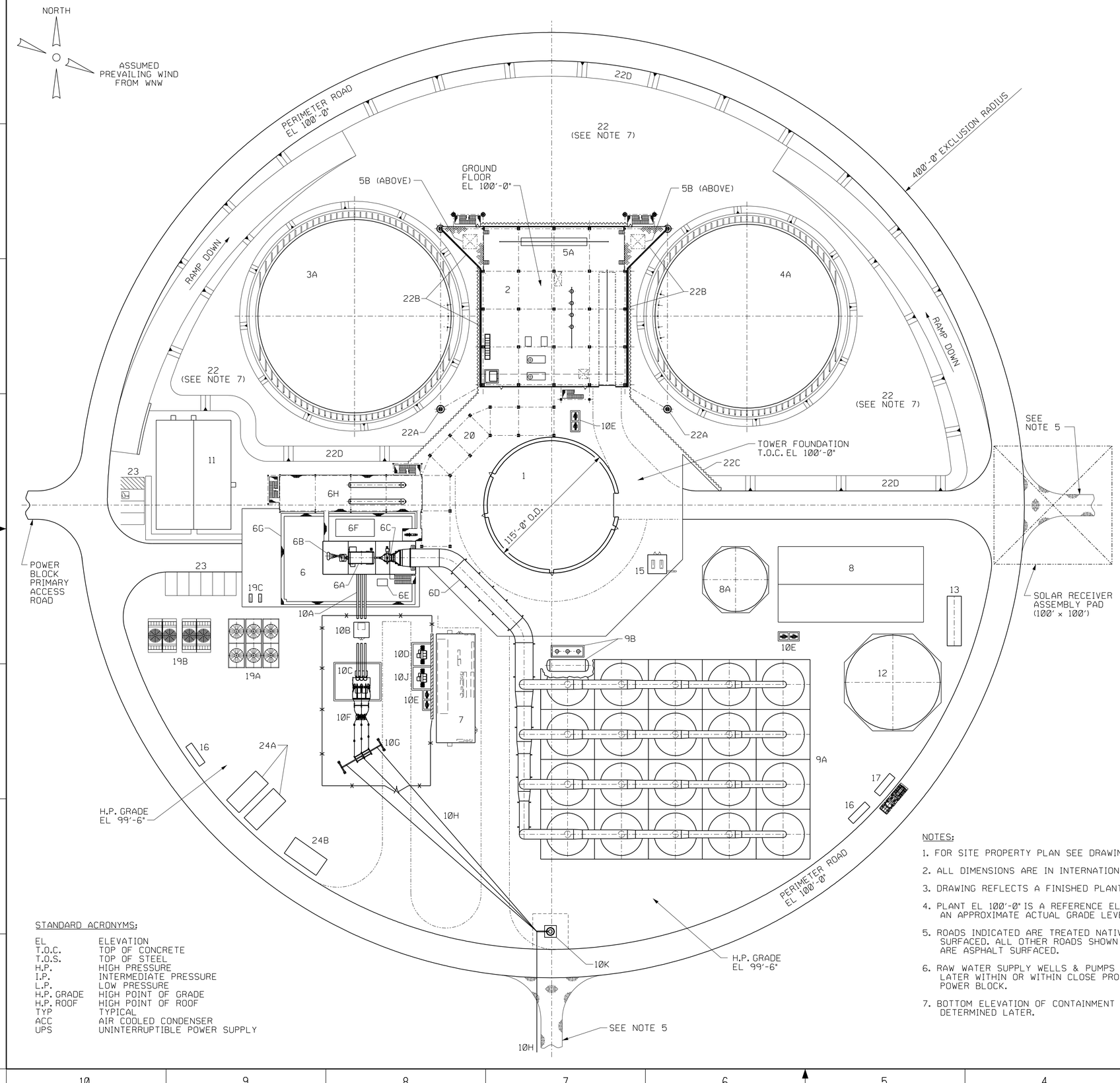
CLIENT/PROJECT TITLE

RICE SOLAR ENERGY, LLC
RICE SOLAR ENERGY PROJECT

CONCEPTUAL GENERAL ARRANGEMENT AND OVERALL SITE PLAN

SCALE 1"=1600' | DRAWING SIZE 11x17

WORLEYPARSONS DWG. NO. SRRC-0-SK-112-111-001 | REV I



LEGEND

1 SOLAR RECEIVER TOWER

2 STEAM GENERATION BUILDING

3 HOT SALT STORAGE TANK AREA
- 3A HOT SALT STORAGE TANK

4 COLD SALT STORAGE TANK AREA
- 4A COLD SALT STORAGE TANK

5 PUMP SUPPORT & MAINTENANCE AREA
- 5A PUMP MAINTENANCE AREA
- 5B PUMP REMOVAL HATCH

6 STEAM TURBINE/GENERATOR AREA
- 6A GENERATOR
- 6B H.P. TURBINE
- 6C I.P./L.P. TURBINE
- 6D TURBINE EXHAUST DUCT
- 6E HYDRAULIC OIL UNIT
- 6F LUBE OIL UNIT
- 6G FLOOR TRENCH
- 6H HEATER BAY
- 6J BOILER FEEDWATER PUMPS (NOT SHOWN)
- 6K DEAERATOR (NOT SHOWN)

7 ELECTRICAL BUILDING/PDC

8 WATER TREATMENT AREA/BUILDING
- 8A DEMINERALIZED WATER TANK
- 8B DEMINERALIZED WATER PUMPS (NOT SHOWN)
- 8C SERVICE WAER PUMPS (NOT SHOWN)

9 AIR COOLED CONDENSER AREA
- 9A AIR COOLED CONDENSER
- 9B CONDENSATE DRAIN TANK & PUMPS (UNDER ACC)

10 ELECTRICAL TRANSMISSION AREA
- 10A SEGREGATED PHASE BUS DUCT
- 10B GENERATOR CIRCUIT BREAKER SWITCHGEAR
- 10C GENERATOR STEP-UP TRANSFORMER
- 10D UNIT AUXILIARY TRANSFORMER
- 10E STATION SERVICE TRANSFORMER
- 10F STEP-UP CIRCUIT BREAKER
- 10G TRANSMISSION TOWER
- 10H OVERHEAD POWER LINES
- 10J BACKFEED UTILITY TRANSFORMER
- 10K TUBULAR STEEL POLE

