GALATI | BLEK LLP

455 Capitol Mall Suite 350
Sacramento CA 95814
Tel •916.441.6575
Fax •916.441.6553

June 28, 2012

Mary Dyas
Compliance Project Manager
Siting, Transmission and Environmental Protection Division
California Energy Commission
1516 Ninth Street, MS-2000
Sacramento, CA 95814-5512

Subject: **PALO VERDE SOLAR I, LLC'S PETITION FOR AMENDMENT CONVERSION TO PV BLYTHE SOLAR POWER PROJECT DOCKET NO. (09-AFC-6C)**

Dear Ms. Dyas,

On behalf of Palo Verde Solar I, LLC (PVSI), GalatiBlek LLP hereby submits ten (10) hard copies and ten (10) CDs of PVSI, LLC's Petition for Amendment (Petition) for the Blythe Solar Power Project (BSPP) (09-AFC-6C) to convert the BSPP from concentrating solar thermal to photovoltaic electrical generating technology. This Petition is filed pursuant to California Public Resources Code Section 25500.1.

As described in Section 1 of the Petition, PVSI is currently the subject of bankruptcy proceedings. I have been authorized by the bankruptcy court to prepare and file this Petition on behalf of PVSI. I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge. I also certify that I am authorized to submit PVSI, LLC's Petition for Amendment for the BSPP on behalf of PVSI.

Sincerely,

Scott A. Galati
Counsel to Palo Verde Solar I, LLC

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 *BLYTHE SOLAR POWER PLANT PROJECT*

Docket No. 09-AFC-6

PROOF OF SERVICE
(Revised 8/27/10)

APPLICANT
Alice Harron
Senior Director of Project Development
***1111 Broadway, 5th Floor**
Oakland, CA 94607
harron@solarmillennium.com

Elizabeth Ingram, Associate Developer, Solar Millennium, LLC
***1111 Broadway, 5th Floor**
Oakland, CA 94607
ingram@solarmillennium.com

Carl Lindner
AECOM Project Manager
1220 Avenida Acaso
Camarillo, CA 93012
carl.lindner@aecom.com

Ram Ambatipudi
Chevron Energy Solutions
150 E. Colorado Blvd., Ste. 360
Pasadena, CA 91105
rambatipudi@chevron.com

Co-COUNSEL
Scott Galati, Esq.
Marie Mills
Galati/Blek, LLP
455 Capitol Mall, Suite 350
Sacramento, CA 95814
sgalati@gb-llp.com
mmills@gb-llp.com

Co-COUNSEL
Peter Weiner
Matthew Sanders
Paul, Hastings, Janofsky & Walker LLP
55 2nd Street, Suite 2400-3441
San Francisco, CA 94105
peterweiner@paulhastings.com
matthewsanders@paulhastings.com

INTERESTED AGENCIES
California ISO
e-recipient@caiso.com

Holly L. Roberts, Project Manager
Bureau of Land Management
Palm Springs-South Coast Field Office
1201 Bird Center Drive
Palm Springs, CA 92262 Office
CAPSSolarBlythe@blm.gov

INTERVENORS
California Unions for Reliable Energy (CURE)
c/o: Tany A. Gulesserian,
Elizabeth Klebaner
Marc D. Joseph
Adams Broadwell Joseph & Cardozo
601 Gate Way Boulevard,
Suite 1000
South San Francisco, CA 94080
tgulesserian@adamsbroadwell.com
eklebaner@adamsbroadwell.com

ENERGY COMMISSION
KAREN DOUGLAS
Chairman and Presiding Member
kldougla@energy.state.ca.us

ROBERT WEISENMILLER
Commissioner and Associate Member
rweisenm@energy.state.ca.us

Raoul Renaud
Hearing Officer
rrenaud@energy.state.ca.us

Alan Solomon
Siting Project Manager
asolomon@energy.state.ca.us

Lisa DeCarlo
Staff Counsel
ldecarlo@energy.state.ca.us

Jennifer Jennings
Public Adviser's Office
e-mail service preferred
publicadviser@energy.state.ca.us

*indicates change

DECLARATION OF SERVICE

I, Marie Fleming, declare that on June 28, 2012, I served and filed copies of the attached **PALO VERDE SOLAR I, LLC'S PETITION FOR AMENDMENT**, dated June 28, 2012. 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/solar_millennium_blythe]

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:

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

_X__ 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, via personal delivery, 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-6
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.

Marie Fleming

BLYTHE SOLAR POWER PROJECT

Petition to Amend

Conversion to PV

06.28.12

(09-AFC-6C)

Submitted By:

PALO VERDE SOLAR I, LLC

BLYTHE SOLAR POWER PROJECT

Petition to Amend

Conversion to PV

(09-AFC-6C)

Submitted By:

PALO VERDE SOLAR I, LLC

Submitted to:

California Energy Commission

06.28.12

GALATI | BLEK LLP

455 Capitol Mall Suite 350
Sacramento CA 95814
Tel •916.441.6575
Fax •916.441.6553

June 28, 2012

Mary Dyas
Compliance Project Manager
Siting, Transmission and Environmental Protection Division
California Energy Commission
1516 Ninth Street, MS-2000
Sacramento, CA 95814-5512

Subject: **PALO VERDE SOLAR I, LLC'S PETITION FOR AMENDMENT**
CONVERSION TO PV
BLYTHE SOLAR POWER PROJECT
DOCKET NO. (09-AFC-6C)

Dear Ms. Dyas,

On behalf of Palo Verde Solar I, LLC (PVSI), GalatiBlek LLP hereby submits ten (10) hard copies and ten (10) CDs of PVSI, LLC's Petition for Amendment (Petition) for the Blythe Solar Power Project (BSPP) (09-AFC-6C) to convert the BSPP from concentrating solar thermal to photovoltaic electrical generating technology. This Petition is filed pursuant to California Public Resources Code Section 25500.1.

As described in Section 1 of the Petition, PVSI is currently the subject of bankruptcy proceedings. I have been authorized by the bankruptcy court to prepare and file this Petition on behalf of PVSI. I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge. I also certify that I am authorized to submit PVSI, LLC's Petition for Amendment for the BSPP on behalf of PVSI.

Sincerely,

Scott A. Galati
Counsel to Palo Verde Solar I, LLC

Table of Contents

List of Tables, Figures and Appendices

TABLES

FIGURES

APPENDICES

Section 1 INTRODUCTION

1.1 BACKGROUND

Palo Verde Solar I, LLC, is a wholly-owned subsidiary of STA Development LLC (PVSI) and is the current owner of the California Energy Commission (Commission or CEC) Final Decision issued for the Blythe Solar Power Project (BSPP). On April 2, 2012 PVSI filed voluntary petitions for relief under chapter 11 of the Bankruptcy Code in the United State Bankruptcy Court for the District of Delaware (Bankruptcy Court) captioned *In re Solar Trust of America, LLC, et al.*, Case No. 12-11136 (KG). On June 21, 2012 pursuant to the Bankruptcy Court approved auction procedures, NextEra Blythe Solar Energy Center, LLC (NextEra Blythe), a wholly owned subsidiary of NextEra Energy Resources, was selected as the highest bidder for the BSPP. Subject to the satisfaction of closing conditions and approval of the Bankruptcy Court, NextEra Blythe will be the owner of the BSPP. NextEra Blythe filed a Petition For Ownership with the Commission on June 25, 2012. When the acquisition of the BSPP is complete, the Bankruptcy Court approves the acquisition and the Commission has approved the Petition For Ownership transfer, then NextEra Blythe will be the project applicant instead of PVSI and NextEra Blythe will effectively own or have control over all the PVSI Project assets. For purposes of this Petition, however, the owner of the BSPP will continue to be referred to as PVSI.

PVSI files this Petition For Amendment to convert the electrical generating technology from concentrating solar thermal collection (CSP) and steam turbine technology of the BSPP to photovoltaic solar technology (PV). The BSPP is located at 10000 Dracker Drive, Blythe, CA 92225 in Riverside, California, on land administered by the Bureau of Land Management (BLM). A small portion of the project may be located on private land, but most of the project will be located within the boundaries of the previously issued ROW Grant (CACA 048811). The proposed project site is located 8 miles west of Blythe, California and 3 miles north of Highway I-10. Current access to the site is from Exit #232, Airport/Mesa Drive on I-10 via Mesa Drive Road. The BSPP site is located within the Palo Verde Area Plan of Riverside County.

PVSI submitted an Application for Certification (AFC) for the BSPP to the Commission on August 24, 2009 (09-AFC-6). In 2008, PVSI's predecessor-in-interest filed a 299 Right of Way Grant (ROW) Application with the BLM to develop the BSPP on public lands. Consistent with a Memorandum of Understanding between the BLM and the CEC, the agencies prepared a joint environmental compliance document to address the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) for BSPP. Specifically, a Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) was prepared and was circulated for

agency and public review and comment between March 19, 2010, and June 17, 2010. The BLM and the CEC prepared separate final documents for compliance with NEPA and CEQA, respectively. The CEC issued its Final Decision on September 15, 2010. The BLM published the Plan Amendment/Record of Decision (PA/ROD) on October 22, 2010 and issued the ROW Grant on November 4, 2010.

The Final Decision allowed the BSPP to be constructed in Phases. PVSI obtained a Notice To Proceed for construction of Phase 1A of the BSPP on November 4, 2010 and immediately began construction. PVSI continued construction of portions of Phase 1A until August 2011. On August 25, 2011, PVSI sent a letter to the Commission and to BLM outlining that it would cease construction activities on BSPP site and would seek to amend the ROW Grant and the Final Decision to allow construction and operation of PV technology on the site. This letter outlined maintenance activities that would continue on site to ensure site security and prevent off-site environmental impacts. The BLM and Commission approved a maintenance plan and associated activities on September 8, 2011. PVSI has been maintaining the site in accordance with this maintenance plan to date.

1.2 ORGANIZATION OF THIS PETITION

This Section provides an Introduction to the Project; discusses the authority for the Commission to exercise jurisdiction over this Petition; outlines the purpose of need of the Petition; and outlines the benefits from the BSPP after modification.

Section 2 of the Petition describes the modifications proposed to convert the BSPP to PV technology as well as the modifications to the project footprint.

Sections 3, 4, 5 and 6 contain analysis of the proposed modifications comparing the potential environmental impacts from the modified PV configuration to the potential environmental impacts of the original project as approved in the Commission Final Decision. These Sections also include an update of laws, ordinances, regulations or standards applicable to the PV configuration where applicable. Where appropriate each technical section proposes modifications to the Conditions of Certification contained in the Commission Final Decision.

Section 7 discusses any potential effects on nearby property owners.

Section 8 contains conclusions and recommended findings for Commission consideration.

1.3 LEGISLATIVE CHANGES TO COMMISSION JURISDICTION

On October 4, 2011, the Legislature passed and the Governor signed into law SB 226 (Simitian). SB 226 added Section 25500.1 to the Public Resources Code which authorized the Commission to review and amend a License for a solar thermal power plant to use of PV technology. Section 25500.1 applied to projects that met certain requirements. The BSPP meets all of the requirements of Section 2550.1. In accordance with Section (d) of Section 25500.1, the commission shall process a petition submitted under this section pursuant to Section 1769 of Title 20 of the California Code of Regulations.

1.4 PURPOSE AND NEED FOR AMENDMENT

PVSI originally proposed the use of concentrating solar technology for the BSPP site. At the time, PVSI was owned by Solar Millennium AG that had the rights to a particular type of helio-trough design that it was attempting to develop in the United States. Well after the Commission issued its Final Decision in 2010, Solar Millennium AG filed insolvency proceedings in Germany. As discussed in Section 1.1 above, the BSPP is currently being acquired by NextEra Blythe. NextEra Blythe desires to convert the solar generation technology from CSP to PV. This information was not known or anticipated at the time the Commission issued its Final Decision.

1.5 PROJECT AMENDMENT BENEFITS

The BSPP site has received a Commission Final Decision and a BLM ROW Grant. The Amendments proposed in this Petition provide an opportunity to deliver up to 1000 MW of renewable power to Californians without the need to permit a new site. In addition, as described in this Petition the use of PV technology reduces the visibility of project by removing four power blocks and associated 120 foot tall cooling towers, reducing the overall height of the solar collectors by approximately 15 feet, and removing Heat Transfer Fluid from the system. The use of a previously permitted site as reconfigured to further lessen environmental impacts with an approved Large Generator Interconnection Agreement is a responsible approach to helping California achieve its Renewable Portfolio Standards and beyond.

1.6 SCOPE OF ANALYSIS

Pursuant to PRC Section 25500.1, the Commission should process this Petition in accordance with Section 1769 of its regulations and the well-established principles of practice the Commission has followed when processing other petitions. This Petition has been prepared in accordance with those principles, focusing on comparing the

modifications proposed herein to the original project as described in the Commission Final Decision.

1.7 UPDATES TO THE PROJECT'S CUMULATIVE SCENARIO

A Cumulative Scenario for the Project was established during Staff's assessment of the BSPP and ultimately incorporated in the Final Commission Decision and included a list of existing and future foreseeable projects in the vicinity of the Project. As part of this Amendment effort, a search was performed for new reasonably foreseeable future projects with the potential to increase the cumulative impacts described in the Commission Decision. It should be noted that the Area of Potential Effect varies among resource areas and, as such, no standardized area was analyzed. A search of Riverside County and City of Blythe available permit filings has not revealed any additional projects that were not already included in the original Cumulative Impact analysis included in the BSPP Final Decision.

Section 2 DESCRIPTION OF PROJECT AMENDMENT

This Section provides a description of the proposed modifications to the BSPP . The Final Decision describes the BSPP as a nominally rated 1000 MW solar thermal generating plant using four solar fields of concentrating parabolic trough mirrors and four power blocks. The Commission Final Decision includes a description of the linear facilities including a transmission line interconnecting to the Colorado River Substation, primary and secondary access roads, telecommunication facilities, and a natural gas pipeline. For convenience, the term "Approved Project" refers to the BSPP as described in the Commission Final Decision. The terms "Project Modifications" or "Modified Project" refers to the BSPP as proposed in this Petition.

2.1 GENERAL PROJECT DESCRIPTION

2.1.1 Description of Approved Project

The Commission issued a Final Decision for the BSPP which included a description of the BSPP as a solar thermal generating facility that would consist of four adjacent, independent, units of 250 megawatt (MW) nominal capacity each for a total nominal capacity of 1,000 MW. The Approved Project would have utilized solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola. A heat transfer fluid (HTF) is brought to high temperature (750°F) as it circulates through the receiver tubes. The HTF is then piped through a series of heat exchangers where it releases its stored heat to generate high pressure steam. The steam is then fed to a traditional steam turbine generator where electricity is produced. Individual components of the Approved Project included:

- Solar Field & Power Block #1 (northeast);
- Solar Field & Power Block #2 (northwest);
- Solar Field & Power Block #3 (southwest);
- Solar Field & Power Block #4 (southeast);
- Access road from and including upgraded portion of Black Rock Road to onsite office;
- Warehouse/maintenance building, assembly hall and laydown area;
- Telecommunications Lines;
- Natural Gas Pipeline;
- Concrete Batch plant;
- Fuel depot;
- Onsite transmission facilities, including central internal switchyard;
- 230 kV double circuit transmission line interconnecting to the Colorado

River Substation (Gen-Tie Line); and
- Groundwater wells used for water supply.

2.1.2 Description of Modified Project

The Modified Project includes replacing the solar thermal technology completely with PV generating technology. Access to the site will be the same as the Approved Project and the BSPP will continue to interconnect to the regional transmission grid at Southern California Edison's (SCE's) Colorado River Substation (CRS) which is currently under construction.

PVSI proposes to develop BSPP in eight operational phases designed to generate a total of approximately 1,000 MW nominal of electricity. Each phase will consist of approximately 125 MW nominal of electricity as shown on the Preliminary Layouts, Figures 2-1A and 2-1B. Figure 2-1A shows a preliminary project layout with Alternative 1 transmission corridor along the eastern boundary. Figure 2-1B shows a preliminary layout to accommodate Alternative 2 transmission corridor in the center of the site. During operations, all eight units would share an Operations and Maintenance (O&M) Facility, Onsite Substation, access and maintenance roads (either dirt, gravel or paved), perimeter fencing and other ancillary security facilities, and a double-circuit 230 kV gen tie transmission line.

The Modified Project will be located on public land within Bureau of Land Management (BLM) right-of-way (ROW) # CACA – 048811. PVSI has acquired control over two private parcels that could be included as part of the BSPP site. The first property is located near the center of the existing ROW, consists of approximately 160 acres and is known as the Strait-Murphy Property. PVSI now owns the Strait-Murphy Property. The second private parcel is located at the southern boundary near the transmission ROW as it leaves the solar facility ROW. This property consists of approximately 160 acres and is known as the Porter Property. PVSI has acquired an option to purchase the Porter Property.

The total proposed ROW acreage is approximately 7,025 acres including linear facilities outside of the proposed ROW area of approximately 183 acres. Including the 320 acres of private property (Strait-Murphy and Porter Properties), the total acreage of the Modified Project will be approximately 7,345 acres.

Assuming that required transmission upgrades and permits are in place and construction progresses as planned, the first phase of the approved 1,000 MW solar PV energy-generating project could start construction on the Project site as early as mid 2013. Subsequent phases would be constructed in phased stages (each 125 MW unit) moving across the site with potential overlap for start of the next phase prior to

completion of previous phase and would continuing to support the commercial operation dates for the phases.