11 CONTROL & OPERATIONS BUILDING

12 SERVICE/FIRE WATER STORAGE TANK

13 FIRE WATER PUMP HOUSE

14 NOT USED

15 FIRE WATER BOOSTER PUMPS

16 ABOVE GROUND DIESEL FUEL STORAGE TANK

17 HELIOSTAT WASH TRUCK FILL AREA

18 OIL/WATER SEPARATOR - LATER

19 AUXILIARY COOLING SYSTEM
- 19A FIN FAN COOLER
- 19B WET SURFACE AIR COOLER (WSAC)
- 19C CLOSED COOLING WATER PUMPS

20 HIGH ENERGY PIPE BRIDGE

21 NOT USED

22 MOLTEN SALT CONTAINMENT AREA
- 22A CAISSON FOUNDATION
- 22B DIVERSION WALL
- 22C RETAINING WALL
- 22D 2:1 SLOPED SOIL

23 DESIGNATED PARKING AREA

24 HELIOSTAT UPS AREA
- 24A EMERGENCY GENERATOR
- 24B HELIOSTAT DISTRIBUTION SWITCHGEAR

25 RAW WATER SUPPLY WELLS & PUMPS (SEE NOTE 6)

REFERENCES:

1. LATER

STANDARD ACRONYMS:

EL	ELEVATION
T.O.C.	TOP OF CONCRETE
T.O.S.	TOP OF STEEL
H.P.	HIGH PRESSURE
I.P.	INTERMEDIATE PRESSURE
L.P.	LOW PRESSURE
H.P. GRADE	HIGH POINT OF GRADE
H.P. ROOF	HIGH POINT OF ROOF
TYP	TYPICAL
ACC	AIR COOLED CONDENSER
UPS	UNINTERRUPTIBLE POWER SUPPLY

NOTES:

1. FOR SITE PROPERTY PLAN SEE DRAWING "LATER".
2. ALL DIMENSIONS ARE IN INTERNATIONAL FEET.
3. DRAWING REFLECTS A FINISHED PLANT CONDITION.
4. PLANT EL 100'-0" IS A REFERENCE ELEVATION EQUAL TO AN APPROXIMATE ACTUAL GRADE LEVEL OF EL "LATER".
5. ROADS INDICATED ARE TREATED NATIVE SOIL OR GRAVEL SURFACED. ALL OTHER ROADS SHOWN ON THIS PLAN ARE ASPHALT SURFACED.
6. RAW WATER SUPPLY WELLS & PUMPS TO BE LOCATED LATER WITHIN OR WITHIN CLOSE PROXIMITY TO THE POWER BLOCK.
7. BOTTOM ELEVATION OF CONTAINMENT AREA TO BE DETERMINED LATER.

40 0 40 80 120

SCALE: 1" = 40'

REV	DATE	DESCRIPTION	DRAWN	CHECKED	LEAD ENGINEER	ENGINEER/TECH SPEC	LEAD ENGINEER	PROJ ENGR	PROJECT MANAGER
D	06/30/09	INCORPORATE COMMENTS CONCEPTUAL DESIGN	MTW	JAW	MTW	JL	JL	BA	BA
B	04/28/09	INITIAL ISSUE FOR REVIEW AND COMMENT	MTW	JAW	MTW	JL	JL	BA	BA

PRELIMINARY STATUS DATE — REPRESENTS GENERAL DESIGN CONCEPTS BASED ON ASSUMPTIONS. REVIEWED NOT CHECKED.
LDE

APPROVED STATUS DATE — REPRESENTS REVIEWED AND APPROVED DESIGN. ANY PORTION MARKED "HOLD" RETAINS PRELIMINARY STATUS.
LDE

ORIGINATING PERSONNEL	PROFESSIONAL ENGINEER'S SEAL
DRAWN BY: MTW	
CHECKED BY: J. WORK	
LEAD DESIGNER: M. WELSH	
ENGINEER/TECH SPECIALIST: J. LINDER	
PROJECT ENGINEERING MANAGER: B. ANDERS	
PROJECT MANAGER: B. ANDERS	

Zero Harm — Leadership No Incidents Safe Behavior

ORIGINALLY PREPARED UNDER THE RESPONSIBLE SUPERVISION OF
PE: _____ STATE: _____
LIC. NO.: _____ DATE: _____

WorleyParsons
resources & energy

SolarReserve

CLIENT/PROJECT TITLE

RICE SOLAR ENERGY, LLC
RICE SOLAR ENERGY PROJECT

GENERAL ARRANGEMENT
SOLAR POWER PLANT
POWER BLOCK PLAN

SCALE: 1" = 40'-0" | DRAWING SIZE: ARCH D (36" x 24")

WORLEYPARSONS DWG. NO.: SRRC-1-SK-111-002-002 | REV: B

...\srrc1sk111002002.dgn 6/30/2009 3:41:18 PM

EMP HELIOSTAT
BLY BLDG/AREA

ADMIN/SHOP

EXISTING
DRAINAGE
BERM

HELIOSTAT FIELD

Appendix B

RICE SOLAR ENERGY PROJECT FIRE PROTECTION PLAN

RICE SOLAR ENERGY PROJECT

FIRE PROTECTION PLAN

REVISION A

JUNE 2010

TABLE OF CONTENTS

1.0 SCOPE

This document, along with the Fire Protection Piping and Instrument Diagrams (Dwg. No. *LATER*), provide the fire protection design for the Rice Solar Energy Project (RSEP).

2.0 DESIGN BASIS

2.1 System Description

2.1.1 Fire Protection Water Supply

A. The Fire Protection Water Supply Subsystem provides water under pressure to the Site Fire Subsystem, which then supplies water to the fire hydrants and fixed water suppression systems within buildings and structures.

B. One set of pumps (electric and diesel backup) provides pressurized water only to the tower, while the other set provides water to the remainder of the Site Fire Subsystem.

C. The Fire Protection Water Supply Subsystem consists of the following:

1. Two (2) x 100 percent capacity electric motor driven fire pumps – one dedicated to the tower, and the other providing water to the rest of the site.

2. Two (2) x 100 percent capacity diesel engine driven fire pumps – one dedicated to the tower, and the other providing water to the rest of the site.

3. Two (2) x 100 percent electric motor driven pressure maintenance (jockey) pump.

4. One raw/fire water storage tank.

2.1.2 Site Fire Protection

The Site Fire Protection Subsystem consists of the following major components:

A. Underground yard piping, above ground piping, and valves.

B. Fire hydrants and accessories.

2.1.3 Buildings and Equipment Fire Protection

The Buildings and Equipment Fire Protection Subsystem provides fixed water suppression systems and portable fire extinguishers to protect buildings and equipment in the event of fire.

The buildings and equipment fire protection consists of the following major components:

A. Wet-pipe sprinkler systems.

B. Dry-pipe sprinkler systems.

C. Preaction spray or sprinkler systems.

D. Deluge spray or sprinkler systems.

E. Independent smoke detection system to automatically detect fires.

F. Standpipe system.

G. Portable fire extinguishers; specifically, dry chemical and CO_2 hand carried type.

H. Instrumentation and control equipment for alarm, indication of system status, and actuation of fire protection equipment.

I. Piping and valves between the fire water source and the various fire protection systems.

2.2 System Philosophy

2.2.1 Water Supply

The fire protection water supply will be designed to use the raw/fire water storage tank as the reliable supply. This source will have a minimum capacity to supply fire water flow continuously for a minimum two hour duration. The demand of water will be calculated based on the largest single fixed suppression system event plus an additional 500 gpm for hose streams. Two (2) x 100 percent capacity electric motor driven fire pumps will be provided, each with a diesel engine driven backup of equal capacity. One set of electric motor driven and diesel engine driven pumps will be dedicated solely to providing a fire protection water supply to the tower.

2.2.2 Site Fire Protection

The site fire protection will be designed such that a single failure of a fire pump or a single break in the underground piping (loop system), including the pump supply and discharge piping, will not cause the failure of fire protection systems.

2.2.3 Building Fire Protection

Building fire protection will be specified as required by code and by contract.

2.3. Design Requirements

2.3.1 Water Supply

A. The source of water for the fire protection water supply will be the raw/fire water storage tank. A standpipe used for supplying plant fire water will maintain the minimum two hour water storage for fire protection in the lower portion of the raw/fire water tank.

B. The pressure maintenance (jockey) pumps will maintain system pressure under zero flow. The pressure maintenance (jockey) pumps will be rated at 25 gpm. The pumps will operate on low system pressure or shutoff on high system pressure.

C. The main fire pumps will begin operation on a pressure drop in the system which occurs by activating a fire hydrant, or fixed suppression system. The main electric fire pump will start upon low pressure on the discharge side of the fire pumps. The diesel engine fire pump will start when the pressure on the discharge side of its respective motor driven fire pump falls below preset levels in accordance with NFPA requirements. Upon starting, the fire pumps will be manually stopped at a locally mounted control panel.

D. The size of the suction pipe will be such that with one pump operating at 150 percent of rated capacity, the gauge pressure at the pump suction flange will be 0 psig or greater. The discharge piping will be sized to convey water flow quantities as determined by the single largest suppression system event plus hydrant hose streams.

2.3.2. Site Fire Protection

A. An underground yard distribution system will be provided to supply fire protection water throughout the main plant area. The yard distribution piping will include a loop around the plant complex to supply water to fire hydrants and fixed water suppression systems installed in buildings and other plant structures.

B. Multiple flow paths with sectionalizing valves will be provided in the loop piping such that if one path fails, other piping paths can supply sufficient fire protection water to other outlets.

C. Maximum velocity of water in underground piping will be approximately 10 feet/second.

D. Fire hydrants will be spaced approximately 250 feet apart around the loop piping in the main plant area. A minimum of two dry type fire hydrants will be installed at strategic locations near each major plant building or structure.

E. Fire water underground piping will be high density polyethylene and cement lined ductile iron, which both will be UL listed and FM approved in accordance with NFPA 24. Pipe will comply with local code requirements.

F. The depth of cover for underground pipe will not be less than 1 foot below the frost line for the locality.

G. The design conditions for the fire hydrant installations will be as follows:

1. Type of barrel -- base valve, dry barrel type.

2. Type shutoff -- compression.

3. Hydrant size -- 5-1/4 inch valve opening.

4. Outlet nozzles – two (2) x 2-1/2 inch and one(1) x 4-1/2 inch with cap, chains, and threads to match local fire department hose threads (NH).

5. Each hydrant will be equipped with a barrel drain.

H. Each fire hydrant installation will include an underground isolation valve. Each valve will be a 6-inch iron body gate with flanged ends and square operating nut. Each valve will be provided with a valve box and tee wrench.

2.3.3. Buildings and Equipment Fire Protection

A. The type of fire protection systems to be provided are shown in Table 1.

B. Protection Systems.

1. Steam Turbine Generator Bearings.

The steam turbine generator bearings automatic preaction spray system will utilize rate compensated heat detectors to actuate the supply valve and fixed temperature closed spray nozzles to limit water discharge to the affected bearings only. The nozzles will be directional type. The system will be designed to provide a minimum of 0.25 gpm per square foot over the protected area.

The supply piping will be adequate to supply all heads operating simultaneously. The preaction system will utilize rate compensated heat detectors provided with alarm set points at approximately 50°F above the maximum ambient temperature at each bearing location. The spray nozzles will be rated at a temperature a minimum of 50°F above the set points of the heat detectors.

The Steam Turbine Bearing protection shall be designed in accordance with NFPA 850 and the Electric Power Research Institute (EPRI) Document – EPRI NP-4144, Turbine Generator Fire Protection by Sprinkler System, Project No. 1843-2, Final Report 1985.