For ease of review, we have included the following list to identify the primary project modifications to the Approved Project:

- The previously planned four power blocks (which each included a steam turbine, evaporation pond, auxiliary boiler, air-cooled condenser, and equipment) and structures have been eliminated.
- The Land Treatment Units for heat transfer fluid (HTF) have been eliminated.
- The HelioTrough energy collection systems have been eliminated and replaced with PV panels configured for either horizontal tracking or fixed tilt operations.
- The substation will be relocated near the center of the disturbance area.
- The large assembly hall will be eliminated.
- The concrete batch plant will be eliminated.
- The natural gas line has been eliminated.
- The water treatment system, associated waste and evaporation ponds have been reduced from eight ponds to two.
- The large drainage structures surrounding the site will be reduced in size or eliminated.
- The amount of mass grading will be reduced.
- The Project footprint could include private land recently acquired by PVSI.
- The Project footprint has been modified to allow two alternative transmission and access road corridors to accommodate the NextEra McCoy and the EnXco Projects proposed to the north of the BSPP.
- A minor modification to a portion of the BSPP transmission line ROW in area of south of I-10 to accommodate NextEra McCoy Project and the EnXco McCoy Project transmission line interconnections to the CRS.
- Water use during constructions will be reduced from approximately 4,100 AF to 3,500-4,000 AF during the duration of construction.
- Water use during operations will be reduced from approximately 600 AFY to between 60 to 88 AFY.

The list above largely encompasses the items that were eliminated or reduced by the switch in technology from parabolic trough/concentrating solar thermal to PV technology. There are new elements of the Modified Project related to the PV technology (e.g., inverters, solar panels, an O&M building, etc). These elements and the currently proposed PV project are described in greater detail in this Section of the Petition.

2.2 PHOTOVOLTAIC TECHNOLOGY

The BSPP will involve the installation of PV modules with the capacity to generate a total of 1,000 MW of power under peak solar conditions. This Petition is based on current technology and installation methodology. Inverter hardware will be located in each Power Conversion Station (PCS), which will convert the direct current (DC) electric input into grid-quality alternating current (AC) electric output.

The PV modules that make up the Inverter Blocks have the capability to convert the sun's energy into DC electricity, each producing a relatively small amount of electricity, about several hundred watts each at rated conditions. Modules are electrically connected in series and parallel arrangements. A series arrangement increases the collective output voltage and a parallel arrangement increases the current to the desired levels for the DC collection system.

The modules being considered for this Modified Project are produced by a number of manufacturers of silicon crystalline and thin film modules. This technology is changing rapidly primarily in the areas of cost and efficiency. For reasons of availability to support the Modified Project delivery requirements and to allow PVSI to capitalize on the latest technological advances, multiple sources might be utilized. At this time PVSI has not selected whether it will install a Fixed-Tilt or Single-Axis Tracking modular system or a combination of both systems. While both systems are similar in how they generate and distribute electricity, the orientation and collection of the sun's energy is different. Appendix A contains specifications for several types of PV modules and racking systems.

2.2.1 Photovoltaic Modules

The solar PV modules, or panels, convert the solar energy into direct current. Different materials display different energy generation efficiencies; higher efficiency panels produce more electricity per given area, but generally cost more per panel area. Materials commonly used for PV solar cells include monocrystalline silicon, polycrystalline silicon, amorphous silicon, cadmium telluride, and copper indium selenide/sulfide. Several of the PV cells currently available are manufactured from bulk materials that are cut into very thin wafers, i.e., between 180 to 240 micrometers thick. Others are constructed from thin-film layers. PVSI is considering the installation of both polycrystalline and cadmium telluride solar cells. Both technologies are proven and viable for utility-scale PV plants. Characteristics of typical panels are given in Table 2-1.

TABLE 2-1
TYPICAL PV PANEL CHARACTERISTICS

Typical Panel Physical and Electrical Characteristics	Thin Film (CdTe) (First Solar FS Series 3)	Polycrystalline (Yingli Solar YGE 280 Series)
Length	1.2 m	1.9 m
Width	0.6 m	0.99 m
Weight	12 kg	26.8 kg
Cell Type	CdS/CdTe semiconductor, 154 active cells	72 multicrystalline
Frame Material	None	Anodized aluminum alloy, silver, clear
Cover Type	3.2 mm heat strengthened front glass laminated to 3.2mm tempered black glass	Low-iron tempered glass
Nominal Power	85 W	290 W
Efficiency	~12%	~15%
Voltage at Pmax	48.5 V	35.8 V
Current at Pmax	1.76 A	8.10 A
Open Circuit Voltage	61.0 V	45.3 V
Short Circuit Current	1.98 A	8.62 A
Maximum System Voltage	1000 V DC	1000 V DC
Temperature Coefficient of Pmpp	-0.25%/°C	-0.45%/°C

The system would incorporate high-efficiency commercially available solar PV panels that are Underwriters Laboratory (UL)-listed or approved by another recognized testing laboratory. By design, the solar PV panels would absorb sunlight to maximize electrical output and use anti-reflective glass. Due to the limited rotation angles, the solar PV panels have no potential for reflecting the sun's rays upon any ground-based observer off-site. These panels would be protected from impact by tempered glass, and would have factory applied ultraviolet (UV) and weather-resistant "quick connect" wire connectors.

Silicon is the traditional material choice for PV panel cells and PVSI is considering polycrystalline silicon PV modules for use at the BSPP. A CdTe solar panel uses solar cells constructed in a thin semiconductor layer (also known as a "thin film") to absorb and convert sunlight into electricity. PVSI is also considering the use of thin film CdTe panels as one of its technology options. If thin film CdTe panels are used, PVSI would ensure that the vendor offers a PV module recycling program through which any module may be returned for recycling.

PV modules can be mounted together in different configurations (also referred to "arrays") depending on the equipment selected. The BSPP arrays primarily would be organized into approximately 2 MW blocks, with some additional arrays configured in smaller blocks to utilize land space efficiently. Although the acreage of each block would depend on the technology, spacing, mounting equipment, and other design criteria subject to change in detailed engineering, each full-size block is expected to cover approximately 15 acres.

Multiple modules are connected in series, and groups of these series-connected modules in turn are connected to a DC to AC inverter, which converts the panel DC output to AC. Different manufacturers utilize different PV technologies, so the panel size and wattage rating varies between manufacturers. The PV modules will be electrically connected by wire harnesses and combiner boxes that collect power from several rows of modules and feed a PCS via underground DC cables. Inverter hardware located in each PCS converts the DC electric input into grid-quality AC electric output. A transformer then steps up the voltage of the array output for on-site transmission of the power to the PV Combining Switchgear (PVCS). Overhead or underground lines then take the electricity to the Onsite Substation where the voltage is stepped up and routed to CRS via the Gen-Tie Line. The PCS and transformer will be located within each PV block, and will be housed on concrete vaults, slabs or pier foundations.

2.2.2 Panel Supporting System

2.2.2.1 Fixed Tilt System

A fixed tilt racking system is supported by vertical steel posts that are spaced about 12 feet apart. The support posts generally project 5 to 6 feet above the ground and are vibrationally driven to a roughly equivalent depth into the ground. The fixed tilt system will not use permanent foundations enabling complete removal when the BSPP is decommissioned. A fixed tilt system can follow the terrain and to account for ground surface differences, simplifying grading. The support posts may vary in height above the ground surface to accommodate the terrain. The height of the structure will be approximately 9 feet depending on the tilt angle selected.

2.2.2.2 Single Axis Tracking System

Either of two types of single-axis tracker systems could be selected for the BSPP. Tracker Option 1 is a “ganged system” that would use one motor to control multiple rows of PV modules through a series of mechanical linkages and gearboxes. By comparison, Tracker Option 2, a stand-alone tracker system, would use a single motor and gearbox for each row of PV modules. A single-axis tracking system optimizes production by rotating the panels to follow the path of the sun throughout the day. The central axis of the tracking structure is oriented north to south and is constructed to rotate the panels east to west while limiting self shading between rows. Each tracker holds 30 to 50 PV modules mounted on a metal framework structure. The steel structure would be able to withstand high-wind conditions (up to 90 miles per hour), site-specific wind gust and aerodynamic pressure effects, and seismic events.

The drive unit typically consists of a bi-directional AC motor or a hydraulic system utilizing biodegradable fluid. The drive unit would be connected to an industrial-grade variable-frequency drive that translates commands from the control computer.

The tracker controller is a self-contained industrial-grade control computer that would incorporate all of the software needed to operate the system. The controller would include a liquid crystal display monitor that displays a combination of calibration parameters and status values, providing field personnel with a user-friendly configuration and diagnostic interface. The monitor would enable field adjustment, calibration, and testing.

2.2.2.3 System Foundations

Depending on the final PV technology and vendor selected, the design of the tracker support structures could vary. Typical installations of this type are constructed using steel piles or concrete foundations. Steel piles may be driven, screwed, or grouted. Driven steel pile foundations typically are galvanized and used where high load bearing capacities are required. The pile is driven using a hydraulic ram where up to two workers are required. Soil disturbance would be restricted to the pile insertion location with temporary disturbance from the hydraulic ram machinery, which is about the size of a small tractor. Screw piles, if used, would be driven into the ground with a truck-mounted auger requiring two or three people. Screw piles create a similar soil disturbance footprint as driven piles. Grouted steel piles, if used, would require pre-drilling with auger equipment so that the pile could be inserted into the cleaned hole. The pile then would be grouted into place from bottom to top until grout flows out of the top of the hole. Soil disturbance would be the same as the previous steel pile descriptions with additional disturbance from the soil removal and insertion of grout at the pile location. Concrete foundations avoid ground penetration by withstanding the design loads from the weight of the concrete itself. Concrete requires time to cure and can be pre-cast and transported to the site or poured in place for installation. Concrete foundations reduce the ground penetration, but increase the permanent disturbance.

The spacing between the rows of tracking units or fixed mounts is dependent on site-specific features and would be identified in the final design. PVSI's preliminary configuration indicates the spacing at approximately 34 feet between rows (post to post), which allows at least 20 feet of clearance for maintenance vehicles and panel access.

2.2.3 Panel Orientation

The arrays and PCS would be accessible by two access corridors, one in a north-south direction every third block (approximately 3,000 feet) of nominal 24 foot width and the

other in an east-west alignment passing every PCS unit of nominal 16 foot width. These access corridors would consist of unpaved compacted road base and would be used only as necessary during operation and maintenance activities.

2.2.3.1 Fixed Tilt System Orientation

The fixed tilt system employs a support table to which the modules are attached. The support table is set at a fixed tilt angle, typically 20 to 30 degrees from horizontal, and facing south. Preliminary designs for the BSPP anticipate a 30 degree tilt angle.

2.2.3.2 Single-Axis Tracking System Orientation

If a single-axis tracking system is employed the tracker assembly is fitted with a torque tube that attaches to the support posts. Each tracker assembly consists of a steel torque tube, on which rests the supporting frames for the PV modules. The wiring for the PV panels is also attached to the torque tube assembly. The single-axis tracker system employs controlled movement to tilt the PV panels so they face the sun and the assembly is oriented to allow the panel to track the sun in an east to west direction. This system aligns the solar PV modules toward the sun through the use of electric drives or actuators. In order to maximize electrical output and minimize shadowing of the panels, the tracker controllers turn the panels to face the sun at all times during the day and over the year, while avoiding shadowing on the adjacent string of panels. The method employed to avoid shadowing the adjacent panels in the early morning and late afternoon hours of operation is called “back-tracking”. The single-axis tracker control system also communicates with, and receives instructions from, the central control room via the Supervisory Control and Data Acquisition (SCADA) system.

As discussed above, PVSI has not selected the specific PV modules nor has it decided on whether a Tracker System, Fixed Tilt System, or combination of the two systems will be installed. As described in Sections 3, 4, 5, and 6 the potential effects from each system is analyzed and PVSI is requesting the Final Decision be amended in such a way as to allow the specific combination of technologies to be selected prior to construction without the need for filing another amendment.

2.2.4 Solar Field DC Distribution and Power Conversion

2.2.4.1 DC Distribution

The PV modules would be electrically connected in series by wire harnesses that conduct DC electricity to combiner boxes. Each combiner box would collect power from several rows of modules and feed a PCS via cables placed in covered underground trenches (or within above ground cable trays or conduits in limited circumstances where underground trenching is determined not to be practical). The DC trenches would be

approximately 3 feet deep and from 1.5 to 2.5 feet wide. The bottom of each trench would be filled with clean fill surrounding the DC cables and the remainder of the trench would be back-filled with native soil and compacted to 90 percent (95 percent when crossing under roadways). Power screeners could be used on site for a limited period of time (less than 1 year) to extract the required clean fill from native soils for use as bedding material in the trenches. A power screener is a motorized piece of equipment that uses moving screens to filter soils to a particular granularity.

Each PCS comprises an inverter package consisting of multiple inverters connected to adjacent transformers. An overhead shade would cover the inverters or a common equipment enclosure would include multiple inverters. The individual inverter packages would be approximately 7 feet tall, and the transformer exterior to the enclosure would be approximately 6.5 feet tall.. The overhead shade would be 10 to 12 feet tall. The equipment enclosure, if utilized, would be up to approximately 35 feet long by 10 feet wide by 10 feet tall. In the PCS, the inverters would change the DC output from the combiner boxes to AC electricity. Integrated with the inverter, a data acquisition system (DAS) would utilize a data logger and sensors to record AC power output. Other integrated components would include equipment to record weather conditions, including ambient temperature measured in degrees Celsius (°C), incoming solar radiation measured in watts per square meter (W/m^2), and wind speed measured in meters per second (m/s). The DAS would enable system data transfer and performance monitoring via the proposed O&M facility.

The resulting AC current from each individual inverter would be routed through underground AC cables (or within above ground conduits in limited circumstances where underground trenching is determined not to be practical) to an oil-filled, medium voltage, step-up transformer positioned within secondary containment. Based on preliminary design, the 265 volt output from an inverter would be stepped up (increased) to the desired substation feed voltage of 34.5 kV by the transformer. The medium-voltage transformer would be placed on a pre-cast concrete pad or other foundation delivered by flatbed truck during construction. The medium voltage collection circuits would be installed underground to the substation in trenches that would be approximately 3 feet deep with pole-mounted above-ground circuits possible on the final "home runs" to the substations. The medium voltage cabling would create multiple collection circuits that would carry the electricity from the solar field to the unit's substation.

2.2.4.2 AC Collection

Multiple PCS blocks (approximately 10 MW total) would form a lateral configuration and transmit the AC power at 34.5 kV via aboveground double circuit monopoles or underground lines in covered trenches (or within above ground conduits in limited

circumstances where underground trenching is determined not to be practical). Laterals would be combined into an aboveground or underground feeder line (24 to 26 MW) that would transmit the AC power to the Power Distribution Center (PDC) at the substation. As applicable, AC trenches would be approximately 3 feet deep and from 8 inches to 6.5 feet wide and also would be used to house fiber optic cables for communication. The bottoms of the trenches would be filled with sand surrounding the fiber optic cables, and the remainder of the trench would be back-filled with native soil and compacted.

The on-site electrical collection system is designed to minimize electrical losses within the BSPP prior to delivery to the On-Site Substation. At the Onsite Substation, the voltage of the Solar Facility-generated electricity will be stepped up to interconnect with the SCE regional transmission grid at the CRS.

2.3 SITE ACCESS

The Modified Project will utilize the same existing roads to reach the site as described in the Final Decision. Access to the BSPP will be via a new road (Dracker Drive) heading north from the frontage road. Dracker Drive will be accessed from a [may not need to be improved] section of Black Rock Road, along I-10, from the plant access road to the Airport/Mesa Drive exit. As part of the Notice to Proceed issued for BSPP Phase 1A of the CSP design, PVSI has already installed Desert Tortoise exclusionary fencing and conducted clearing and grubbing activities within the entire length of Dracker Drive starting at its intersection with Black Rock Road into the project site.

2.4 TRANSMISSION SYSTEM INTERCONNECTION

The Gen-Tie route remains largely unchanged from the Approved Project. It will proceed in a southerly direction, crosses over Interstate 10, and turns westward to the CRS, which is currently under construction. The metering point will be located in the switchyard on the Project site. The gen tie line will be owned and operated by PVSI. The only modification to the route will be a slight shift southward of a portion where the route turns west to accommodate future planned transmission lines.

The 230 kV double circuit transmission line will be constructed on self-supporting monopole structures up to approximately 145 feet high, except where FAA regulations and Riverside County Airport Land Use Commission (RCALUC) guidelines near the airport require shorter and/or H-frame structures. An area of approximately 200 by 200 feet (0.9 acre) per structure may be temporarily disturbed during construction.

The required right-of-way (ROW) width for the gen tie is approximately 120 feet. Where larger H-frame structures are used it is approximately 250 feet. The average span length between the transmission structures vary from approximately 800 feet for the 70-foot tall H-frame structures up to 1,200 feet for the self-supporting tubular steel 145-foot

tall monopole structures. The gen tie line will be constructed using "strong" tubular towers at the cornering points of the line, which will have sufficient strength without guy wires. PVSI spent significant time in 2010 working with the FAA and RCALUC to minimize aviation-related impacts created by the project and its gen tie structures. The variation in height and other items were incorporated into the gen tie design to accommodate FAA and RCALUC concerns. It should be noted that the change in technology to PV reduced other aviation-related concerns. For example, the removal of the Air Cooled Condensers will eliminate prior concerns relating to upward thermal plume potential effects on aircraft. The switch in technology also removes the presence of Heat Transfer Fluid at the site which significantly reduces the fire hazards of the proposed project.

The Project was included in the "Transition Cluster" in the new GIPR process. The Phase One Study results for the Transition Cluster were released in August 2009. The Phase Two Study results for the Transition Cluster were released in July 2010. CAISO, SCE and the Applicant executed a Large Generator Interconnection Agreement (LGIA) in November 2010, which was approved by the Federal Energy Regulatory Commission (FERC) in March 2011. SCE and CAISO are currently reviewing the effect of switching solar technologies and whether that impacts the previous interconnection studies. Once this evaluation is complete, the LGIA will be amended to address the technology switch. The LGIA amendment, once executed, will require FERC review and approval.

2.5 ANCILLARY FACILITIES

2.5.1 Telecommunications Facilities

The Modified Project switchyard would also require the same new telecommunication infrastructure as originally approved. The telecommunication facilities will be installed to provide a protective relay circuit and a SCADA circuit together with data and telephone services. Voice and data communications for plant operations will be installed for use during construction and operations. The routing for this cable will end at the existing infrastructure near Mesa Drive. In addition, the BSPP has two other telecommunications lines required by CAISO to provide operational data to the CRS. The primary transmission-related telecommunications line will be strung overhead along the same poles as the 230 kV gen-tie line to the CRS. The redundant transmission-related telecommunications cable will be buried cable similar to the BSPP's telecommunications cable. The routing for both of the buried telecommunications cables will be adjacent to the site access road for the portion north of I-10. The redundant telecommunications line continues south of I-10 to the Colorado River Substation following the route of the gen-tie line, while the BSPP's telecommunications cable follows Black Rock Road to Mesa Drive.

2.5.2 Operations and Maintenance Facility

2.5.2.1 Operation and Maintenance Building

The BSPP would likely include an approximately 3,000-square-foot O&M building located on BLM-administered land near the center of the site and will be shared for services to all units. The building would provide an administration area, a work area for performing minor repairs, and a storage area for spare parts, transformer oil, and other incidental chemicals. The administration area would be air conditioned and include offices, conference rooms, a break room, rest rooms, and locker rooms with showers.

The building would be supported on reinforced concrete mat foundations or individual spread footings as determined during detailed design. Excavation for the footings would be approximately 2 feet deep. Excavation within the perimeter of the building would be approximately 1 foot deep. An aggregate or stone base would be laid after excavation. The floor would consist of a 6-inch reinforced concrete slab. Concrete for this slab would come from Blythe.

The O&M building would be a pre-engineered metal building approximately 17 feet high at its peak with a neutral-colored metal siding and roof to minimize visual impact. The building's maintenance area would include roll-up doors to provide equipment access as well as personnel access doors.

The proposed SCE distribution line would provide electrical service to the O&M building. Telecommunications would be provided by a new fiber optic line constructed at the same time as the distribution line.

An approximately 10,000-square-foot parking area would be provided at the O&M building.

2.5.3 Meteorological Station

The BSPP will not modify its Approved meteorological station.

2.5.4 Anemometers

Depending on the final design of the equipment, the solar arrays may be installed with tracker anemometer towers, which measure and communicate wind speed data to the facility control room for solar array panel tracker positioning in the event of high winds. Each tower measures approximately 30 feet in height, and would be installed within the arrays within the facility site. Figure 2-2 shows a typical tracker anemometer tower.

2.5.5 Fencing and Site Security

For public safety and site security, the BSPP would have fencing around the site and access will be controlled via gates located at the entrances to the facility. The main site gate would be either a motor-operated swing or rolling-type security access gate, and would be monitored through a security camera, swipe card, or other mechanism that would control and monitor access. There will be a guard shack at the main facility gate. Access through the main gate would be controlled during construction and operation of the BSPP to prevent unauthorized access to the solar plant site. All facility personnel, contractors, and visitors would be logged in and out of the facility through the main gate. A secondary access gate, similar in construction to the main gate, would be used for emergency purposes only. A Fire Department Knox Box or other access device and emergency contact placard would be provided at the main gate and secondary access gate to provide emergency access.

Fencing would be installed around the solar plant site perimeter, substations, and around the evaporation pond described in accordance with the existing Conditions of Certification. Individual units may be fenced with perimeter fencing as the construction and operation of the facility is phased. Security fencing would be chain-link, approximately 8 feet tall, with 3-strand barbed wire. Some modifications would be needed in areas of stormwater inflow and outflow from the solar field to allow for high flow events. The security fencing would be constructed slightly inside the solar plant site boundary to allow room for on-foot fence maintenance on the outside of the fence if necessary. Fencing would be designed to resist all wind or other loads imposed on the fence. Posts would be spaced a maximum of 10 feet apart. Tortoise fencing would be installed 1 foot below the ground surface and 2 feet above ground surface, using a fencing type recommended by USFWS and in accordance with the existing Conditions of Certification.

2.5.6 Temporary construction workspace, yards, staging areas

Temporary construction facilities will be built for materials storage, storage of equipment, for field fabrication facilities, and a construction office complex for employee work areas on the project during construction. Additionally, there will be a number of construction staging areas within the site boundaries that will be utilized throughout the approximately 48-month Project construction period and then decommissioned and/or replaced by arrays. Construction area lighting will be provided.

The staging areas will include material laydown and storage areas and an equipment assembly area. During construction, the area near the location of the O&M facility will also contain a guard shack, construction trailers, construction worker parking and portable toilet facilities that will serve the Project's sanitation needs during construction.

Temporary construction fencing will surround this area and the guard shack will be manned to provide security during construction. Additionally, the project will no longer need the large assembly hall structure originally planned to assemble the HelioTrough structures.

In addition to the permanent plant roads and parking, construction roads and parking will be required to provide access to construction facilities and the laydown area. Construction parking space will be provided near the construction office complex. These temporary roads may be all weather gravel surfaced and of sufficient width and location to accommodate efficient use and traffic pattern. The parking area will have barriers to control parking pattern and locations.

2.6 FIRE PROTECTION

Fires are most likely to be introduced from human activity, and also could occur as a result of lightning strikes or equipment malfunctions. Project-related fire-protection activities would be taken to limit personnel injury, property loss, and Project downtime resulting from a fire. During construction, a water truck or other portable trailer-mounted water tank would be kept on-site and available to workers for use in extinguishing small man-made fires. Fire watches would be required during hot work on-site. An Emergency Action Plan (EAP) would designate responsibilities and actions to be taken in the event of a fire or other emergency during construction. The EAP, including fire prevention and suppression, and a worker safety plan would be provided to BLM and local fire departments for approval before the receipt of a Notice to Proceed (NTP). During operation and maintenance of the BSPP, fire protection systems for the solar plant site would include a fire protection water system for protection of the O&M building, including portable fire extinguishers and possibly hydrants. The fire protection water system would be supplied from a 20,000-gallon raw and fire water storage tank located on the solar plant site near the O&M area.

To decrease the risk of fire during operation and maintenance of the Project, all vegetation underneath the panels would be managed via either mechanical mowing/trimming or with a BLM-approved herbicide in accordance with guidance provided in the Solar PEIS; Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States and the Final Vegetation Treatments Programmatic Environmental Report (PER) (BLM, 2007).[1] A pre-emergent herbicide would be applied in the spring,

[1] The Record of Decision associated with the PER (72 FR 57065-01), published October 5, 2007, outlines the herbicides that are approved for use on public lands, including 14 herbicides with the following USEPA registered active ingredients: 2, 4-D, bromacil, chlorsulfuron, clopyralid, dicamba, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, sulfometuron methyl, tebuthiuron, and triclopyr identifies

and spot foliar applications may be used throughout the year to manage invasive vegetation.

The Final Decision outlines that Riverside County Fire Department would provide fire protection services to the BSPP. At this time PVSI is coordinating with both Riverside County and the City of Blythe to ensure that appropriate measures will be taken to control the risk of fire and to ensure the proper level of service is provided. With the elimination of the risks associated with use of Heat Transfer Fluid, it is likely that the impacts to Riverside County will be reduced from previously analyzed and it may be that the City of Blythe Fire Department can adequately provide fire protection services.

2.7 WATER SUPPLY AND USAGE

2.7.1 Water Supply and Use

The BSPP Final Decision allowed the construction of several wells to produce up to 600 AFY for operations and up to 4,100 AFY. Up to three wells are anticipated for the Modified Project and would be constructed in the same manner as outlined in the Final Decision.

Water from the proposed wells would be tested for and meet the domestic water quality and monitoring standards for constituents as required by the California Code of Regulations (22 Cal. Code Regs. §64400.80 et seq.). Regulated wells must be sampled for bacteriological quality once a month and the results submitted to the California Department of Health Services (DHS). The wells also must be monitored for inorganic chemicals once and organic chemicals quarterly during the year designated by the DHS. DHS would designate the year based on historical monitoring frequency and laboratory capacity. PVSI would sample and conduct groundwater quality monitoring consistent with the Waste Discharge Requirements issued as part of the Final Decision.

2.7.2 Construction-related Water Needs

Construction-related water use would support site preparation (including operation of a portable batch plant, if needed) and grading activities. During earthwork for the grading of access roads, foundations, equipment pads, and other components, the primary uses of water would be for compaction and dust control. Smaller quantities would be

---

the states where the active ingredients are approved. It also identified six herbicide active ingredients that are not permitted for use BLM lands unless a need is shown by the BLM and updated risk assessments for human health and ecological risks are assessed. The six precluded active ingredients are: 2, 4-DP, asulam, atrazine, fosamine, mefluidide, and simazine.

required for preparation of the concrete required for building foundations and other minor uses. Subsequent to the earthwork activities, the primary water use would be for dust suppression. During the approximately 48-month construction period for all units, an estimated total of between 3,500 and 4,000 acre-feet of water will be needed for such uses as soil compaction, dust control, and sanitary needs for construction of the BSPP, depending on the configuration selected. The majority of the construction water use would occur during site grading operations. Water will be needed for dust abatement and moisture conditioning of soils to facilitate overland travel during construction of the transmission line for the various alternatives. Water will be stored onsite during construction using either temporary construction ponds or tanks.

Drinking (potable) water would be supplied for construction workers on-site, and is estimated to be approximately 10,000 gallons per month (approximately 0.5 acre-foot per year (AFY)), varying seasonally and by work activities. The potable water could be brought to the site by tanker truck, or groundwater could be used with a package water treatment system to treat the water to meet potable standards.

2.7.3 Operation and Maintenance-related Water Needs

Water quality is expected to be unsuitable for potable use without treatment, with between 730 and 3,100 milligrams per liter of total dissolved solids. Consequently, PVSI is considering either options for treatment of groundwater or the importation of trucked potable water to meet the Project's potable water requirements for operation and maintenance. If the groundwater option is selected, water would be treated with a conventional package water treatment system to assure that any drinking water meets potable standards.

Either a reverse osmosis/electrodeionization (EDI) system or a deep bed demineralizer system would be used for other (non-drinking water) purposes. The water treatment system design has not been developed, but could include either a trailer-mounted water treatment system or a free-standing facility. The water treatment system would supply water for the BSPP for the purposes and in the amounts indicated in Table 2-2.

A trailer-mounted water treatment system is a totally enclosed, self-contained, containerized water treatment system. This system would include filters and demineralizer vessels. These systems typically are leased with a service contract, contain all the necessary supplies for operation, and are taken off-site for the regular regeneration and periodic maintenance that is required. No wastewater discharge is expected.

TABLE 2-2
OPERATION AND MAINTENANCE-RELATED WATER USE

Water Use		PV Module Cleaning, Dust Control (1)		Potable water (2)	
Solar Field Unit		**Per Unit**	**Total**	**Per Unit**	**Total**
Annualized Average	Rate (gpd)	6,700 – 9,800	53,600 -78,400	138	1104
Estimated Peak	Rate (gpd)	33,500 – 49,500	268,000 – 396,000	230 -450	1,840 - 3,600
Estimated Annual	Use (AF)	7.5-11	60-88	0.5	2

The water treatment area would be constructed near the middle of the solar plant site. It would be a roughly square area up to a maximum of 3 acres excluding any area needed for the evaporation ponds if utilized. The water treatment area would contain the water treatment system and water storage area. A free-standing water treatment facility would contain different equipment from the trailer-mounted system, and be based predominately on reverse osmosis treatment. It would be constructed on site in an enclosure for permanent use. The enclosure would be a pre-fabricated steel building on a concrete foundation with a maximum height of 17 feet. Water treatment equipment would include pumps, filters, biocide or ozone injection, and a reverse osmosis/EDI system. The water treatment facility would house the filter replacements and tools needed for periodic maintenance of the system. Wastewater discharge would be non-hazardous, have a maximum quantity of up to 56 gallons per minute (gpm), and be produced primarily from the reverse osmosis reject. One or more on-site netted evaporation ponds (up to 8 acres total) would be required for disposal of the wastewater and would be constructed, operated and maintained, and ultimately removed from the water treatment area within the solar plant site boundary.

There would be three tanks on site for the storage of the raw fire water, potable water, and demineralized water for the BSPP. The raw water tank storage capacity also would provide the fire supply. This tank would hold up to 20,000 gallons. It would be constructed of bolted or welded steel and painted with a non-reflective coating to blend with the surrounding environment. The potable water tank would be of similar construction with a maximum volume of 7,500 gallons. The Demineralized water tanks with a total capacity of 80,000 to 100,000 gallons would store water to be used for panel washing. They would be stainless steel and painted with a non-reflective coating.

The panels would be cleaned on an as-needed basis, depending on the frequency of rainfall, proximity of arrays to airborne particulates and other factors. PVSI assumes that panel washing would occur in the fall and spring and take approximately 20 days to complete per unit per wash. Panel washing for both all units could take a total of 150 to 160 days per year to complete. Approximately 33,500 to 49,500 gallons per day (gpd)

per unit, which equates to approximately between 60 and 80 AFY for the entire Modified Project, would be required to wash the panels.

Based on the anticipated uses (including drinking water, showers, restroom facilities, panel washing, dust suppression, and 3,000-gallon dedicated fire supply, among other uses), the estimated quantity of water needed for operation and maintenance of the BSPP would be approximately 7.5 to 11 AFY per unit, plus a total of 0.5 AFY of potable water. The primary use of water during operation and maintenance-related activities would be for panel washing and dust control (the proposed PV technology requires no water for the generation of electricity).

A BLM-approved dust suppressant would be applied to control dust. Water could be used to supplement the dust suppressant in some areas on a limited basis; the amount of water used depends on the type of suppressant used and the manufacturer's recommendations. The concentrate from a reverse osmosis treatment unit (if required for on-site water treatment) might be used for dust control by blending it with water from the on-site water wells.

2.8 CONSTRUCTION AND OPERATIONS

This section describes the construction activities and the operations of the Modified Project. The construction of the Project will begin once all applicable approvals and permits have been obtained and currently anticipated to be as early as April 2013. After the preconstruction surveys, construction mobilization, and site preparation are completed, construction of the BSPP and Gen-Tie Line will begin. Work will be completed in phased stages moving across the site so that completion of one phase is closely followed by the beginning of the next. Construction of all of the phases is anticipated to take approximately 48 months from the commencement of the construction process to full construction of the BSPP and Gen-Tie Line.

2.8.1 Construction Workforce Numbers

Typical construction work schedules are expected to be between 8 and 12 hours per day, Monday through Friday, from 7:00 am to 10:00 pm. The work schedule may be modified throughout the year to account for changing weather conditions (e.g., starting the workday earlier in the summer months to avoid work during the hottest part of the day for health and safety reasons). In the event that construction work takes place outside these typical hours, activities will comply with Riverside County standards for construction noise levels. For safety reasons, certain construction tasks, including final electrical terminations, must be performed after dark when no energy is being produced. The BSPP will use restricted nighttime task lighting during construction. No more lighting will be used than is needed in order to provide a safe workplace, and lights will

be focused downward, shielded, and directed toward the interior of the site to minimize light exposure to areas outside the construction area.

The construction will take place in phases and it assumed that the grading of the next phase will take place shortly after erection of the previous phase begins. A preliminary construction schedule is presented in Appendix D, Table 7.

During Project construction, the workforce is expected to average approximately 450 to 600 employees over the 75-month construction period, with a peak workforce of approximately 700 employees during Months 5 through 38 of the construction period. The Project construction workforce will be recruited from within Riverside County and elsewhere in the surrounding region to the extent practicable.

2.8.2 Construction Equipment/Vehicles

Most construction equipment and vehicles will be brought to the BSPP at the beginning of the construction process during construction mobilization and will remain on site throughout the duration of the construction activities for which they were needed. Generally, the equipment and vehicles will not be driven on public roads while in use for the Project. In addition to construction worker commuting vehicles, as discussed above, construction traffic will include periodic truck deliveries of materials and supplies, recyclables, trash and other truck shipments.

Truck access to the site will be from I-10 and then via Mesa Drive Road to Black Rock Road. Construction truck deliveries and shipments will typically avoid the peak traffic hours in the morning and evening, so it is unlikely that Project deliveries will represent a substantial increase in traffic volumes during peak commuting hours. Materials will typically be delivered starting two weeks before the start of the associated task with the exception of electrical gear (PCSs, PVCs, etc.), which will be drop shipped just prior installation. An estimate of the types of construction equipment is presented in Appendix D, Table 9.

2.8.3 Site Clearing, Grading, and Compaction

PVSI will utilize construction grading and compaction techniques that will adequately prepare the Site for safe and efficient installation and operation of the PV arrays. The discussion below provides preliminary detail relative to the site preparation techniques that may be employed at the Site.

PVSI would utilize site preparation techniques that adequately prepare the site for safe and efficient and operation of PV arrays while allowing water to sheet flow across the site with negligible impact on surface water flow upstream and downstream of the site. The planned approach to Project Site preparation, which involves the use of "disc and roll" and micrograding techniques, reflects the results of field testing of various site preparation techniques at an off-site location by one of the PV manufacturers, with considerable experience in construction at desert locations in Southern California and Nevada. The worst case clearing, grading and compaction will be with the use of single-axis tracking systems. The descriptions below reflect that worst case grading.

2.8.3.1 Clearing

Vegetation would be cleared from roadways, access ways, and where concrete foundations are used for inverter equipment, substations, and the operations and maintenance building. Vegetation would be cleared for construction of the drainage controls. Organic matter would be mulched and redistributed within the construction area (except in trenches and under equipment foundations). Plant root systems would be left in place to provide soil stability except where grading and trenching are required for placement of solar module foundations, underground electric lines, inverter and transformer pads, road and access ways, and other facilities. During the site clearing process, the site would also be cleared of refuse, as necessary. Refuse materials encountered would be recycled or disposed.