2. Steam Turbine Under-floor of the Power Generation Building.

The area under the operating floor will be provided with an automatic dry-pipe sprinkler system. The system will be designed to provide water at a minimum water sprinkler density of 0.30 gpm per square foot over the most hydraulic remote 5,000 square feet.

3. Steam Turbine Lube Oil Reservoir, Conditioner, Piping and Seal Oil Unit of the Power Generation Building.

This area will be provided with an automatic deluge spray system. The system will be designed to provide water at a minimum water sprinkler density of 0.30 gpm per square foot over the entire area.

4. The Control Room, DCS Room, and Tele-Com Room of the Administration /Control Building.

These areas of the Administration/Control building will be provided with an automatic preactoin sprinkler system. The system will be designed to provide

water at a minimum sprinkler density of 0.15 gpm per square foot over the entire area.

5. The Administration/Control Building.

   The rest of the building will be provided with a wet pipe sprinkler system. The system will be designed to provide water at a minimum sprinkler density as required by the occupancy of the area. The entire building will be provided with a Class II standpipe system and manual pull stations.

6. The Maintenance/Warehouse Building.

   The Maintenance/Warehouse building will be provided with automatic wet pipe sprinkler system. The system will be designed to provide water at a minimum sprinkler density as required by the occupancy of the area. The entire building will also be provided with a Class II standpipe system and manual pull stations.

7. The Generator Step-Up (GSU) transformer.

   The GSU will be provided with a deluge spray system. The systems will be actuated by dry pilot detection. The unit auxiliary transformers (UAT) will also be provided with a deluge spray system with dry pilot detection.

8. Fire Pump House.

   A wet pipe sprinkler system will be provided for the fire pump house (both pump rooms). The system will be designed to provide a minimum of 0.25 gpm per square foot over the floor area.

9. The Water Treatment Building.

   The water treatment building will be provided with an automatic wet pipe sprinkler system. The system will be designed to provide water at a minimum water sprinkler density of 0.20 gpm per square foot over the most hydraulic remote 1,500 square feet. This building will also be provided with a Class II standpipe and manual pull stations.

10. Packaged Electrical and Electronics Control Cabinet (PEECC).

    The PEECC will be provided with smoke detection.

11. Power Distribution Center (PDC) Building.

    The PDC will be provided with smoke detection.

12. Piping.

    Fire protection piping will be ASTM A53.

13. System Isolation Valves.

A cast iron gate valve of the outside screw and yoke type having flanged ends will be installed in each sprinkler and spray system main line. A tamper switch will be furnished for each valve for alarming the not fully open condition of the valve.

14. Dry-Pipe, Alarm Check, Deluge, and Preaction Valves.

    The dry-pipe, alarm check, deluge, and preaction valves will be of cast iron construction with a minimum working water pressure of 175 psig. The valves will be furnished complete with pressure switch and gauges, and detection systems as required.

15. Sprinkler Heads

    The sprinkler heads will be fusible link type and designed to fuse at a predetermined temperature.

16. Fire Extinguishers

    All portable fire extinguishers will be located so as to keep a maximum travel distance of 50 feet from any location in a fire hazard area to an extinguisher.

    The dry chemical portable fire extinguishers will be 20-pound multipurpose type with a minimum rating of 20A:120B:C.

    The carbon dioxide portable fire extinguishers will be 20-pound capacity with a 10B:C rating.

2.4. Functional Requirements

2.4.1 The fire pumps will be shut off manually at the local controllers only. All valves in the Fire Protection water supply system will be of the indicating type. Valves will remain in the open position at all times except those indicated otherwise on the Piping and Instrument Diagram. Selected above ground valves designed to be open will be of the OS&Y type or other type in accordance with NFPA 24 and annunciated in the control room when not fully open.

The fire pumps and site pressure maintenance pump will be specified for parallel operation.

Interior fire walls which separate fire pumps will be two-hour rated.

2.4.2. The motor driven fire pumps will begin operation upon sensing a pressure drop in the fire protection ring header measured at the discharge of the pump. The main fire pumps will be sequence delayed in 10 second intervals to avoid starting all the pumps at one time due to sensing the same low pressure.

Additionally, each fire pump will have pressure switches set in a manner shown below:

Pump	Start Condition	Stop Condition

Pump	Start Condition	Stop Condition
Pressure Maintenance (Jockey) Pumps	160 psig	170 psig
Motor Driven Fire Pumps	150 psig	Manual[1]
Diesel Engine Driven Fire Pumps	140 psig	Manual[1]

It will not be possible to stop the pumps from other than at the local fire pump controller.

Provisions will be made such that each motor driven fire pump will be tested weekly by relieving the pressure to the pressure-actuated switch. The pump controllers will initiate the test and supervise the operation of the pump and the system pressure during the test.

2.4.3. The following alarms will be annunciated locally on the fire pump controllers in accordance with NFPA 20:

A. Motor driven fire pump:

1. Power available.

2. Phase reversal.

2.4.4 The following remote fire pump alarms will be arranged to alarm on the Fire Alarm Annunciation Panel (FAAP) in the control room in accordance with NFPA 20.

A. Motor driven fire pump:

1. Motor running.

2. Loss of any phase of AC power.

3. Phase reversal.

2.4.5 All underground valves, except hydrant curb box valves will be of the indicating type. Valves will remain in the open position at all times. All below ground valves of the post indicator type will be locked or sealed open.

2.4.6 When a fixed water suppression system operates, it operates until the isolation valve is closed, the automatic fire protection valve reset, and the fused sprinkler(s) replaced.

2.4.7 Fixed fire suppression systems will be automatic or manual as indicated in Table 1.

2.4.8 Local fire alarms (visual and audible) will be provided for fixed suppression and detection systems as follows:

[1] Except after automatic weekly test.

System Type	Annunciator Requirements[2]
Wet-Pipe Sprinkler	System Normal Fire Alarm (water flow)
Dry-Pipe Sprinkler	System Normal Fire Alarm (water flow)
Deluge System	System Normal Fire Alarm (fire detected) Fire Alarm (water flow)
Preaction System	System Normal Fire Alarm (fire detected) Fire Alarm (water flow)
Carbon Dioxide System	System Normal Fire Alarm (fire detected) Fire Alarm (System Discharge)
Independent Detection	System Normal Fire Alarm (fire detected)

2.4.9 Local trouble and supervisory signals (visual and audible) will be provided for fixed suppression and detection systems as follows.

System Type	Trouble Alarms
Wet-Pipe Sprinkler	Isolation Valve Not Full Open Water Flow Trouble
Dry-Pipe Sprinkler	Isolation Valve Not Full Open Low/High Air Pressure Water Flow Trouble
Deluge System	Isolation Valve Not Full Open Low/High Air Pressure Water Flow Trouble
Preaction System	Isolation Valve Not Full Open Low Supervisory Air Pressure Solenoid Circuit Trouble Water Flow Trouble
Standpipe System	Isolation Valve Not Full Open
Independent Detection	Detection System Fault

[2] Indicating lights for “System Normal” will be green. Other indicating lights for alarms will be red.

System Type	Trouble Alarms
Raw/Fire Water Storage Tank	Low Level Supervisory Water Temperature Supervisory

2.4.10 Remote fire alarms and trouble/supervisory signals (visual and audible) will be annunciated in the control room on a dedicated Fire Alarm Annunciator Panel (FAAP). Fire alarms on the FAAP will consist of individual system fire alarms signaled from the local panels. Trouble/supervisory signals on the FAAP will consist of common panel trouble alarms on that panel. All functions of the signaling system will comply with the requirements of NFPA 72.

2.4.11 Portable fire extinguishers will operate on the stored pressure principle and will meet the functional requirements of NFPA 10.

3.0 CODES, STANDARDS AND QUALITY

3.1 Water Supply

The fire protection water supply system design and equipment will be in accordance with the latest editions of the following codes and standards.

NFPA 20	Centrifugal Fire Pumps.
NFPA 22	Water Tanks for Private Fire Protection.

All major equipment and system components will be FM approved or UL listed for the intended application.

3.2 Site

The site fire protection system design and equipment will be in accordance with the latest editions of the following codes and standards.

EPRI NP-4144	Turbine Generator Fire Protection by Sprinkler System, Project No. 1843-2, Final Report 1985.
NFPA 24	Private Fire Service Mains.
NFPA 850	Recommended Practices for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations.

All major equipment and system components will be FM approved or UL listed for the intended application.

3.3 Buildings and Structures

The buildings and structures fire protection system design and equipment will be in accordance with the latest editions of the following codes and standards.

NFPA 10	Portable Fire Extinguishers.

NFPA 11	Foam Extinguishing Systems, Low Expansion and Combined Agent.
NFPA 12	Carbon Dioxide Extinguishing Systems.
NFPA 13	Sprinkler Systems, Installation.
NFPA 14	Standpipe and Hose Systems.
NFPA 15	Water Spray Fixed Systems.
NFPA 16	Standard for the Installation of Foam-Water Sprinkler and Foam Water Spray systems.
NFPA 25	Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.
NFPA 30	Flammable and Combustible Liquids Code.
NFPA 50A	Standard for Gaseous Hydrogen Systems at Consumer Sites.
NFPA 54	National Fuel Gas Code.
NFPA 68	Guide for Venting of Deflagrations.
NFPA 70	National Electrical Code.
NFPA 72	National Fire Alarm Code.
NFPA 75	Electronic Computer/Data Processing Equipment.
NFPA 85	Boiler and Combustion Systems Hazard Code.
NFPA 90A	Standard for the Installation of Air-Conditioning and Ventilating Systems.
NFPA 92B	Standard for Smoke Management Systems in Malls, Atria, and Large Spaces.
NFPA 101	Life Safety Code.
NFPA 204	Standard for Smoke and Heat Venting.
NFPA 221	Standard for FireWalls and Fire Barrier Walls.
NFPA 214	Cooling Towers
NFPA 291	Recommended Practice for Fire Flow Testing and Marking of Hydrants.
NFPA 497	Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas.
NFPA 780	Standard for the Installation of Lightning Protection Systems.
NFPA 2001	Standard on Clean Agent Fire Extinguishing Systems.

All major equipment and system components will be FM approved or UL listed for the intended application.

3.4 Other Requirements

The design of the fire protection system will meet all applicable requirements of applicable local codes and standards and the local authority having jurisdiction.

4.0 STEADY-STATE REQUIREMENTS

Capacity:

See Section 2.0, FIRE PROTECTION DESIGN BASIS

5.0 DYNAMIC REQUIREMENTS

None.

6.0 INSTRUMENTATION AND CONTROL REQUIREMENTS

Instrumentation and control devices will be arranged as shown on the Piping and Instrumentation Diagram for the Fire Protection System. Reference NFPA 20 for water pressure control requirements. All instrumentation and controls will have appropriate response times to ensure sustained stable system operation during normal and transient conditions plus during any other system disturbances.

TABLE 1

BUILDINGS AND EQUIPMENT FIRE PROTECTION

	Location	Type of Suppression System	Type of Detection	Suppression Operation
1.	Admin/Control Building	Wet pipe sprinklers	Quartzoid bulb sprinklers	Automatic
2.	Admin/Control Building	Class II Standpipe		Manual
3.	Maintenance/Warehouse Building	Wet pipe sprinklers	Quartzoid bulb sprinklers	Automatic
4.	Maintenance/Warehouse Building	Class II Standpipe		Manual
5.	Control, DCS, and Tele-Com Room	Preaction sprinklers	Quartzoid bulb sprinklers & smoke detection, at the ceiling level and beneath all raised floors.	Automatic
6.	Steam Turbine Under-floor	Dry-pipe sprinklers	Quartzoid bulb sprinklers	Automatic
7.	Steam Turbine Bearings	Preaction spray	Quartzoid bulb spray nozzles & Fixed temperature rate compensated heat detection	Automatic
8.	Steam Turbine Lube Oil Reservoir	Deluge spray	Dry Pilot	Automatic
9.	Water Treatment Building	Wet pipe sprinkler	Quartzoid bulb sprinklers	Automatic
10.	Water Treatment Building	Class II Standpipe		Manual
11.	GSU Transformer	Deluge spray	Dry Pilot	Automatic
12.	#1 Unit Auxiliary Transformer	Deluge spray	Dry Pilot	Automatic
13.	#2 Unit Auxiliary Transformer	Deluge spray	Dry Pilot	Automatic

Appendix C

RESUMES OF PREPARERS

WESLEY A. ALSTON

Community Planning / Entitlement / Environmental Analysis
Fire Compliance Analysis / Fire Protection Services

CLIENTS SERVED

As Principal of Pacific Development Solutions Group (**PDSG),** Wes Alston has been an active participant in the endeavors of many California builders and developers. **PDSG** has provided services to relatively small entrepreneur developers, mid-size development firms, and major landowners.