2.8.3.2 Grading

The cut and fill depths across the Site will be minimized, and it is expected that no import or export of soil material will be required, as the amount of cut and fill would be balanced on site. Preliminary grading estimates are presented below in Table 2-3, which are significantly less than that for the Approved Project.

TABLE 2-3
ESTIMATED GRADING

Unit	Cut (cubic yards)	Fill (cubic yards)
1	200,000	170,000
2	120,000	100,000
3	250,000	200,000
4	210,000	180,000
5	200,000	170,000
6	500,000	400,000
7	800,000	700,000
8	1,100,000	900,000
Total	3,380,000	2,820,000

The estimates of cut and fill in Table 2-3 are less than the Approved Project which involved cut and fill volumes of approximately 8.3 million cubic yards.

Areas that make up more than half of the solar field would be prepared using conventional farming equipment including tractors with discing equipment and vibratory rollers. This technique is referred to as “disc and roll”. With this approach, rubber-tired farming tractors towing disc harrow equipment would disc the top 5 to 7 inches of soil. A water truck would follow closely alongside the tractor to moisten the soil to hold fugitive dust emissions to acceptable levels. The tractor may make several passes to fully disc the vegetation into the topsoil, preserving the underground root structure, topsoil nutrients and seed base; once the soil has been wetted on the first pass, additional water would not be needed for subsequent passes. A drum roller would then be used to flatten the surface and return the soil to a compaction level similar to the preconstruction stage. The intent of the roller would be to level the soil under the solar field area and even out the surface after the discing is complete.

In dispersed sections of the solar array field, there would be limited use of scrapers to perform micrograding. This technique is referred to as “isolated cut/fill and roll”. In general, portions of the site would be contour graded level; the macro-level topography and stormwater drainage would remain unchanged, but within each solar array, “high spots” would be graded and the soil cut from these limited areas used to fill “low spots” within the same array. Limited use of scrapers for micrograding would be employed only where needed to produce a more level surface than can be produced by the disc and roll technique.

Standard cut and fill techniques would be used in areas of the site where soil conditions do not lend themselves to discing. The overall objective of the earth moving would be to produce a consistent grade in each solar field area. Standard cut and fill techniques would be utilized within specific arrays to limit slope to within 3 percent. Essentially, the

BSPP site would be graded to a sufficiently level topography using the least practicable amount of conventional cut and fill grading. The grading plan would utilize hydrology analysis to identify and protect areas that are susceptible to scour from stormwater runoff, and otherwise manage stormwater runoff to maintain plant facilities and safety and to ensure that off-site drainage conditions upstream and downstream of the site are as close as practicable to preexisting conditions. Work over the site preparation period would be paced so that grading of an area takes place shortly before trenching and post installation are ready to begin. This would minimize the area of open, uncovered ground present at any one time during construction, and thereby minimize dust and erosion issues. As shown in Table 2-4 above, the amount of standard cut and fill grading techniques increases as development progresses westerly from the eastern boundary.

Work over the grading period would be paced so that grading of an area takes place shortly before trenching and post installation are ready to begin. This would minimize the area of open, uncovered ground present at any one time during construction, and thereby minimize dust and erosion issues.

2.8.3.3 Erosion Control

The Project would utilize site preparation techniques that adequately prepare the site for safe and efficient and operation of PV arrays while allowing water to sheet flow across the Site with negligible impact on surface water flow upstream and downstream of the Site. As noted above, the planned approach to Project Site preparation involves the use of “disc and roll” and micrograding techniques.

Based on a preliminary grading plan, PVSI commissioned a hydraulic evaluation contained in Appendix B. PVSI’s final design will implement site design and protective erosion and drainage control design measures during construction and operation to minimize dust and erosion issues. Storm water flow will be managed to prevent downstream erosion and channelization.

Contour grading, erosion control design features, storm water mitigation measures and other protective measures (including avoiding the placement of PV module tables and piles within significant drainages and minimizing disturbance and compaction to the extent possible), will enable historic levels of runoff off site to be maintained at the BSPP and in downstream areas. While the final grading design has not been completed, the amount of grading is considerably less than the Approved Project and there is no need for the large drainage structures that were originally designed for the Approved Project.

The Project may need to obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) Water Quality Order 99-08-DWQ. PVSI will prepare and implement a construction Storm Water Pollution Prevention Plan (SWPPP) prior to the commencement of soil disturbance activities associated with Project construction. The SWPPP will describe construction Best Management Practices (BMPs) to manage storm water on the site to both protect the site and to minimize downstream erosion and sedimentation.

Several erosion control measures are planned during construction including stabilization of the heavily-used construction entrance area, employing a concrete wash-out area, as needed, and tire washes near the entrance to existing roadways. Silt fences are proposed for erosion control along neighboring properties.

The approximate percentage of the BSPP site that will be covered with impervious surfaces (inverter foundations, etc.) will constitute a fraction of one percent of the total surface area of the Site. The final Site Plan will be based on a detailed topographic survey of the Site, as well as detailed hydrologic and topographic studies that will be performed as a part of the permitting and engineering design process.

2.8.4 System Installation

Depending on the final PV technology and vendor selected, the design of the tracker support structures could vary. Typical installations of this type are constructed using steel piles or concrete foundations. Steel piles may be driven, screwed, or grouted. Driven steel pile foundations typically are galvanized and used where high load bearing capacities are required. The pile is driven using a hydraulic ram where up to two workers are required. Soil disturbance would be restricted to the pile insertion location with temporary disturbance from the hydraulic ram machinery, which is about the size of a small tractor. Screw piles, if used, would be driven into the ground with a truck-mounted auger requiring two or three personnel. Screw piles create a similar soil disturbance footprint as driven piles. Grouted steel piles, if used, would require pre-drilling with auger equipment so that the pile could be inserted into the cleaned hole. The pile then would be grouted into place from bottom to top until grout flows out of the top of the hole. Soil disturbance would be the same as the previous steel pile descriptions with additional disturbance from the soil removal and insertion of grout at the pile location. Concrete foundations avoid ground penetration by withstanding the design loads from the weight of the concrete itself. Concrete requires time to cure and can be pre-cast and transported to the site or poured in place for installation. Concrete foundations reduce the ground penetration, but increase the permanent disturbance.

The design method and installation time of the support structures would depend on the support structure and block design with driven piles being the fastest preferred installation method. Final construction and installation details would be determined in the detailed design of the Project.

Solar PV panels would be manufactured off-site and shipped to the site ready for installation. Concrete pads for the drive motors would be either pre-cast or post and brought to the site via flatbed truck. Once most of the components have been placed on their respective foundations, the electricians and instrumentation installers would run the electrical cabling throughout the solar field. After the equipment is connected, electrical service would be verified, motors checked, and control logic verified. The various hydraulic systems would be charged with their appropriate fluids and startup testing would proceed. As the solar arrays are installed, the balance of the plant would continue to be constructed and installed and the electrical power and instrumentation would be placed. Once all of the individual systems have been tested, integrated testing of the BSPP would occur.

2.9 PROJECT OPERATION AND MAINTENANCE

2.9.1 Operation and Maintenance Workforce

Approximately 20-30 permanent, full-time personnel would be employed at the solar plant site during daytime working hours assuming all units are operational. Temporary personnel would be employed, as needed, during seasonal periods when panel washing is required. Monthly visual inspections and annual (minimum) preventive maintenance would be performed. In accordance with United States Department of Labor, Occupational Safety and Health Administration (OSHA) safety regulations, at least two qualified personnel would be present during all energized electrical maintenance activities at the facility. Site security systems would be monitored regularly, by on-site personnel and an off-site 24-hour Remote Operations Center.

2.9.2 Automated Facility Control and Monitoring System

The proposed facility control and monitoring system would have two primary components: an on-site SCADA system and the accompanying sensor network. The on-site SCADA system would offer near real-time readings of the monitored devices, as well as control capabilities for the devices where applicable. Off-site monitoring/data trending systems would collect historical data for remote monitoring and analysis. For example, personnel at the Remote Operations Center would provide continuous 24/7/365 monitoring coverage of Project facilities and would respond to real-time alerts and system upsets using advanced monitoring applications that reside on the servers in their network.

2.9.3 Panel Washing

PV panel washing would be performed by seasonal maintenance crews in the fall and spring, taking approximately 20 days to complete each unit. Up to 50,000 gpd per unit would be required for this purpose. Several types of systems are currently available; most involve spraying filtered water onto the modules from a portable tank mounted in the bed of a pickup truck. Sometimes brushes, rods, or circular cleaning heads are used to remove debris. Surfactants would not be used in these procedures. The process water would be allowed to run off the modules and evaporate or percolate into the ground.

2.9.4 Road Maintenance

Paved roads would be maintained to preserve the asphalt surface from degradation. Maintenance would include seal coating the asphalt surface every 2 to 5 years to prevent decay and oxidization. Potholes or other damage would be repaired as soon as practical.

Unpaved roads would be maintained regularly to control the flow of water on and around the road, remove obstacles, and maintain a solid surface. Maintenance would be completed by conducting regular surveys to inspect the conditions of the road surfaces; blading, grading or compacting the road surfaces to preserve a minimally sloped and smooth planed surface; and applying dust palliatives or aggregate base as needed to reduce dust and erosion.

2.10 HAZARDOUS MATERIALS MANAGEMENT

2.10.1 Waste and Hazardous Materials Management

2.10.1.1 Wastewater

Two separate wastewater collection systems would be provided as part of the Project: one for sanitary wastes, and another to address the process wastewater.

The sanitary wastewater system would collect sanitary wastewater at the O&M building. Portable chemical toilets would be provided for workers in the solar fields. The sanitary wastewater from sinks, toilets, showers, other sanitary facilities in the O&M building would be discharged to a sanitary septic system and on-site leach field. The septic system would be designed and permitted in accordance with state and County regulations.

On-site water treatment would discharge minimal wastewater (up to 56 gpm). The Final Decision allows for each power block to have two 4-acre evaporation ponds for a total of eight 4-acre evaporation ponds. Waste Discharge Requirements for the ponds were

included in the Final Decision. Based on analysis of need for the Modified Project the BSPP could require up to a total of 8 acres of netted evaporation ponds. The evaporation ponds would be located near the water treatment area.

The average pond depth design could be up to 8 feet and residual precipitated solids would be removed approximately every 8 to 10 years, as needed, to maintain a solids depth no greater than 3 feet for operational and safety purposes. The precipitated solids would be sampled and analyzed to meet the characterization requirements of the receiving disposal facility. The characteristics of the precipitated solids would determine the transportation and disposal methodology. It is anticipated the pond solids and other non-hazardous wastes would be classified as Class II non-hazardous industrial waste. Pond solids would be tested using appropriate test methods in advance of removal from the evaporation ponds to confirm this determination; however, preliminary estimates show the material would be non-hazardous.

2.10.1.2 Solid (Non-Hazardous) Waste

Construction, operation, maintenance, and decommissioning of the BSPP would generate non-hazardous solid wastes typical of power generation or other industrial facilities. Solar plant-related wastes generated during all phases of the Project would include: oily rags, worn or broken metal and machine parts, defective or broken electrical materials, other scrap metal and plastic, insulation material, empty containers, paper, glass, and other miscellaneous solid wastes including the typical refuse generated by workers. These materials would be disposed by means of contracted refuse collection and recycling services. Waste collection and disposal would be in accordance with applicable regulatory requirements to minimize health and safety effects.

Information on universal wastes anticipated to be generated during Project construction is provided in Table 2-4. Universal wastes and unusable materials would be handled, stored, and managed per California Universal Waste requirements.

Operation and maintenance of the Project would generate sanitary wastewater, non-hazardous wastes, and small quantities of hazardous wastes. Operation and maintenance of the Project's linear facilities (e.g., the gen-tie line) would generate minimal quantities of waste. The types of waste and their estimated volumes are summarized in Table 2-5.

Facility construction, operation, maintenance, and decommissioning would generate wastes that require proper management and in some cases off-site disposal. There are seven permitted Class III landfills located in the County within approximately 145 miles of the Project site. There are two major permitted Class I hazardous waste landfills

located in California, located approximately 350 and 400 road miles from the site, respectively.

TABLE 2-4
SUMMARY OF CONSTRUCTION WASTE STREAMS AND MANAGEMENT METHODS

Waste Stream and Classification[a]	Origin and Composition	Estimated Amount	Estimated Frequency of Generation	On-site Treatment	Waste Management Method/Off-site Treatment
Construction waste – Hazardous	Empty hazardous material containers	1 cubic yard per week (cy/wk)	Intermittent	None. Accumulate on site for <90 days	Return to vendor or dispose at permitted hazardous waste disposal facility
Construction waste – Hazardous	Solvents, used oil, paint, oily rags	175 gallons	Every 90 days	None. Accumulate on site for <90 days	Recycle or use for energy recovery
Spent batteries - Universal Waste	Lead acid, alkaline type	20 in 2 years	Intermittent	None. Accumulate on site for <90 days	Recycle
Construction waste – Non-hazardous	Scrap wood, concrete, steel, glass, plastic, paper	40 cy/wk	Intermittent	None	Recycle wherever possible, otherwise dispose to Class III landfill
Sanitary waste – Non-hazardous	Portable Chemical Toilets - Sanitary Waste	200 gallons/ day	Periodically pumped to tanker truck by licensed contractors	None	Ship to sanitary wastewater treatment plant
Office waste – Non-hazardous	Paper, aluminum, food	1 cy/wk	Intermittent	None	Recycle or dispose to Class III landfill

NOTE:
[a] Classification under 22 California Code of Regulations (CCR) §66261.20 et seq.

TABLE 2-5
SUMMARY OF OPERATION WASTE STREAMS AND MANAGEMENT METHODS

Waste Stream and Classification[a]	Origin and Composition	Estimated Amount	Estimated Frequency of Generation	Waste Management Method	
				On site	Off site
Used Hydraulic Fluid, Oils and Grease – Non-RCRA[b] Hazardous	Tracker drives, hydraulic equipment	1000 gallons/year	Intermittent	Accumulated for <90 days	Recycle
Oily rags, oil absorbent, and oil filters – Non-RCRA Hazardous	Various	One 55-gallon drum per month	Intermittent	Accumulated for <90 days	Sent off site for recovery or disposed at Class I landfill
Spent batteries – Universal Waste	Rechargeable and household	<10/month	Continuous	Accumulate for <1 year	Recycle
Spent batteries – Hazardous	Lead acid	20 every 2 years	Intermittent	Accumulated for <90 days	Recycle
Spent fluorescent bulbs – Universal Waste	Facility lighting	< 50 per year	Intermittent	Accumulate for <1 year	Recycle
Sanitary wastewater – Nonhazardous	Toilets, washrooms	250 gallons/day	Continuous	Septic leach field	None

NOTES:
[a] Classification under 22 CCR §66261.20 et seq.
[b] Resource Conservation and Recovery Act

2.10.1.3 Hazardous Materials Management

During construction, all hazardous materials would be stored on-site in storage tanks, vessels, or other appropriate containers specifically designed for the characteristics of the materials to be stored. The storage facilities would include secondary containment in case of tank or vessel failure. Construction- and decommissioning-related hazardous materials used for development of the Project would include: gasoline, diesel fuel, oil, lubricants, and small quantities of solvents and paints. Material Safety Data Sheets for all applicable materials present on-site would be readily available to on-site personnel.

Fueling of some construction vehicles would occur in the construction area. Other mobile equipment would return to the laydown area for refueling. Special procedures would be identified to minimize the potential for fuel spills, and spill control kits will be carried on all refueling vehicles for activities such as refueling, vehicle or equipment maintenance procedures, waste removal and tank clean-out. Fuel for construction equipment could be provided by a fuel truck or could be stored on-site in aboveground double-walled storage tanks with built-in containment.

A Spill Prevention and Management Plan (SPMP) would include procedures, methods, and equipment supplied during construction to prevent discharges from reaching waters of the state. The plan would be certified by a Registered Professional Engineer and a complete copy of it would be maintained on-site.

During BSPP operation, a variety of chemicals and hazardous materials would be stored and used at the facility. Chemicals would be stored inside the O&M building as

appropriate to prevent exposure to the elements and to reduce the potential for accidental releases, and in appropriate chemical storage containers. Bulk chemicals would be stored in storage tanks; other chemicals would be stored in returnable delivery containers. Chemical storage and chemical feed areas would be designed to contain leaks and spills. Containment berm and drain piping design would accommodate a full-tank capacity spill without overflowing the containment berms. For multiple tanks located within the same bermed area, the capacity of the largest single tank would determine the volume of the bermed area and drain piping. The transport, storage, handling, and use of all chemicals would be conducted in accordance with applicable laws, ordinances, regulations, and standards.

The quantities of hazardous materials stored on-site would be evaluated to identify the required usage and to maintain sufficient inventories to meet use rates without stockpiling excess chemicals. Chemicals that could be present during construction, operation and maintenance of the BSPP are included in Table 2-6.

If a portable, trailer-mounted water treatment system would meet the BSPP flow and water quality demands described above, then no additional chemicals would be required for maintenance and regeneration of the system. However, if a site-specific water treatment system is used, then the regeneration process could require additional chemicals to maintain its performance. Such chemicals could include sodium hydroxide solution, sodium hypochlorite solution, and/or sulfuric acid solution.