Alliance Residential	Lowes
Andland Properties, LLC	Nevis Development Company
Beazer Homes Southern California	Pacific Century Homes
Braddock and Logan Associates	Pulte Homes
Bren/Osgood Company	Rael Development Corporation
Canaday & Company	R.C. Hobbs Company
Centex Homes	Starbucks
Empire Companies	Stoneridge Commercial
Highpoint Communities	Suncal
K. Hovnanian Homes	Target
KB Homes	Taylor Woodrow Homes
Kohl's	Trumark Companies
Lincoln Properties	William Lyon Companies

PROFESSIONAL EXPERIENCE

Riverside County Fire Department **July 1971 – December 2002**

The Riverside County Fire Department provides all risk emergency management to the County of Riverside and 18 contract Cities. Responsible for a $143 million dollar budget and the supervision and overall management of the Fire department.

Fire Chief, City of Moreno Valley **February 2000 – December 2002**

Accountable for administering $6 million budget and maintaining effective cost controls. Managed staff of 150 firefighters and administrative personnel. Coordinated resource exchanges with other California Department of Forestry (CDF) facilities and fire departments. Responsibilities included:

- *Fire Stations:* Sponsored program to facilitate reducing response time by 5 minutes.
- *Equipment Acquisition and Fire Stations:* Responsible for submitting RFP's, preparing and reviewing specifications, negotiating contracts, and awarding bids.
- *Financial Management:* Maintained the lowest per capita cost of cities in California with a population between 100,000 and 200,000.

Battalion Chief/Fire Marshal, City of Moreno Valley **November 1997 – February 2000**

Supervised clerical and engineering staff in preparation of files, records, drafts, and maps pertaining to Fire Protection Planning for the City of Moreno Valley Fire Prevention office. Provided technical assistance to Fire Protection staff, Building and Safety staff, Code Enforcement, Planning staff, and others within the City that requires technical fire protection and planning information. Assisted in development of the Fire Department budget and monitor expenditures within the general Fire Department fund, development fees, and fire mitigation fees. Developed the Fire Department section of the City of Moreno Valley's new General Plan, presented to the City's Planning Commission and received approval. Attended all meetings throughout the City and County requiring the Fire Department representation. Provided a leadership role in all meetings.

Fire Captain Specialist **July 1984 – November 1997**

Managed the operation of the Fire Protection Planning and Engineering Division. Activities included:

- Participation in committees developing local and state ordinances.
- Serving as representative of the County Fire Department on planning matters before the Riverside County Board of Supervisors and Planning Commission.
- Negotiation of deal terms and purchase agreement conditions with property owners and brokers for new fire stations within the county.
- Preparation of economic and market feasibility analyses for specific plans within the county.

Responsibilities included:

- Management of current planning functions including subdivision, boundary adjustment, annexation, covenant modification, variance, and condition change.
- Preparation and presentation of staff reports and recommendations to Design Review Board and Board of Directors.
- Research and preparation of information on application processing, land use, governing documents, and regulatory code questions for staff, decision-makers, the membership, realtors and land-use professionals.
- Special projects in support or furtherance of Association policies and goals.
- Review and analyze regional plans and projects that have local impacts and generally tracking development in adjacent jurisdictions.
- Representing the Association at meetings of other jurisdictional entities.

EDUCATION

Bachelor of Science in Engineering, 1976
San Diego State

Associate of Arts in Fire Science, 1972
San Diego City College

PROFESSIONAL TRAINING AND CERTIFICATIONS

POST Basic
POST Supervision
NFPA Fire Sprinklers
POST Intermediate
SFM Fire Investigator 1
NFPA Fire Alarms

CURRENT COMMUNITY INVOLVEMENT / PROFESSIONAL AFFILIATIONS

Board Member Riverside Area Rape Crisis Center
Moreno Valley Community Hospital Foundation
RCC Community Partnership
Moreno Valley Chamber of Commerce
National Fire Protection Association
California Fire Chiefs Association
California Conference of Arson Investigators
Board Member United Way of Inland Valleys
Riverside Community College Foundation
Silver Eagles
Building Committee, St. Patrick Church
International Conference of Building Officials
California League of Cities
California Contractor (B2) License No. 81515

JOHN W. SNELL, PE
RESUME

6030 Baldwin Ave ♦ Riverside, Ca 92509 ♦ (951) 318.5806 ♦ john@auroraconsultingsocal.com, jwsnell@earthlink.net

SUMMARY:

Mr. Snell has over thirty years of successful professional practice in Southern California real estate development, project management, civil engineering, planning and project advocacy on projects ranging from small multi-family developments to large scale master planned communities as well as small retail to large scale industrial projects. He has extensive experience in the planning, design and execution of developments including very successful as well as award winning projects. With a background in civil engineering and surveying and a proven track record of resolving complex issues with win-win results. Mr. Snell views development with regard to local and regional issues, the needs of the community and compliance with local, regional and federal requirements. He has gained a full working knowledge of NEPA, CEQA, state and local zoning and development codes. He understands how projects affect the environment, issues such as water quality, traffic, air quality, land use compatibility, and agency challenges. He also has a deep understanding of the impact and benefits projects have on the local economy. Through his experience as a planning commissioner, Mr. Snell has also established himself as an excellent meeting facilitator and a very good listener. Mr. Snell has established a long successful track record for accountability on all the projects he has managed.

John was born, raised and has lived his entire life in the area known as the Inland Empire. The experience, knowledge and relationships from this have been very valuable for John and the projects he has been involved with. John's father, Mr. William Snell, is a well known and long practicing civil engineer in the Inland Empire. From a very young age John would join his father on job sites and actually assist in site assessments, review of site and drainage conditions. This allowed John to enter into the field professionally at a very young age and progress quickly, taking on project responsibilities very early in his career.

In 1987 Mr. Snell, with other members of the community, formed the Indian Hill Alliance. This group was interested in bettering the area of Indian Hills, getting information out to the community, and providing a forum for the community to raise and address issues with local agencies and decision makers as well as project proponents. Mr. Snell has been involved in volunteering and helping to shape his community for many years. In 1992 he volunteered for several days providing communication and coordination assistance for relief of the Landers Earthquake. This inspired Mr. Snell to obtain his amateur radio license and be an official first responder for the County of Riverside..

Mr. Snell's involvement with the community and his technical expertise led to his appointment to the Riverside County Planning Commission by Supervisor John Tavaglione in February 1995. Mr. Snell still holds this position and has been elected by his peers to be chairman several times. Riverside County has been the most active jurisdiction in the state of California during Mr. Snell's tenure. During the 1997 term, Mr. Snell was chairman for the Eagle Mountian Landfill and the El Sobrante Landfill. These projects were of national prominence and were extremely controversial. Some hearings had as many as 600 people, all with very strong held beliefs and a strong desire to make their views known. Mr. Snell conducted these meetings without incident and with respect to all parties. During the 2002-2003 term the Commission spearheaded an update to the county's general plan. Hearings were scheduled throughout the county over an 18 month time period. Mr. Snell was elected chairman for 2 consecutive terms so he could preside over these hearings, unprecedented in Riverside County.

Notable Skill sets:

Computers: Mr. Snell is well versed in Windows operating systems XP and 7. He is an advanced user of Excel, Outlook, Work, Microsoft Project and Adobe Acrobat. He is well versed with PowerPoint.

Agencies & Interested Parties: Mr. Snell has demonstrated a valuable ability to quickly develop relationships with local, state and federal agencies as well as interested third parties such as neighbors, community interest groups and environmental groups. During his career Mr. Snell has worked with most of the city and county governments in Southern California, as well as several state and federal agencies.

Agreements and Technical Documents: Mr. Snell has prepared, reviewed, amended and advised on Zoning Ordinances, County Ordinances, Letters of Interest, Purchase Agreements, Consultant Agreements, Memorandums of Understanding,

State and Local Agency License Agreements, Tri and 4 Party intergovernmental agreements as well as project conditions of approval. Mr. Snell has also been deeply involved with the CEQA and NEPA processes. He is familiar with the timing and hurdles that these regulations create. He is also accustomed to working closely with consultants and attorneys as they propose and prepare technical or expert studies, reviewing these studies to be sure all necessary items are addressed property and then working with the consultants and attorneys as they address agency and public comments. Mr. Snell is also frequently required to "translate" these technical documents and their findings into language or analogies that can be understood by non-technical members of the team.

CURRENT VENTURES:

Aurora Consulting, Riverside, CA

President

Founded company in 1994 with the directive to develop, partner and consult on various real estate projects including multi-use, single-family, multifamily and commercial developments along with expert witness testimony, the most recent case (2009, Sacremento, Ca) being AKT vs. C&C Ranch, working for Jones Day as a project acquisition expert.

Riverside County Planning Commission

Commissioner, 2nd District

Appointed in February, 1994 to present day

Appointed by Supervisor Tavaliogne. Review, modify and provide recommendations to Board of Supervisors for projects and enforcement actions. Includes dealing with public, applicants, staff and agencies in public and private settings. Requires working knowledge and implementation of county ordinances, zoning and general plan policies.

Mission Development, Redlands, CA 2005 to 2008

Partner – Project Management, Planning and Design

Joined a real estate development venture in 2005 that was formed in 2003 with 2 projects: in charge of project management, specific plans, EIR, technical studies, strategies, planning and design.
Greenspot Village & Marketplace – 750,000sf retail, 800 residential unit Mixed Use Community.
DeerPark – 200 Acre Residential Mixed Use railroad adjacent project.
Company has gone dormant due to lack of funding.

American Pacific Homes, Montclair, Ca 1998 to 2005 full-time, 2005 to present part-time

Executive Vice President, Planning and Engineering

- Member of the executive team for a local developer/homebuilder with 2 others. Responsibilities included project acquisition, preliminary entitlements, construction entitlements, DRE filings, HOA formation and training, supervise project management staff, assist construction department, assist customer service department and assist the sales department on a multitude of projects throughout Southern California including large and small lot single family subdivisions, single family condominiums, multi-family condominiums, large and mid scale master planned communities. Prominent projects include Mission Creek Development in Loma Linda and Rio Vista Specific Plan in the Rubidoux area of Riverside County.
- Acquisition responsibilities included preparation of feasibility studies, review of project site and planning conditions, review of all available technical studies, review of fees and all anticipated costs, meeting with local agencies as necessary to determine current project status as well as anticipated project entitlements. Reviewed and/or prepared offers, letters of intent and purchase and sale agreements. Frequently was the primary contact with brokers and buyers when we were selling a project. Also formed project team of consultants and experts in preparation of preliminary entitlements.
- Preliminary entitlements are tentative maps, development plans, site plans or specific plans with associated mitigated negative declaration or environmental impact reports. Responsibilities include assembling the consultant team, establish and maintain project budgets and schedules, plan project with appropriate team and coordinating appropriate level of collaboration. Liaison and project advocate with project neighbors, adjacent developers, local agency staff, commissions and decision makers. Review all project technical studies, staff reports, conditions of approval, environmental studies, and development agreements and lead negotiations on all of these.
- Construction entitlements are the project construction drawings and obtaining of construction permits and filing of final maps. Responsibilities include preparation and maintenance of project budgets and schedules. Assembled and managed project team and reviewed project plans, specifications, studies, reports and plan check comments. When project management staff was available, also supervised, trained collaborated with them. Acted as lead advocate with agency plan checkers and coordination between project team members.