TABLE 2-6
SUMMARY OF SPECIAL HANDLING PRECAUTIONS FOR LARGE QUANTITY HAZARDOUS MATERIALS

Hazardous Material	Use	Relative Toxicity[a] and Hazard Class[b]	Permissible Exposure Limit	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Carbon Dioxide		Low toxicity; Hazard class – Nonflammable gas	TLV: 5,000 ppm (9,000 mg/m^3) TWA	Carbon steel tank, 15 tons maximum on-site inventory	Carbon steel tank with crash posts.
Diesel Fuel	Equipment refueling and emergency diesel fire pump	Low toxicity; Hazard class – Combustible liquid	PEL: none established TLV: 100 mg/m^3	Carbon steel tank (3,600 gallons)	Secondary containment, overfill protection, vapor recovery, spill kit.
Hydraulic fluid (if applicable)	Tracker drive units	Low to moderate toxicity; Hazard class – Class IIIB combustible liquid	TWA (oil mist): 5 mg/m^3 STEL: 10 mg/m^3	Hydraulic drive tank, approximately 20 gallons per tracker drive unit (if applicable) throughout solar field. Carbon steel tank, maintenance inventory in 55-gallon steel drums.	Found only in equipment with a small maintenance inventory. Maintenance inventory stored within secondary containment; alternative measures to secondary containment for equipment will be implemented at the project.
Lube Oil	Lubricate rotating equipment (*e.g.,* tracker drive units)	Low toxicity Hazard class – NA	None established	Carbon steel tank, maintenance inventory in 55-gallon steel drums.	Secondary containment for tank and for maintenance inventory.
Mineral Insulating Oil	Transformers/ switchyard	Low toxicity Hazard class – NA	None established	Carbon steel transformers; total on-site inventory of approximately 250,000 gallons (each 1 megavolt-ampere transformer contains approximately 500 gallons). Carbon steel tank, maintenance inventory in 55-gallon steel drums.	Used only in transformers, secondary containment for each transformer. Maintenance inventory stored within secondary containment; alternative measures to secondary containment for equipment will be implemented at the project.
Soil stabilizer Active ingredient: acrylic or vinyl acetate polymer or equivalent		Non-toxic; Hazard class - NA	None established	No on-site storage, supplied in 55-gallon drums or 400-gallon totes, used immediately	No excess inventory stored on-site.
Sulfur Hexafluoride	230 kV breaker insulating medium			Contained within switchyard equipment; maximum of 7500 lbs	Inventory management.
Acetylene	Welding gas	Moderate toxicity; Hazard class – Toxic	PEL: none established	Steel cylinders; 200 cubic foot each, 600 cubic foot total on site	Inventory management, isolated from incompatible chemicals.
Argon	Welding gas	Low toxicity; Hazard class – Nonflammable gas	PEL: none established	Steel cylinders; 200 cubic foot each, 600 cubic foot total on site	Inventory management.
Oxygen	Welding gas	Low toxicity; Hazard class – Oxidizer	PEL: none established	Steel cylinders; 200 cubic foot each, 600 cubic foot total on site	Inventory management, isolated from incompatible chemicals.

NOTES:

[a] Low toxicity is used to describe materials with a National Fire Protection Association (NFPA) Health rating of 0 or 1. Moderate toxicity is used describe materials with an NFPA rating of 2. High toxicity is used to describe materials with an NFPA rating of 3. Extreme toxicity is used to describe materials with an NFPA rating of 4.

[b] NA denotes materials that do not meet the criteria for any hazard class defined in the 1997 Uniform Fire Code.

PVSI would develop and implement a variety of plans and programs to ensure safe handling, storage, and use of hazardous materials (e.g., Hazardous Material Business Plan). Solar plant personnel would be supplied with appropriate personal protective equipment (PPE) and would be properly trained in the use of PPE as well as the handling, use, and cleanup of hazardous materials used at the facility and the procedures to be followed in the event of a leak or spill. Adequate supplies of appropriate cleanup materials would be stored on-site.

In addition to the chemicals listed above, small quantities (less than 55 gallons, 500 pounds or 200 cubic feet) of janitorial supplies, office supplies, laboratory supplies, paint, degreasers, herbicides, pesticides, air conditioning fluids (chlorofluorocarbons or CFCs), gasoline, hydraulic fluid, propane, and welding rods typical of those purchased from retail outlets also could be stored and used at the facility. These materials would be stored in the maintenance warehouse or office building. Flammable materials (e.g., paints or solvents) would be stored in flammable material storage cabinet(s) with built-in containment sumps. The remainder of the materials would be stored on shelves, as appropriate.

2.10.1.4 Hazardous Waste

Similar to the Approved Project small quantities of hazardous wastes would be generated during BSPP construction, operation, maintenance, and decommissioning. Hazardous wastes generated during the construction phase would include substances such as paint and primer, thinners, and solvents. Hazardous solid and liquid waste streams that would be generated during operation of the Project include substances such as used hydraulic fluids, used oils, greases, filters, etc., as well as spent cleaning solutions and spent batteries. Hazardous wastes generated during decommissioning would include substances such as: carbon dioxide, diesel fuel, hydraulic fuel and lube oil. To the extent possible, all hazardous wastes would be recycled.

PVSI or its contractor would obtain a hazardous waste generator identification number from the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) prior to generating any hazardous waste. All spills would be reported to BLM and the County. Spills greater than 25 gallons would be reported to the RWQCB. A sampling and cleanup report would be prepared and sent to the RWQCB to document each spill and clean up. Each spill, regardless of amount, would be cleaned up within 48 hours and a spill report completed. Copies of all spill and cleanup reports would be kept on-site.

2.11 FACILITY CLOSURE

The standards applied to closure of the facility for the Modified Project would not be different from those applicable to the Approved Project.

The principal materials incorporated into the PV arrays include glass, steel, and various semiconductor metals. The module production process is designed to minimize waste generation and maximize the recyclability and reusability of component materials. Some manufacturers employ the compound CdTe as the semiconductor material. Cadmium telluride is a stable compound of cadmium (Cd) and tellurium (Te). Cadmium, Cd, produced primarily as a byproduct of zinc refining, is a human carcinogen as an independent element, but when combined with Te, a byproduct of copper refining, forms the stable, non-hazardous compound CdTe. In module manufacturing Cd, a hazardous material, is safely sequestered in the form of CdTe in a module for the over 30-year lifetime of the module, after which it is recycled for use in new solar modules or other new products. If the BSPP selects panels that incorporate CdTe, it will participate in the manufacturer's recycling program. An analysis of CdTe is included in Section 4.5 of this Petition.

Section 3 ENGINEERING ANALYSIS

The following sections provide a description of the modifications proposed to the BSPP as they may affect the assumptions, rationale, and Conditions of Certification in the Commission Final Decision. As discussed in Section 2 of this Petition, PVSI has not yet selected the exact combination of fixed tilt and single access tracking PV modules for the site. Such selection will be made as part of the final design of the BSPP. However, where there are differences between the two systems, PVSI has included a comparison of each for the Commission to consider a "worst-case" for each technical area.

3.1 FACILITY DESIGN, EFFICIENCY AND RELIABILITY

This section outlines the portions of the Modified Project that may affect the analysis, rationale, conclusions, and Conditions of Certification contained in the Commission Final Decision for the Approved Project.

3.1.1 Overview of Approved Project

The Approved Project was originally licensed as a nominally rated 1000 MW solar thermal facility to be developed in four independent units, each with a capability of generating up to 250 MW with traditional steam turbine technology. The Approved Project would interconnect with a double circuit 230 kV transmission generation tie-line to the Colorado River Substation (CRS) which is already under construction.

The Approved Project would have utilized solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola. A heat transfer fluid (HTF) is brought to high temperature (750°F) as it circulates through the receiver tubes. The HTF is then piped through a series of heat exchangers where it releases its stored heat to generate high pressure steam. The steam is then fed to a traditional steam turbine generator where electricity is produced. Individual components of the Approved Project included:

- Solar Field & Power Block #1 (northeast);
- Solar Field & Power Block #2 (northwest);
- Solar Field & Power Block #3 (southwest);
- Solar Field & Power Block #4 (southeast);
- Access road from and including upgraded portion of Black Rock Road to onsite office;
- Warehouse/maintenance building, assembly hall and laydown area;
- Telecommunications Lines;
- Natural Gas Pipeline;
- Concrete Batch plant;
- Fuel depot;
- Onsite transmission facilities, including central internal switchyard;
- 230 kV double circuit transmission line interconnecting to the Colorado River Substation (Gen-Tie Line); and
- Groundwater wells used for water supply.

3.1.2 Relevant Modifications to Project Description

The primary modifications relevant to Facility Design, Efficiency and Reliability are the following:

- The previously planned four power blocks (which each included a steam turbine, evaporation pond, auxiliary boiler, air-cooled condenser, and equipment) and structures have been eliminated.
- The Land Treatment Units for HTF have been eliminated.
- The HelioTrough energy collection systems have been eliminated and replaced with PV panels configured for either horizontal tracking or fixed tilt operations.
- The substation will be relocated near the center of the disturbance area.
- The large assembly hall will be eliminated.
- The concrete batch plant will be eliminated.
- The natural gas line has been eliminated.
- The water treatment system, associated waste and evaporation ponds have been reduced from eight ponds to two.
- The large drainage structures surrounding the site will be reduced in size or eliminated.

3.1.3 Power Plant Efficiency

An analysis of the Modified Project's efficient use of land to generate electricity will be submitted under separate cover.

3.1.4 Power Plant Reliability

For practical purposes, a reliable power plant is one that is available when called upon to operate. The evidence shows that delivering acceptable reliability entails: 1) adequate levels of equipment availability; 2) plant maintainability with on-going maintenance; 3) fuel and water availability; and 4) resistance to natural hazards.

An analysis of these factors demonstrating that the Modified Project can be constructed and operated in a safe and reliable manner will be submitted under separate cover.

3.1.5 Compliance With LORS

The Commission Final Decision concluded that, with implementation of the Conditions, the Approved Project would comply with all applicable LORS. No LORS have been identified that are uniquely applicable to PV. In fact, some of the LORS that would have been applicable to the Approved Project, such as those associated with the design of

the facility components using natural gas or HTF, would no longer be applicable to the Modified Project. As with the Approved Project, the Modified Project would comply with all applicable LORS.

3.1.6 Conditions of Certification

Condition of Certification **GEN-2** contains a table of major structures associated with the Approved Project. The table should be modified as follows:

Equipment/System	Quantity (Plant)
PV Modules ~~Steam Turbine Generator Foundation and Connections~~	~~4~~
PV Racking System ~~Start-up Boilers Foundations and Connections~~	~~4~~
Generator Step-up Transformer Foundation and Connections	~~4~~
Inverters ~~Overflow Vessel Foundation and Connections~~	~~8~~
~~Expansion Vessel Foundation and Connections~~	~~8~~
Weather Station Building Structure, Foundation and Connections	~~4~~
~~HTF Pumps Lube Oil Unit Foundation and Connections~~	~~8~~
~~Balance of Plant Electrical Building Structure, Foundation and Connections~~	~~4~~
~~Ullage Coolers and Vessel~~	~~4~~
~~Reheaters Foundation and Connections~~	8
~~MCC Cooling Tower Foundation and Connections~~	~~4~~
~~Gland Condenser Foundation and Connections~~	~~4~~
~~Lube Oil Console~~	~~4~~
~~Deaerator Foundation and Connections~~	~~4~~
~~LP/HP Pre-Heaters~~	~~4~~
~~Main Auxiliary Transformers Foundations and Connections~~	~~4~~
~~Air-cooled Condenser Structure, Foundation and Connections~~	~~4~~
~~Oil/Water Separator Foundation and Connections~~	~~4~~
~~Compressed Air System Foundation and Connections~~	~~4~~
~~Generator Circuit Breaker Foundation and Connections~~	~~4~~
Warehouse Building Structure, Foundation and Connections	~~4~~ ***1***
~~Chemical Injection Skid Foundation and Connections~~	~~4~~
~~Cooling Tower Structure Foundation and Connections~~	~~4~~
Water Tank Structure, Foundation and Connections	4
Take Off Tower Structure, Foundation and Connections	4
~~Blowdown Tanks Structure, Foundation and Connections~~	~~8~~

Condition of Certification **MECH-1** lists several LORS that may no longer be applicable to the construction of a project that uses PV instead of solar thermal technology. An update of the LORS that should be eliminated will be submitted under separate cover.

3.2 TRANSMISSION SYSTEM ENGINEERING

This section outlines the portions of the Modified Project that may affect the analysis, rationale, conclusions, and Conditions of Certification contained in the Commission Final Decision for the Approved Project.

3.2.1 Overview of Approved Project

The Approved Project was originally licensed as a nominally rated 1000 MW solar thermal facility to be developed in four independent units, each with a capability of generating up to 250 MW with traditional steam turbine technology. The Approved Project would interconnect with a double circuit 230 kV transmission generation tie-line to the Colorado River Substation (CRS) which is already under construction. The Commission approved a previous amendment on August 24, 2011 to the Approved Project to accommodate the relocation of the CRS. CAISO, SCE and PVSI executed a Large Generator Interconnection Agreement (LGIA) in November 2010, which was approved by the Federal Energy Regulatory Commission (FERC) in March 2011.

3.2.2 Relevant Modifications to Project Description

The Modified Project will eliminate the power blocks and the CSP generation technology will be replaced with PV. The switchyard will be modified to accommodate this change. A preliminary one-line diagram and a preliminary layout of the proposed switchyard are presented in Appendix C. Additionally, a slight change to the transmission route will be made to accommodate the use of a shared transmission corridor from the McCoy and EneXco Projects located north of the site.

SCE and CAISO are currently reviewing the effect of switching solar technologies and whether that impacts the previous interconnection studies. Once this evaluation is complete, the LGIA will be amended to address the technology switch. The LGIA amendment, once executed, will require FERC review and approval. It is anticipated that the switch to technology will not require different downstream transmission system upgrades than those identified in the previous CAISO studies.

3.2.3 Compliance With LORS

The Modified Project will comply with all transmission system engineering related laws, ordinances, regulations and standards. This will be ensured by enforcement of the existing Conditions of Certification as modified below. Evidence that the Modified Project can safely interconnect with the CAISO system at the CRS will be demonstrated by the LGIA, when amended.

3.2.4 Conditions of Certification

No modifications of Conditions of Certification are proposed to the Commission Final Decision to accommodate the Modified Project.

3.3 TRANSMISSION LINE SAFETY AND NUISANCE

There will be no changes to the Commission's assumptions, analysis, rationale or Conditions of Certification as a result of the Modified Project to the technical area of Transmission Line Safety and Nuisance because the Approved Transmission Line is not changing, except for a minor shift to accommodate other projects.

Section 4 PUBLIC HEALTH AND SAFETY

The following sections provide a description of the modifications proposed to the BSPP as they may affect the assumptions, rationale, and Conditions of Certification in the Commission Final Decision. As discussed in Section 2 of this Petition, PVSI has not yet selected the exact combination of fixed tilt and single access tracking PV modules for the site. Such selection will be made as part of the final design of the BSPP. However, where there are differences between the two systems, PVSI has included a comparison of each for the Commission to consider a "worse-case" for each technical area. Ultimately the selection of either fixed-tilt or tracking PV systems or a combination of both systems will not affect: the amount of land that is assumed to be considered impacted and upon which mitigation is based; the construction methodologies or types or quantities of equipment necessary to construct the project and therefore construction emissions will be the same; or the hazardous materials or waste generated.

4.1 GREENHOUSE GAS EMISSIONS

This section provides estimates of Greenhouse Gas Emissions (GHG) associated with the construction of the Modified Project. Estimates of GHGs for operation and maintenance of the Modified Project are not provided since the elimination of the solar thermal technology eliminates the major GHG emissions associated with the use of HTF, the consumption of natural gas, and the intensive mirror washing program. The GHGs for operation and maintenance of the Modified Project are estimated to be a fraction of those of the Approved Project.

GHG emissions during construction, however, were evaluated for the Modified Project since many of the construction activities associated with grading of the site were similar to the Approved Project, warranting a closer comparison.

4.1.1 Summary of GHG Construction Emissions

The methodology for calculating GHG emissions during construction is described in Appendix D. Table 4.1-1 presents the estimates of GHGs for the construction phase of the Modified Project (total of on-site and offsite emissions).

TABLE 4.1-1
GHG CONSTRUCTION EMISSIONS ESTIMATES

Total CO_2e, short tons/period	9578
Total CO_2e, metric tons/period	8707
Total CO_2e, normalized short tons/yr	1532.5
Total CO_2e, normalized metric tons/yr	1393

These GHG construction emission estimates are less than the GHG construction estimate of 103,900 metric tons/period contained in the Final Decision.

4.2 AIR QUALITY

This section provides estimates of criteria pollutant emissions and modeled impacts associated with the construction of the Modified Project. Emissions estimates and modeling was not conducted for operation and maintenance of the Modified Project because the discontinued use of the solar thermal technology eliminates the emissions associated with the use of HTF, the consumption of natural gas, and the intensive mirror washing program of the Approved Project. The air quality emissions for operation and maintenance of the Modified Project are estimated to be a fraction of those of the Approved Project.

However, criteria pollutant emissions during construction were evaluated for the Modified Project since many of the construction activities associated with grading of the site were similar to the Approved Project, warranting a closer comparison.

4.2.1 Summary of Construction Emissions

The methodology for calculating criteria pollutants and modeling impacts during construction is described in Appendix D. Table 4.2-1 presents the modeling results. Also included in the table are the maximum background levels that have occurred in the last three years and the resulting total ambient impacts. As shown in Table 4.2-1, modeled construction impacts are expected to be below the most stringent state and national standards. Total (i.e., modeled plus background) impacts are greater than the state's PM10 standards because these standards are already exceeded by background ambient concentrations even in the absence of the construction emissions from the Modified Project. Total (modeled+background) concentrations all also greater than the new 1-hour federal NO_2 standard.