- DRE (Department of Real Estate) filings are required for projects under the direct jurisdiction of a county and projects with home owners associations including condominiums. Includes the preparation of Conditions, Covenants and Restricitions in compliance with state and local guidelines and the project conditions. Coordinated with project attorney, title company and HOA budget consultant. Included determining project phasing and preparation of HOA by-laws.
- HOA (Home Owners Association)Formation and training typically included hiring the management company, assuming the role of HOA president and presiding over the HOA meetings for the first year as a minimum and up to three years. Role as liaison and often informal arbitrator between home owners and company. Gained deep understanding of the laws and procedures for HOAs and was able to assist HOA's in establishing correct procedures, by-laws, budgets and reserves for their long term viability.
- Assist construction and sales department included regular meetings, review and assist in project bidding documents, sales contract, sales office site planning and overall sales program.
- Miscellaneous duties included working with attorneys whenever litigation was brought to the company and closing out projects by obtaining the release of bonds and any final paper work with the local agency.
- Projects were located in Riverside County, Cities of Rancho Cucamonga, Ontario, Oxnard, Anaheim, Riverside, Elsinore, Monterey Park, Murrieta and Temecula.

PRIOR EMPLOYMENT:

Concordia Homes, San Bernardino, Ca 1995-1998
Executive Vice President

- Member of the executive team for a local developer/homebuilder with 4 others. Responsibilities included project acquisition, preliminary entitlements, construction entitlements, supervise project management staff, assist in the establishment of out of state divisions, assist construction department, and assist the sales department on a multitude of projects throughout Southern California including single family subdivisions, single family condominiums, multi-family condominiums, large and mid scale master planned communities.
- Assisted in the establishment of divisions in Colorado and Las Vegas. Assisted in project acquisition, project management and general operations until local staff could be brought on and trained.
- Projects were located in the County of Riverside, Cities of Rancho Cucamonga, Victorville, Apple Valley, Yucaipa, Oxnard, Ventura, Riverside, San Bernardino, Pasadena, Adelanto, Murrieta and Temecula.

Adkan Engineers, Riverside, CA 1985-1995
Vice President

- Joined company when it had 2 employees in engineering division and developed this into an engineering staff of 35 employees, all hired, supervised and trained by Mr. Snell. Responsibilities included project management, project design, site planning, strategic planning, supervision of staff, client interface, preparation of project proposals, contracts, coordination of vendors and sub consultants, review of all project plans and studies which were prepared under his authority. Assisted survey department as needed with plan review, dispute resolution and field meetings on construction issues. Occasional work as expert witness on third party disputes and as a witness for actions against company.
- Projects within San Bernardino, Riverside, Orange and LA Counties and several dozen cities. Work included residential, commercial, industrial, public works and private/public joint ventures.

Wes Engineer, San Bernardino, CA 1980-1985
Project Engineer, Project Manager, Surveyor

- Responsibilities included project design, boundary and construction surveying, preparation of drainage studies, water /sewer demands and needs analysis, traffic studies; street, sewer, water, storm drain, grading plan design and preparation; project management and processing.
- Projects included the initial planning, studies, boundary survey and layouts for East Highland Ranch.
- Projects were locating in San Bernardino County and city, cities of Victorville, Redlands, Rialto, Highland and Red Mountian, Ca.

EDUCATION:

California State University at Fullerton, coursework in civil engineering, San Bernardino Valley College, coursework in general engineering, California Polytechnic Institute review and instructional courses in preparation for Engineer In Training exam and Professional Civil Engineering exam

Continuing education and seminars in various subjects, including environmental issues, land development, real estate law, land use studies, project management and personal growth.

Professional License:

Professional Civil Engineer in the State of California, RCE 47867, Aug 1991

PARTIAL LIST OF PROJECTS:

Greenspot Village & MarketPlace, Highland, CA – Mixed Use (Retail, Office, SFD, Apartments, Condominiums)
Rio Vista Specific Plan, Riverside, Ca – Mixed use residential plan 947 acres, 1,600 homes
East Highlands Ranch, Highland, Ca – Masterplanned Community
Rancho Etiwanda Estates, Rancho Cucamonga, Ca- Residential Master Planned Community
Rancho Vista, Rancho Cucamonga, Ca – Several Single Family Projects
Pointe Premier, Anaheim Hills, Ca- high end semi-custom homes
Pacific Pointe, Oxnard, Ca- senior duplexes
Mission Creek and Mission Lane, Loma Linda, Ca- small lot residential with TND principals
Pacific Breeze, Oxnard, Ca – small lot detached condominiums
Pacific Ponte, Oxnard, Ca- small lot detached condominiums
Heritage Estates, Rancho Cucamonga, Ca – large lot single family
Hidden Canyon, Riverside – large lot custom homes
Rancho Park, Rancho Cucamonga, Ca- duplex homes
Hastings Ranch Terrace, Pasadena, Ca- Multifamily condominiums
Estate Hill, Rancho Cucamonga, Ca- semi-custom homes on large lots
Bryant Park Estates, Yucaipa, Ca- large lot single family
Monterey Views Estates, Montery Park, Ca- Large homes on small pads
Apple Valley Estates, Apple Valley, Ca – mixed single family and duplex homes

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE *RICE SOLAR ENERGY POWER PLANT PROJECT*

Docket No. 09-AFC-10

PROOF OF SERVICE
(Revised 8/5/2010)

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DECLARATION OF SERVICE

I, Marie Mills, declare that on October 25, 2010, I served and filed copies of the attached, RICE SOLAR ENERGY, LLC'S REVISED FIRE NEEDS ASSESSMENT, dated October 25, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:
[http://www.energy.ca.gov/sitingcases/ricesolar].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

__X___ sent electronically to all email addresses on the Proof of Service list;

_____ by personal delivery;

__X__ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses NOT marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

__X___ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (*preferred method*);

OR

_____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 09-AFC-10
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Marie Mills