TABLE 4.2-1
MODELED MAXIMUM IMPACTS

Pollutant	Averaging Time	Maximum Impacts (ug/m³)	Background (ug/m³)	Total Impacts (ug/m³)	State Standard (ug/m³)	Federal Standard (ug/m³)
NO_2	1 hour CAAQS	185.9	90.2	276.1	339	-
	1-hour NAAQS	173.3	73.3	246.6	-	188
	Annual	0.44	16.9	17.35	57	100
CO	1 hour	949	3437	4386	23000	40000
	8 hour	158	768	926	10000	10000
PM_{10}	24 hour	16.5	324	340.1	50	-
	CAAQS	16.5	96	112.5		150
	24-hour	0.08	35.4	35.5	20	-
	NAAQS					
	Annual					
$PM_{2.5}$	24 hour	7.4	14.7	22.1	-	35
	Annual	0.04	7.8	7.84	12	15.0
SO_2	1 hour	1.44	136.3	137.7	655	196
	3 hour	0.59	N/A	<136.9		1300
	24 hour*	0.13	18.42.6	18.53	105	365
	Annual*	0.001		2.6		80
Ozone	1 hour	Modeling not required.			180	-
	8 hour				137	147

Notes:

1. Background values are the limiting values, i.e., when used for both state (CAAQS) and federal (NAAQS) standards, the value that is the highest for each applicable averaging time from Table 4 is used.
2. CARB Ambient Air Quality Standards Table, 2-7-12.
3. *Federal SO_2 standards for 24 hour and annual apply only to certain areas (not applicable to this project).
4. Annual values are arithmetic means.
5. ARM applied for annual NO_2 average, using national default ratio of 0.75. Ozone Limiting Method (OLM) applied for 1-hour NO_2 average, calculated by AERMOD as described above.

4.2.2 Compliance With LORS

The Modified Project will not be required to submit an application for a Determination Of Compliance with the Mojave Desert Air Quality Management District (MDAQMD) because it will not have any permanent emission sources that would require permits under MDAQMD rules.

4.2.3 Conditions of Certification

Conditions of Certification **AQ-1** through **AQ-64** should be deleted as they are no longer applicable to the Modified Project because the BSPP will no longer have equipment that requires MDAQMD permits.

Condition of Certification **AQ-SC6** should be revised as follows to reflect that the Modified Project will not incorporate mirrors.

AQ-SC6 The project owner, when obtaining dedicated on-road or off-road vehicles for ~~mirror~~ ***panel*** washing activities and other facility maintenance activities, shall only obtain vehicles that meet California on-road vehicle emission standards or appropriate U.S.EPA/California off-road engine emission standards for the latest model year available when obtained.

4.3 PUBLIC HEALTH

This section provides a public health impact analysis associated with construction emissions for the Modified Project. The public health impact analysis for operation and maintenance of the Modified Project is not provided because with the elimination of the solar thermal technology and the emissions associated with the use of HTF, the consumption of natural gas, and the intensive mirror washing program are no longer present. Therefore, the potential public health impacts associated with emissions during operation and maintenance of the Modified Project are estimated to be a fraction of those of the Approved Project.

However, since the emissions associated with construction activities for the Modified Project are expected to be similar to those evaluated for the Approved Project, a revised health risk analysis was performed for the Modified Project.

4.3.1 Summary of Construction Emission Health Risk Analysis

The screening risk calculation for construction impacts (i.e., diesel equipment particulate matter emissions and the inhalation pathway assumption) is presented in Table 4.3-1. Consistent with the previous project analysis, no sensitive receptors were noted within a 3-mile radius of the plant site. The resulting impacts to public health are less than the applicable significance level of 1 in a million. Thus, during the construction phase of the Modified Project, no impacts to public health are expected to occur.

TABLE 4.3-1
CONSTRUCTION RISK SUMMARY

Parameter	MIR Receptor #1	MIR Receptor #2
Receptor Location	Fence line	Nearest Residential
MIR Receptor Coordinates (UTM meters-NAD83)	705922, 3727306	710535, 3721040
Cancer Risk (per million-6.25 years)	0.69	0.01
Chronic HI	0.007	0.000
The maximum onsite diesel exhaust period emissions (normalized tons/year) were used for risk evaluation purposes. Maximum annual PM10 combustion source impacts are 0.03605 ug/m^3 for the fenceline receptor, and 0.00070 ug/m^3 for the nearest residential receptor.		

4.3.2 Compliance With LORS

There are no public health related LORS that would be applicable to the Modified Project solely as a result of its conversion to PV technology. Therefore, the Commission Final Decision's conclusion that the BSPP would comply with all public health related LORS would still be applicable.

4.3.3 Conditions of Certification

The Commission Final Decision includes Condition of Certification **PUBLIC HEALTH-1** which applied solely to use the cooling tower. Since the Modified Project will not construct or operate any cooling towers, this Condition of Certification should be deleted.

4.4 WORKER SAFETY/FIRE PROTECTION

This section discusses the reduction in impacts to worker safety and fire protection for the Modified Project.

4.4.1 Project Changes Related to Worker Safety and Fire Protection

The Modified Project proposes to utilize either fixed tilt or single-axis tracking PV modules for the Modified Project's electrical generation. The elimination of all solar thermal technology (including the equipment within the four power blocks) would result in the elimination of combustion of natural gas and the transport and storage of HTF. These components were the focus of potential impacts to worker safety and fire protection during Licensing of the Approved Project.

4.4.2 Changes in Environmental Impacts

The potential impacts to worker safety during construction would be the same for the Modified Project as for the Approved Project.

The largest potential change to the analysis contained in the Final Decision is whether the on-going contribution to Riverside County Fire Department remains necessary since the level of service needed to respond to a HTF fire in the solar field, or a fire or explosion within the power block, has been eliminated. PVSI will work with the Riverside County Fire Department and/or the City of Blythe Fire Department to negotiate an appropriate mitigation fee to offset the impacts to the applicable fire department(s) from the reduced risk posed by the Modified Project.

4.4.3 Compliance With LORS

In the Commission Final Decision, the Commission concluded that, with the implementation of the Conditions, the Approved Project would comply with all applicable LORS. As with the Approved Project, the Modified Project would comply with all applicable LORS, and no new or additional LORS have been identified.

4.4.4 Conditions of Certification

No new or more severe impacts requiring additional mitigation would result from the Modified Project and therefore no changes the Conditions of Certification are proposed. However, it is likely that Condition of Certification **WORKER SAFETY -7** will need to be revised to reflect the reduction in impacts to the Riverside County Fire Department and/or City of Blythe Fire Department associated with the lower of level response necessary for the Modified Project.

4.5 HAZARDOUS MATERIALS MANAGEMENT

As described below impacts of the Modified Project to hazardous materials management are expected to be less than or equal to those of the Approved Project and will remain less than significant.

4.5.1 Project Changes Related to Hazardous Materials Management

The Modified Project proposes to utilize either fixed tilt or single-axis tracking PV modules for the Modified Project's electrical generation. The elimination of the solar thermal technology and power blocks will reduce the need for some hazardous materials storage, management and disposal. Hazardous materials used during construction will be the same for the Modified Project as for the Approved Project. A description of the types, quantities and methods for management and disposal is discussed in Sections 2.10.1.3 and 2.10.1.4 of this Petition.

4.5.2 Changes in Environmental Impacts

4.5.2.1 Construction

The types and amounts of hazardous materials to be used during construction for the Modified Project are the same in type and amount as the hazardous materials as contemplated for the Approved Project. Therefore, the Modified Project's impacts to public health and safety associated with the use of hazardous materials during construction would be similar to the impacts from the Approved Project and would remain less than significant.

4.5.2.2 Operations

The types of hazardous materials that would be used during operation under the Modified Project would be less than those assumed for the Approved Project because the power blocks and HTF would be completely eliminated.

As discussed in this Petition, PVSI has not yet selected the specific panel for installation at the plant site. Some manufacturers employ the compound CdTe (cadmium telluride) as the semiconductor material within the modules. Cadmium telluride is a stable compound of cadmium (Cd) and tellurium (Te). Cd, produced primarily as a byproduct of zinc refining, is a human carcinogen as an independent element, but when combined with Te, a byproduct of copper refining, forms the stable, non-hazardous compound CdTe. In module manufacturing Cd, a hazardous material, is safely sequestered in the form of CdTe in a module for the over 30-year lifetime of the module, after which it is recycled for use in new solar modules or other new products.

In addition, CdTe's physical properties, including its extremely low vapor pressure and high melting point, along with its insolubility in water, limit its mobility. Furthermore, the very thin layer of CdTe in PV modules is encapsulated between two protective sheets of glass. As a result, the risk of health or environmental exposure in fires, from accidental breakage, or from leaching is de minimus. The exposure routes to CdTe in modules are limited; furthermore, recent toxicological testing indicates that CdTe is significantly less toxic than elemental Cd.

First Solar, a manufacturer that uses CdTe, employs a collection and recycling program to ensure that PV materials stay in the production cycle and out of municipal landfills. The program is designed to recover approximately 95 percent of the semiconductor material and 90 percent of the glass. The remaining materials (e.g., glass fines, dust) are collected in HEPA filters and are disposed of properly. Commercial scale recycling facilities are currently in operation at each of First Solar's manufacturing facilities to recycle manufacturing materials. If PVSI elects to use a PV panel that uses CdTe, it would participate in that manufacturer's recycling program.

In 2009, an in-depth assessment of the environmental, health and safety aspects of First Solar's CdTe PV systems and manufacturing operations was carried out under the authority of the French Ministry of Ecology, Energy, Sustainable Development, and the Sea. It concluded that, "During standard operation of CdTe PV systems, there are no cadmium emissions – to air, to water, or to soil. In the exceptional case of accidental fires or broken panels, scientific studies show that cadmium emissions remain negligible. Accordingly, large-scale deployment of CdTe PV can be considered safe to human health and the environment."[2]

A 2005 peer review of three major published studies on the environmental profile of CdTe PV organized by the European Commission, Joint Research Center and sponsored by the German Environment Ministry concluded "…CdTe used in PV is in an environmentally stable form that does not leak into the environment during normal use or foreseeable accidents, and therefore can be considered the environmentally safest current use of cadmium." This review also concluded that "Large scale use of CdTe photovoltaic modules does not present any risks to public health and the environment."[3]

---

[2]. Summary Report, "Environmental, Health, and Safety (EHS) Aspects of First Solar Cadmium Telluride (CdTe) Photovoltaic (PV) Systems," carried out under the authority of the French Ministry of Ecology, Energy, Sustainable Development, and the Sea, July 2009.

[3]. Summary Report, "Peer Review of Major Published Studies on the Environmental Profile of Cadmium Telluride (CdTe) Photovoltaic (PV) Systems," European Commission, Joint Research Centre.

Independent analysis also indicates that CdTe modules do not pose a risk during fires. CdTe has an extremely low vapor pressure, high boiling and melting points and is almost completely encapsulated by molten glass when exposed to fire. Exposure of pieces of CdTe PV modules to flame temperatures from 1,400°F to 2,000°F illustrated that CdTe diffuses into glass, rather than being released into the atmosphere. Higher temperatures produce further CdTe diffusion into the glass.[4]

4.5.3 Compliance With LORS

In the Commission Final Decision, the Commission concluded that, with the implementation of the Conditions, the Approved Project would comply with all applicable LORS. As with the Approved Project, the Modified Project would comply with all applicable LORS, and no new or additional LORS have been identified.

4.5.4 Conditions of Certification

Condition of Certification **HAZ-4** should be deleted as it pertains solely to use of HTF which will be eliminated from the Modified Project.

4. Fthenakis, V., Fuhrmann, M., Heiser, J., Lanzirotti, A., Fitts, J., and Wang, W.,""Emissions and Encapsulation of Cadmium in CdTe PV Modules During Fires," *Progress in Photovoltaics: Research and Applications*, 6, 99-103 (1998).

4.6 WASTE MANAGEMENT

This section describes the changes proposed by the Modified Project that may affect the analysis, conclusions or Conditions of Certification of the Commission Final Decision for the Approved Project.

4.6.1 Project Changes Related to Waste Management

The only changes proposed by the Modified Project relevant to waste management are the elimination of the wastes associated with operation of the power blocks and the solar field's use of HTF. Elimination of the Land Treatment Units for HTF spills will also affect the need for a waste management program tailored specifically to address such spills.

Construction wastes are expected to be the same as those identified in the Commission Final Decision for the Approved Project.

4.6.2 Changes in Environmental Impacts

4.6.2.1 Construction

The types and quantities of wastes generated and the management methods for such wastes during construction of the Modified Project would be consistent with the wastes and management methods contemplated for the Approved Project. For both the Approved Project and the Modified Project, solid waste, non-recyclable waste, and hazardous and non-hazardous waste would be treated in a similar manner. Therefore, the Modified Project's waste management impacts would be less than or equal to impacts under the Approved Project and would be less than significant.

4.6.2.2 Operations

The types of wastes generated and the management methods for such wastes during operation of the Modified Project would be consistent with the wastes and management methods contemplated for the Approved Project although the quantities of wastes would be reduced and there would be no need to manage the waste associated with releases of HTF. The reduction in sanitary wastewater amounts can be attributed to the reduction in the Project workforce. Because the Modified Project would eliminate the use of a steam turbine and an electric generator, the wastes specific to that technology would be eliminated (e.g. waste associated with PCUs, etc.). Therefore, the Modified Project's waste management impacts from operation are anticipated to be less than or equal to the impacts under the Approved Project and would be less than significant.

4.6.3 Compliance With LORS

In the Commission Final Decision the Commission concluded that, with the implementation of the Condition of Certification, the Approved Project would comply with all applicable LORS. As with the Approved Project, the Modified Project would comply with all applicable LORS, and no new or additional LORS have been identified. The Modified Project would no longer be required to comply with LORS related to the delivery, storage, handling and disposal of HTF-related wastes.

4.6.4 Conditions of Certification

Condition of Certification **WASTE-8** should be deleted since HTF and the land treatment units have been removed from the Modified Project.

Section 5 ENVIRONMENTAL ANALYSIS

The following sections provide a description of the modifications proposed to the BSPP as they may affect the assumptions, rationale, and Conditions of Certification in the Commission Final Decision. As discussed in Section 2 of this Petition, PVSI has not yet selected the exact combination of fixed tilt and single access tracking PV modules for the site. Such selection will be made as part of the final design of the BSPP. However, where there are differences between the two systems, PVSI has included a comparison of each for the Commission to consider a "worse-case" for each technical area. Ultimately the selection of either fixed-tilt or tracking PV systems or a combination of both systems will not affect the amount of land that is assumed to be considered impacted and upon which the biological, cultural, geological and paleontological resources mitigation is based.

5.1 BIOLOGICAL RESOURCES

This section describes differences in the potential impacts to biological resources that would be expected to occur in association with the Modified Project as a result of the change in technology and acreage, versus those of the Approved Project. As demonstrated below in all cases, the Modified Project's potential environmental impacts are equivalent to or less than those identified in the Commission Final Decision for the Approved Project.

5.1.1 Summary of Project Changes Related to Biology

5.1.1.1 Change in Technology

As described in Section 2 of this Petition, PVSI is proposing to replace all of the solar thermal facilities with PV. The four power blocks including the cooling tower will be eliminated. The PV layout will be constructed in eight 125 MW phases instead of four solar thermal power plants generating 250 MW each. The change in technology to PV will engender no additional impacts to special-status wildlife, plants, and natural communities as compared to those for the Approved Project:

- Support facilities (natural gas pipeline, transmission line, telecommunications, new access road, upgraded Black Rock Road access, onsite water treatment system [including evaporation ponds], O&M building and parking area, internal access roads, groundwater wells), will occur for both projects and result in relatively the same impacts.

- Construction of the PV solar site and linear features will result in permanent and semi-permanent losses of habitat equivalent to or less than those for the Approved Project.

- As with the Approved Project, the solar site will be fenced with exclusionary fencing to exclude, at a minimum, desert tortoises. Fencing will also remove the solar site from use by most or all species currently using the site and will potentially disrupt movement patterns of wildlife outside the site in the same manner as contemplated for the Approved Project.

- Effects on desert tortoises, which will be sought during clearance surveys and translocated per the approved translocation plan, will be the same for both projects.

- No additional special-status species, including state or federally listed species, will be affected by the change in technology, as none are expected at the Modified Project.

- Impacts to other protected and/or special-status species or biological resources - including but not limited to plants, natural communities, jurisdictional state waters, desert kit foxes, American badgers, Mohave fringe-toed lizards, Couch's spadefoot toads, burrowing owls, and nesting birds - will be similar and minimized identically for both projects by a combination of surveying, monitoring, avoidance, removal, and/or compensatory mitigation.

- In addition to losses of habitat and some individuals of low-mobility species, behaviors of animals in the Project vicinity may be disturbed by activities and noise associated with construction of either project. Operations on the Modified Project will result in activity, lights, and ongoing maintenance activities that will affect wildlife similarly or identically to that for solar thermal technology.

- The potential for indirect impacts, including but not limited to, weed expansion, predator increases and dust deposition, will occur similarly for both projects.

- The potential for impacts to biological resources that may result from lowered groundwater levels (e.g., springs, seeps,) will be less with the Modified Project because of lower water use for PV. The Approved Project projected an annual use of 600 acre-feet per year (afy) while the Modified Project expects to use between 60 and 88 afy.

- Impacts to existing topography and hydrology will be equivalent to or less than that for solar trough technology because the PV structures do not have the same restrictive grading requirements as solar trough mirrors.

5.1.1.2 Change in Acreage

As detailed in Section 2 of this Petition, the Footprint for the Modified Project will be entirely within the footprint of the Approved Project, except for the possible addition of two private parcels that are either owned by PVSI or under purchase-option contract to PVSI. The first property encompasses approximately 160 acres located in the center of the BSPP Project Site and is known as the Strait/Murphy Properties. The second property is located in the southern portion of the site, encompasses approximately 120 acres and is known as the Porter Property. PVSI has a purchase-option agreement for the Porter Property.

Biological surveys on the Strait-Murphy Properties were conducted in 2010 as part of the overall project surveys. The Porter Property was partially surveyed during buffer

surveys for the Approved Project. However, lands completely surrounding this property were surveyed in 2009 and 2010 and those results, along with the buffer surveys on the Porter Property, provide ample information to assess biological conditions, impacts and the relevance of licensing and permit conditions developed for the Approved Project. The results of those surveys are summarized below and were previously submitted to the Commission as part of the BSPP's Compliance submittals.

All linear facilities will not change from the Final Decision, as modified by an Amendment approved by the Commission on August 30, 2011, as a result of the switch to PV technology. Within the original project footprint the originally proposed drainage structures which will not be installed because the BSPP site no longer needs the type of extensive grading that was necessary to accommodate the solar trough technology. As described in Section 5.2 of this Petition, the grading necessary to accommodate either the fixed tilt or single access tracking PV systems is considerably less than that required for the original BSPP, which will allow much of the storm water from runoff events to flow through the site with minimal drainage structures.

5.1.2 Summary of Surveys

5.1.2.1 Summary of Strait-Murphy Properties Surveys

Biological surveys for the BSPP took place in 2009 and 2010. The discussion below identifies the nature of those surveys as they pertained to the Strait-Murphy Properties.

5.1.2.1.1 Vegetation Mapping

The Strait-Murphy Properties were surveyed in 2010, from 8 March through 11 May (AECOM 2010a:10).

5.1.2.1.2 Special-Status Plants

The Strait-Murphy Properties were surveyed in 2010, during surveys of the reconfigured Project Disturbance Area (PDA). Although these properties were not part of the reconfigured PDA, they were included in the 2010 survey, presumably because surveys were not permitted there in 2009 (AECOM 2010a:17; AECOM 2010b: Attachment 8). The 2010 surveys occurred from 8 March through 11 May (AECOM 2010:17).

5.1.2.1.3 Jurisdictional Waters

State Waters were not initially surveyed in Spring 2009 (AECOM 2009a:20 and Figure 7). They were subsequently surveyed on one or all of the following dates: 7 October 2009, 5-6 November 2009 and 5-8 and 10 April 2010 (AECOM 2010d:19 and Figures 12 and 13).

5.1.2.1.4 Wildlife

Desert tortoise and other wildlife were surveyed in 2010 from 15 March through 14 May (AECOM 2010a:24). Surveys were not conducted in 2009.

Focused surveys for burrowing owl were conducted in 2010, during which a Phase I habitat assessment was completed and Phase II burrow surveys were conducted between 15 March and 14 May (AECOM 2010a:24 and Figures 18 and 19). No Phase III surveys were done on the Strait-Murphy Properties because of lack of sign during the Phase II survey. No burrowing owl surveys were conducted in 2009 (AECOM 2009a:32 and Figure 6).

5.1.2.2 Summary of Porter Property Surveys

Biological surveys for the BSPP took place in 2009 and 2010. The discussion below identifies the nature of those surveys as they pertained to the Porter Property.

5.1.2.2.1 Vegetation Mapping

The Porter Property is part of the Biological Resources Survey Area (BRSA) and was included in the "buffer area" outside the Project Disturbance Area. Vegetation mapping for the entire BRSA, including the Porter Property, was completed in 2009, between 11 February and 21 April (AECOM 2009a: 19 and Figure 6).

5.1.2.2.2 Special-Status Plants

The Porter Property is included in the BRSA as part of the "buffer area" outside the Project Disturbance Area. For special-status plants, the reports (EDAW AECOM 2009a, AECOM 2010a) stated that surveys were conducted in the PDA and buffer area, but were unclear relative to the intensity and specific locations of the survey in the buffer. However, the Project Applicant's response to the December 2009 CEC Data Request showed that the Porter Property was not part of the buffer that was surveyed for special-status plants in 2009 (AECOM 2010c: Figure DR-BIO-76). The Porter Property also was not part of the 2010 survey for the reconfigured PDA (AECOM 2010a:17; AECOM 2010b: Attachment 8).

Despite the lack of surveys on the Porter Property, surveys for the Approved Project in 2009 and 2010 completely surrounded the Porter Property (AECOM 2010a). Also, the habitat on the Porter Property was mapped (AECOM 2010a: Figures 8 and 9) and is the same as that in the adjacent portions of the Approved Project. Accordingly, it is reasonably expected that the species that might be present are those found in the adjacent Approved Project, specifically Harwood's milkvetch, Utah milkvine and desert

unicorn (AECOM 2010a: Figures 10 and 11). None of these plants is a state or federally listed species.

5.1.2.2.3 Jurisdictional Waters

State Waters were surveyed on the Porter Property in 2010 (AECOM 2010d: Figures 12 and 13) and Fall 2009 (AECOM 2010d:19). A 250-foot survey buffer extended into from the PDA into the Porter property on all sides (AECOM 2010d:v and Figures 12 and 13). But, delineation was also completed on the Porter Property as part of the delineation of hydrologically connected areas outside the PDA that was completed to facilitate impacts analysis (AECOM 2010d:9). Survey dates were 7 October 2009, 5-6 November 2009 and 5-8 and 10 April 2010 (AECOM 2010d:19). State Waters were not initially surveyed in March 2009 (AECOM 2009b:20 and Figure 7).

5.1.2.2.4 Wildlife

Desert Tortoise – No surveys were conducted for desert tortoise (AECOM 2009a:29 and Figures 5 and 9; AECOM 2010a:22 and Figures 6 and 7).

Kit Fox, American Badger and other Special–Status Wildlife – No surveys were conducted (AECOM 2009a:28 and Figure 11; AECOM 2010a:20 and Figure 13).

Burrowing Owl – No surveys were conducted in 2009 (AECOM 2009a:32 and Figure 10). Surveys in 2010 extended into the Porter Property via the PDA buffer surveys that extended 492 feet into the Porter Property along all of that property's borders (AECOM 2010a:23 and Figures 6 and 7).

Although wildlife surveys were not conducted or only marginally conducted for wildlife, surveys for the Approved Project in 2009 and 2010 completely surrounded the Porter Property (AECOM 2010a). Also, the habitat on the Porter Property was mapped (AECOM 2010a: Figures 8 and 9) and is the same as that in the adjacent portions of the Approved Project. Accordingly, it is reasonably expected that the species that might be present are those found in the adjacent Approved Project in similar concentrations:

Desert Tortoise - No tortoises are expected, although they are possible in very low numbers. Surrounding sign consisted of bone fragments and questionable burrows and pallets (see AECOM 2010a: Figures 16 and 17). The more incised topography along the western edge of the Approved Project was where tortoises and definitive evidence of tortoise use were found in BSPP surveys, rather than in the flatter, more open terrain that is present on the Porter Property.

Kit Fox, American Badger and Other Special-Status Wildlife – Probably present (see AECOM 2010a: Figures 12 and 13).

Burrowing Owl - Possibly present (see AECOM 2010a: Figures 18 and 19).

Pre-construction clearance surveys (required for the Approved Project) would verify this conclusion, but there is a negligible chance that there would be unexpected results (e.g., a higher tortoise density or a listed species not observed on the Approved Project).

5.1.3 Changes in Environmental Impacts

Table 5.1-1 provides the acres that will be disturbed and require habitat compensation mitigation for addition of the Strait-Murphy and Porter Properties as well as the reduction of the Project footprint due to relocation of the eastern boundary.

TABLE 5.1-1
REVISED BIOLOGICAL RESOURCES COMPENSATION ACRES

Special-Status Biological Resource	Strait-Murphy Property (acres)	Porter Property (acres)	Comments
Desert Tortoise	160	160	AECOM (2010a: Figures 14 and 15)
Burrowing Owl	Unknown	Unknown	If compensation is necessary due to occupied burrows, it can be included in desert tortoise mitigation lands under specific conditions in BIO-18 (4)(a).
State Waters	Approximately 1.3 acres of Jurisdictional Ephemeral Channels	0	AECOM (2010d: Figure 12,Table 7)
Mohave Fringe-toed Lizard/Sand Dunes	0	0	There is no MFTL habitat on the site; all impacts are within the transmission line corridor which remains unchanged.

5.1.4 Compliance With LORS

In the Commission Decision, the Commission concluded that, with the implementation of the Conditions, the Approved Project would comply with all applicable LORS. Finding 2 at page 247 of the Final Decision states:

> With implementation of mitigation measures as appropriate, construction and operation of the planned substation and associated gen-tie connection area project would be expected to comply with all applicable LORS, and would not be expected to result in any significant adverse direct, indirect, or cumulative impacts to biological resources.

There are no new LORS that would affect the Commission's finding. However, since the project includes the addition of the Strait-Murphy and Porter Properties, an amendment to the Commission's Final Decision would also amend the Incidental Take Permit and a Lake and Streambed Alteration Agreement from the CDFG.

Additionally, since the issuance of the Final Decision the BSPP obtained a Jurisdictional Determination from the United States Army Corps of Engineers that there are no waters of the United States on the BSPP site, included in Appendix E.

5.1.5 Conditions of Certification

The conforming changes to the Conditions for the Modified Project related to biological resources are necessary only to adjust the compensation acreages by the new project phases and to adjust for the amount of habitat that will be impacted within the addition of the two private properties. In addition, the Commission will need to correct the security requirements associated with the new compensation acreages and any recent information supplied by the REAT agencies.

CONDITION OF CERTIFICATION BIO-12

BIO-12 To fully mitigate for habitat loss and potential take of desert tortoise, the project owner shall provide compensatory mitigation at a 1:1 ratio for impacts to ~~6,957~~ ***7277*** acres, adjusted to reflect the final project footprint. For purposes of this Condition, the project footprint means all lands disturbed in the construction and operation of the Blythe Project, including all linears, as well as undeveloped areas inside the project's boundaries that will no longer provide viable long-term habitat for the desert tortoise. …

CONDITION OF CERTIFICATION BIO-22

BIO-22 The project owner shall implement the following measures to avoid, minimize and mitigate for direct and indirect impacts to waters of the state and to satisfy requirements of California Fish and Game Code sections 1600 and 1607.

1. Acquire Off-Site State Waters: The project owner shall acquire, in fee or in easement, a parcel or parcels of land that includes at least ~~1,384~~ ***1386*** acres of state jurisdictional waters, or the area of state waters directly or indirectly impacted by the final project footprint. The project footprint means all lands disturbed by construction and operation of the Blythe Project, including all linears. The parcel or parcels comprising the ~~1,384~~ ***1386*** acres of ephemeral washes shall include at least 639 acres of desert dry wash woodland or the acreage of desert dry wash woodland impacted by the final project footprint at a 3:1 ratio. The terms and conditions of this acquisition or easement shall be as described in Condition of Certification **BIO12** and the timing associated with **BIO-28** (phasing). Mitigation for impacts to state waters shall be within the Chuckwalla Valley or Colorado River Hydrological Units (HUs), as close to the project site as practicable.

CONDITION OF CERTIFICATION BIO-25

PVSI requests that Condition of Certification BIO-25 be deleted because it applies solely to the use of evaporation ponds and the Modified Project has eliminated the use of evaporation ponds.

CONDITION OF CERTIFICATION BIO-28

Condition of Certification BIO-28 which allows the habitat compensation lands to be acquired in phases. Once the full impact areas have been evaluated by Staff by each Phase of construction, PVSI proposes to revise this condition accordingly.

LITERATURE CITED

California Energy Commission. 2010. Blythe Solar Power Project Commission Decision. CEC-800-2010-009-CMF. 629 pp.

EDAW AECOM 2009a. Blythe Solar Power Project Biological Technical Report. Prepared for Solar Millennium, LLC. 1213 pp.

EDAW AECOM 2009b. Blythe Solar Power Project Jurisdictional Delineation Report for Regulated Waters of the United States and State. Prepared for Solar Millennium, LLC. 95 pp.

AECOM 2010a. Blythe Solar Power Project Biological Resources Technical Report. Prepared for Palo Verde Solar I, LLC. 983 pp.

AECOM 2010b. Blythe Solar Power Project Botanical Survey Report. Prepared for Palo Verde Solar I, LLC. 309 pp.

AECOM 2010c. Blythe Solar Power Project (09-AFC-6) Responses to CEC Staff Data Requests 45-97. 990 pp.

AECOM 2010d. Blythe Solar Power Project Jurisdictional Delineation Report for Regulated Waters of the United States and State. Prepared for Palo Verde Solar I, LLC. 126 pp.

5.2 WATER RESOURCES

The following paragraphs describe the characteristics of the Modified Project that could affect water resources in a different manner than the Approved Project.

5.2.1 Project Changes Related to Water Resources

Characteristics of the Modified Project that have the potential to impact water resources differently than the Approved Project include the following:

- replacement of concentrating solar helio-trough and associated HTF collections and circulation system with PV modules;
- elimination of all the power blocks and cooling towers;
- reduction in the water treatment facilities from 4 to 1;
- reduction in the acreage of evaporation ponds from up to 32 acres to up to 8 acres;
- addition of inverter pads;
- less intensive grading of the site to accommodate PV;
- elimination of the large drainage control channels; and
- reduction of water use from up to 600 AFY to up to 88 AFY.

5.2.2 Changes in Environmental Impacts

The Commission Final Decision concluded that, with the implementation of the Conditions, the Approved Project would comply with all applicable LORS, and would not result in any unmitigated and significant direct, indirect or cumulative adverse impacts related to water resources.

The Commission Final Decision addressed three areas within the context of water resources. Those areas are: 1) potential storm water impacts related to flooding/drainage, erosion and sedimentation; 2) water supply and use, including groundwater; and 3) groundwater quality. As described below, in all cases the Modified Project results in less potential impacts than the Approved Project.

5.2.2.1 Storm Water: Flooding, Erosion and Sedimentation

Preliminary hydraulic analyses were prepared to reflect the effects of the movement of storm water under the Modified Project and are contained in Appendix B to this Petition.

Since the grading of the site is less, it is anticipated that stormwater can be controlled without the need for large drainage channels. A Preliminary Grading Design will be submitted under separate cover.

There is the potential that the hydrologic, hydraulic, and sediment response for the Modified Project may change from that of the Approved Project as a result of the PV module spacing, coverage, post size, and PV module orientation. A revised DESCP will be prepared and submitted under separate cover.

5.2.2.2 Water Supply and Use

The Modified Project would use the same groundwater wells as the Approved Project. The amount of groundwater to be used during construction is reduced from 4,100 AF to between 3,500 and 4,000 AF. Additionally the amount of groundwater used for operations will be reduced from 600 AFY for the Approved Project to a maximum of 88 AFY for the Modified Project.

This reduction in groundwater use for the Modified Project would therefore reduce the potential effects on nearby well owners or on the Palo Verde Groundwater Basin. With the Conditions of Certification contained in the Final Decision which fully mitigated the BSPP groundwater use, the Modified Project will not have a significant impact on groundwater.

An updated water mass balance diagram demonstrating water use during operations was not available at the time of this Petition and will be provided under separate cover.

5.2.2.3 Wastewater

The following paragraphs demonstrate that the impacts associated with the Modified Project on sanitary wastewater, construction wastewater, and process wastewater systems are reduced and less than significant with the implementation of the existing Conditions of Certification.

5.2.2.3.1 Sanitary Wastewater

The Modified Project would require fewer workers during construction and operation than would the Approved Project, so lower demands would be imposed on sanitary systems. The Modified Project, like the Approved Project, would utilize temporary portable toilets during construction prior to the installation of a septic tank and leach field.

5.2.2.3.2 Construction Wastewater

Wastewater generated during construction would consist of equipment washwater but would no longer include piping and vessel hydrostatic test water.

5.2.2.3.3 Process Wastewater

The Modified Project will no longer construct the 8-acres of evaporation ponds are each power block because the power blocks have been eliminated. However, water treatment facilities will be located in the central portion of the site to produce high quality water for panel washing activities. The wastewater from treatment of the groundwater will be discharged into evaporation ponds that may take up to 8 acres. The evaporation ponds will be constructed in accordance with the Commission Final Decision which includes the Waste Discharge Requirements (WDRs) from the Colorado River Basin Regional Water Quality Control Board.

5.2.3 Compliance With LORS

In the Commission Final Decision, the Commission concluded that, with the implementation of the Conditions, the Approved Project would comply with all applicable LORS. The same conclusion can be made for the Modified Project as there are neither changed circumstances nor new LORS applicable to the Modified Project since the Final Decision.

There are also no "Waters of the United States" on the BSPP site and, therefore, federal wetland permitting is not required under Section 404, and a 401 Water Quality Certification is not required either for the Approved Project or the Modified Project. See Appendix E.

5.2.4 Conditions of Certification

Minor modifications to the some of the Conditions of Certification are necessary to remove any reference to HTF is required. Additionally once the Preliminary Grading Design is completed, it may result in the need to revise Conditions of Certification **SOIL&WATER-11, 12, 13, 14, and 15.** No other modifications to the Conditions of Certification are required to accommodate the Modified Project.

5.3 CULTURAL RESOURCES

This section describes and compares the potential impacts to cultural resources between the Modified Project and the Approved Project. As demonstrated below in all cases, the Modified Project's potential environmental impacts are less than those identified in the Commission Final Decision for the Approved Project.

5.3.1 Summary of Project Changes Related to Cultural Resources

As described in Section 2 of this Petition, STA is proposing to replace all of the solar thermal facilities with PV. The four power blocks including the cooling tower will be eliminated. The PV layout will be constructed in eight 125 MW phases instead of four solar thermal power plants generating 250 MW each.

As detailed in Section 2 of this Petition, the footprint for the Modified Project will be entirely within the footprint of the Approved Project, except for the possible addition of two private parcels that are now owned by PVSI or under purchase-option contract to PVSI. The first two properties encompass 160 acres located in the center of the BSPP Project Site, and are known as the Strait/Murphy Properties. The second addition is located in the southern portion of the site, encompasses approximately 160 acres, and is known as the Porter Property. PVSI has a purchase-option agreement to purchase the Porter Property.

A cultural survey was conducted in 2010 for the Strait/Murphy properties. The Porter Property has not been surveyed. The results of the Strait/Murphy survey is summarized below.

All linear facilities will not change from the Final Decision as a result of the switch to PV technology. Within the original project footprint, the originally proposed drainage structures will not be installed because the BSPP site no longer needs to the intensive grading necessary to accommodate the solar trough technology. As described in Section 2 of this Petition, the grading necessary to accommodate either the fixed tilt or single access tracking PV systems is considerably less than that required for the original BSPP, which will allow much of the storm water from runoff events to flow through the site with minimal drainage structures.

5.3.2 Summary of Strait/Murphy and Porter Property Surveys

The Strait/Murphy Properties total 160 acres and are located in the middle of the project area. They were surveyed for both archaeology and the built environment in 2010 (AECOM letter report, May 11, 2010). The methodologies followed were the same as

for the original field survey. No cultural resources were located on the property either in the 2009 Class I literature review or in the field inventories. Historic isolated finds were recorded.

The Porter Property is a 120 acre private parcel located on the south end of the main project area. It has not been surveyed except where the Approved Project CEC survey buffer runs along the north ½ of the western boundary, the northern boundary and the eastern boundary. This buffer survey encompassed about 200 x 6780 feet (~31 acres). Approximately 14 historic isolated finds were located within or immediately adjacent to the buffer area. The Class I literature review (February 11, 2009) showed a 1977 linear survey crossing the property, for a proposed alignment of the Palo Verde-Devers Transmission Line, and no cultural resources were located in this corridor. This survey covered perhaps 200 x 3,000 feet (~14 acres). Black Creek Road, a dirt road, crosses the property from northwest/southeast.

5.3.3 Changes in Environmental Impacts

5.3.3.1 Original Footprint

Within the original footprint, blading and construction activities will still occur. Blading will be significantly less for the Modified Project. The Approved Project required the removal of up to seven feet of sediments in order to completely level the ground surface for the solar trough construction. The technology for PV, for the Modified Project, does not require a completely level project area, but will require some blading. Due to the reduced blading and depending on the Modified Project PV layout and design, there is the potential to avoid some smaller archaeological sites. This possibility will be evaluated during the design phase.

The buried gas line will no longer be necessary for this project, reducing subsurface/surface impacts for 10 miles.

For visual effects, the Modified Project will not have the power blocks with the 120-foot-tall cooling tower. The height for the solar troughs was approximately 24 feet, whereas the PV units will only be approximately 9 feet. Facility lighting will still be shielded and oriented to reduce night time illumination.

5.3.3.2 Strait/Murphy Properties

There were no archaeological sites recorded on these parcels. The Conditions for Certification established for the Approved Project will apply to project activities occurring within this parcel.

5.3.3.3 Porter Property

Very little cultural resource survey has been done on this parcel, but it is assumed that a Class III archaeological survey will be conducted for the Modified Project. Any cultural resources located during that survey are expected to be similar to those that have been recorded for the Approved Project. Two small surveys have been conducted on this land, and no archaeological sites were identified. The property is topographically indistinctive, with Pleistocene-age bajada remnants of desert pavement. The closest archaeological site is the pebble quarry, CA-RIV-3419, about 2,000 feet to the east. Data recovery occurred on this site for the Approved Project (AECOM letter report, April 11, 2011; submitted to CEC on April 12, 2011). The closest historic archaeological sites are close to the property line to both the north and east. These include SMB-H 180, 181, 182, 183, 184, 185, 194 and 195. All of these are historical refuse scatters dating to WWII DRC/C-AMA or prospecting/ranching. Isolated finds of historic artifacts were located on this property in the buffer survey which demonstrates the likelihood of other historic refuse scatters occurring on this parcel. The Conditions for Certification established for the Approved Project will apply to any resources or project activities that are found or located within this parcel.

In summary, a 160 acre parcel requires survey which could result in additional archaeological sites. They are not expected to be unique or unusual, and will fall into the same categories as has been located in the project area. Mitigation and monitoring measures will apply the same to this parcel as to the rest of the Modified Project. In other respects, there will be reductions in effects for visual, subsurface (less blading and no gas pipeline), reduced water use, and some smaller sites within the solar array area may be avoidable. Therefore, there will be no increase in effects to cultural resources from the Modified Project, and they are likely to be reduced.

5.3.4 Compliance With LORS

In the Commission Final Decision, the Commission concluded that, with the implementation of the Conditions, the Approved Project would comply with all applicable LORS. Finding 3 at page 395-196 of the Final Decision states:

> With implementation of the Conditions of Certification below, the BSPP will conform to all applicable laws, ordinances, regulations, and standards relating to cultural resources as set forth in the pertinent portion of **Appendix A** of this Decision.

There are no new LORS that would affect the Commission's finding. The BLM's Record of Decision for the EIS did state that the conditions for approval for the right-of-way

grant for the project included compliance with the NHPA section 106 requirements and the Programmatic Agreement (PA).

However, since the project includes the possible addition of the private properties and the technology is changing, BLM has indicated that it will amend the PA to accommodate the new "undertaking." Under Stipulation XI for the PA, Amendments to the Agreement, BLM will notify all consulting parties and initiate a 30 day period of consultation on the amendment. With an amendment, the Modified Project will be under the jurisdiction of the PA.

The PA also has Stipulation IV. E. "Where additional identification and evaluation efforts are required due to changes in the project and the APE, the BLM and Energy Commission shall ensure that cultural resources located in the APE are identified and evaluated for the NRHP and the CRHR pursuant to Stipulation III of this agreement." Stipulation III, Identification and Evaluation, describes the methods to conduct field investigations.

The Commission is an invited signatory for the PA. The PA includes language to address CEC's concerns and involve them at all steps for identification, evaluation and assessment of effects for the project.

5.3.5 Conditions of Certification

According to the Final Decision, the adoption and implementation of the Conditions of Certification CUL-1 through CUL-18 would put the Approved Project in conformity with all applicable LORS. For the Modified Project, PVSI recommends that no modifications be made to any Conditions of Certification.

LITERATURE CITED

May 11, 2010 AECOM letter report; Blythe Solar Power Project, Riverside County, California Additional Surveys.

5.4 GEOLOGICAL AND PALEONTOLOGICAL RESOURCES

This section describes the portions of the Modified Project that may affect the analysis, rationale, conclusions, and Conditions of Certification contained in the Commission Final Decision for the Approved Project as it relates to geological and paleontological resources.

5.4.1 Summary of Project Changes

The Modified Project removes the deeper foundations that would have been required within the power blocks for each of the four units of the Approved Project. No other aspect of the Modified Project is relevant to the analysis of geological or paleontological resources.

5.4.2 Changes in Environmental Impacts

The only change in environmental impacts to geological and paleontological resources is a reduction in the potential to discover paleontological resources for the Modified Project due to elimination of the deeper foundation excavations associated with the Approved Project.

5.4.3 Compliance With LORS

There are no differences in the LORS analysis between the Modified Project and the Approved Project. LORS relating to the design of the Modified Project as contained in the Final Decision would ensure the Modified Project is designed to minimize impacts to and from geologic hazards.

Similarly, there are no specific LORS designed to protect paleontological resources that would be applicable to the Modified Project in a manner different than would be applicable to the Approved Project.

5.4.4 Conditions of Certification

No changes to Conditions of Certification in the areas of Geological or Paleontological Resources are necessary for the Modified Project.

5.5 SOIL RESOURCES

This section describes the portions of the Modified Project that may affect the analysis, rationale, conclusions, and Conditions of Certification contained in the Commission Final Decision for the Approved Project as it relates to soil resources.

5.5.1 Summary of Project Changes

As described in Section 2.8.3.2, the grading for the Modified Project is less intensive than the grading for the Approved Project. Although the Modified Project may include 320 acres of new private land, no different soil types than those analyzed for the Approved Project will be encountered.

5.5.2 Changes in Environmental Impacts

The only change in environmental impact to soil resources is a reduction in the potential soil loss due to grading activities, and therefore the Approved Project's soil loss calculations will be more than those anticipated for the Modified Project.

5.5.3 Compliance With LORS

There are no specific LORS designed to protect soil resources that would be applicable to the Modified Project in a manner different than would be applicable to the Approved Project. Therefore the analysis contained in the Final Decision should remain unchanged for the Modified Project.

5.5.4 Conditions of Certification

No changes to Conditions of Certification in the area of Soil Resources are necessary for the Modified Project.

Section 6 LOCAL IMPACT ASSESSMENT

The following sections provide a description of the modifications proposed to the BSPP as they may affect the assumptions, rationale, and Conditions of Certification in the Commission Final Decision. As discussed in Section 2 of this Petition, PVSI has not yet selected the exact combination of fixed tilt and single access tracking PV modules for the site. Such selection will be made as part of the final design of the BSPP. However, where there are differences between the two systems, PVSI has included a comparison of each for the Commission to consider a "worse-case" for each technical area. Ultimately the selection of either fixed-tilt or tracking PV systems or a combination of both systems will not affect: the maximum or peak amount of construction and operation workers and associated traffic; the overall socioeconomic impacts; the amount of noise generated during construction or operation; or the overall visual impact of the site.

6.1 LAND USE

As described in below impacts of the Modified Project to land use are expected to remain the same as those of the Approved Project.

6.1.1 Summary of Project Changes Related to Land Use

The only change proposed by the Modified Project that is relevant to land use is the possibility of including two private parcels within the BSPP site. The Strait-Murphy Property is owned by PVSI and encompasses approximately 160 acres in the center of the site. PVSI also has an option to purchase the Porter Property (160 acres) which is located at the southern border of the site near the permitted transmission gen-tie line. .

6.1.2 Changes in Environmental Impacts

Both parcels of private land are designated Open Space-Rural by the Riverside County General Plan and are zoned W-2-10. As the Commission found in the Palen Solar Power Project, this zoning and general plan designation are consistent with the development of a solar facility.[5] Therefore, since the land use is consistent there are no land use impacts associated with the addition of these two private parcels within the Modified Project.

6.1.3 Compliance With LORS

In its Commission Final Decision, the Commission concluded that the Project is consistent with all applicable LORS. There are no new LORS that would be applicable to the Modified Project other than the zoning and general plan designation addressed above. By submitting this Petition to the Commission, PVSI subjects the Modified Project to the exclusive siting jurisdiction of the California Energy Commission[6]. Section 25500 provides:

> The issuance of a certificate by the commission shall be in lieu of any permit, certificate, or similar document required by an state, local or regional agency, or a federal agency to the extent permitted by federal law, for such used of the site and related facilities, and shall supersede any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law.

[5] Palen Solar Power Project (09-AFC-7) Final Commission Decision, Land Use page 9
[6] Public Resources Code 2550.1 (c) applies the entire chapter of the Public Resources Code to a facility that makes a Petition for Amendment.

Therefore compliance with the Commission's Petition For Amendment process will satisfy all land use related LORS applicable to the possible addition of the two private parcels.

6.2 TRAFFIC AND TRANSPORTATION

The following sections discuss the Modified Project's impacts to traffic and transportation as compared to the Approved Project.

6.2.1 Project Changes Related to Traffic and Transportation

The following aspects of the Modified Project would affect the analysis and Conditions of Certification for Traffic and Transportation.

- The construction traffic is slightly less for the Modified Project;
- The operation traffic is reduced significantly for the Modified Project; and
- The BSPP will no longer have solar trough mirrors that the Commission determined interfered with airport operations at the Blythe Airport.

6.2.2 Changes in Environmental Impacts

6.2.2.1 Construction Traffic

The Modified Project has a slightly reduced peak construction workforce. However, the reduction in workforce is not enough to warrant reduction of any of the requirements contained in the Final Decision designed to reduce impacts during the construction period.

6.2.2.2 Operations Traffic

The operations workforce is proposed to be reduced from 221 workers for the Approved Project to between 20 and 30 for the Modified Project. Therefore, traffic impacts associated with this workforce are less than those identified in the Final Decision.

6.2.2.3 Blythe Airport

The Final Decision identified potential effects on the Blythe Airport due to upward thermal plumes from the cooling towers and due to glint and glare of the reflective surface of the mirrors during low sun angle hours. First, the Modified Project will no longer require cooling towers and therefore upward thermal plumes have been eliminated. Second, since the PV panels are not as reflective as mirrors and are distant from the Blythe Airport, glint and glare should no longer be an issue for pilots using the

Blythe Airport. Additionally, the Commission should note that Riverside County recently permitted a solar PV project on the Blythe Airport property itself.[7]

6.2.3 Compliance With LORS

In its Final Decision, the Commission concluded that, with the implementation of the Conditions, the Approved Project would comply with all applicable LORS. As with the Approved Project, the Modified Project would comply with all applicable LORS, and no new or additional LORS have been identified.

6.2.4 Conditions of Certification

Since the Modified Project will not have an effect on the Blythe Airport for reasons discussed in Section 6.2.2 above, PVSI recommends that Conditions of Certification **TRANS-7, TRANS-9** and **TRANS-10** be deleted as unnecessary.

[7] On December 10, 2010 Riverside County Board of Supervisors agreed to lease 829 acres of Blythe Airport Property to NRG for construction and operation of a PV solar facility.

6.3 SOCIOECONOMICS

At the time of submittal of this Petition For Amendment the capital costs to develop, construct and operate the BSPP as a PV project were not sufficiently defined in order to perform the modeling necessary to quantify the potential economic benefits to Riverside County and particularly residents within the City of Blythe. While the analysis should not undermine any of the assumptions and rationale contained in the Commission Final Decision, PVSI has commissioned the analysis be performed. This analysis will be submitted under separate cover.

However, it should be noted that the Commission Final Decision, at pages 493-494 made the following findings:

1. A large labor pool within a two-hour commuting distance is available for construction and operation of the project.

2. Over the 69-month construction period, an average of approximately 604 daily construction workers, with a peak daily workforce of 1004, will be required depending on the month and phase of development.

3. The project will hire about 221 permanent, full-time employees from the local area for project operations.

4. The project will not cause an influx of a significant number of construction or operation workers to permanently relocate to the local area.

5. There is an adequate supply of hotels/motels and rental properties within the project vicinity to accommodate workers who stay in the area temporarily during the week and commute to their homes on the weekend.

6. The project will not result in significant adverse effects on local employment, housing, schools, public utilities, parks and recreation, law enforcement, or emergency services.

These findings are based on a construction and operation workforce much larger than proposed by the Modified Project. Therefore, the Modified Project will not alter the ultimate findings contained in the Commission Final Decision.

6.4 NOISE AND VIBRATION

This section describes the portions of the Modified Project that may affect the analysis, rationale, conclusions, and Conditions of Certification contained in the Commission Final Decision for the Approved Project as it relates noise and vibration.

6.4.1 Summary of Project Changes

The Modified Project removed the power blocks which were the source of operational noise and vibration analyzed by the Commission in its Final Decision. Construction related noise is also expected to be less as the concrete batch plant has been eliminated.

6.4.2 Changes in Environmental Impacts

Construction noise from the Modified Project is expected to be the same as the Approved Project. There are no new pieces of equipment or methods of construction that were not analyzed previously for the Approve Project.

Operational noise, however, is expected to be considerably less since there will no longer be a steam turbine, a generator and associated piping.

In addition, PVSI has a purchase option to acquire the property (Porter Property) which is the closest residential receptor. There are no other residential receptors close enough to the BSPP site to be affected by noise or vibration.

6.4.3 Compliance With LORS

The only noise-related LORS applicable to the Modified Project are the same as those that would be applicable to the Approved Project. The Modified Project will comply with all applicable noise-related LORS as enforced by the Conditions of Certification.

6.4.4 Conditions of Certification

Because the Modified Project will not generate significant noise during operations and because there are no sensitive receptors near the project, Conditions of Certification **NOISE-4, NOISE-5** and **NOISE-7** should be deleted.

6.5 VISUAL RESOURCES

As described below impacts of the Modified Project to visual resources are expected to be less than or equal to those of the Approved Project.

6.5.1 Summary of Project Changes Related to Visual Resources

Changes proposed in the Modified Project that are relevant to visual resources include:

- Elimination of the Power Blocks for all four units including the 120 foot cooling towers;
- Elimination of the solar trough mirrors which are 24 feet tall; and
- Installation of PV modules on either a fixed mounting system or a single axis tracking system that would enable the module to track the sun.

6.5.1 Changes in Environmental Impacts

The Commission Final Decision ultimately found that the Approved Project, even with mitigation, would still result in significant direct, indirect and cumulative impacts. The Modified Project will lessen those impacts because it will result in less glint and glare, will eliminate taller structures and the PV modules will be significantly less visible since they will be about a third of the height of the original solar trough mirrors.

The visual simulations for the Modified Project were not complete at the time of filing of this Petition. When complete they will be submitted under separate cover. However, for every KOP we anticipate that the visual impact will be less than the Approved Project, although not likely to be considered less than significant from all KOPs.

6.5.2 Compliance With LORS

There are no specific visual related LORS applicable to the Modified Project.

6.5.3 Conditions of Certification

No modifications to the Conditions of Certification are necessary for the Modified Project.

Section 7 POTENTIAL EFFECTS ON PROPERTY OWNERS

The Commission's Power Plant Siting Regulations require a Petition For Amendment to include 1) a discussion of how the modification affects the public; 2) a list of property owners potentially affected by the modification; and 3) a discussion of the potential effect on nearby property owners, the public and the parties in the application proceedings.

The Modified Project would not affect the public differently than the Approved Project. As described in every technical area evaluated in Sections 3, 4, 5 and 6 of this Petition, impacts of the Modified Project are either the same or less than the Approved Project. In addition to reducing impacts, the Modified Project would still result in the overall public benefits described in the Commission Final Decision.

A list of the adjacent property owners potentially affected by the Modified Project is provided in Appendix G.

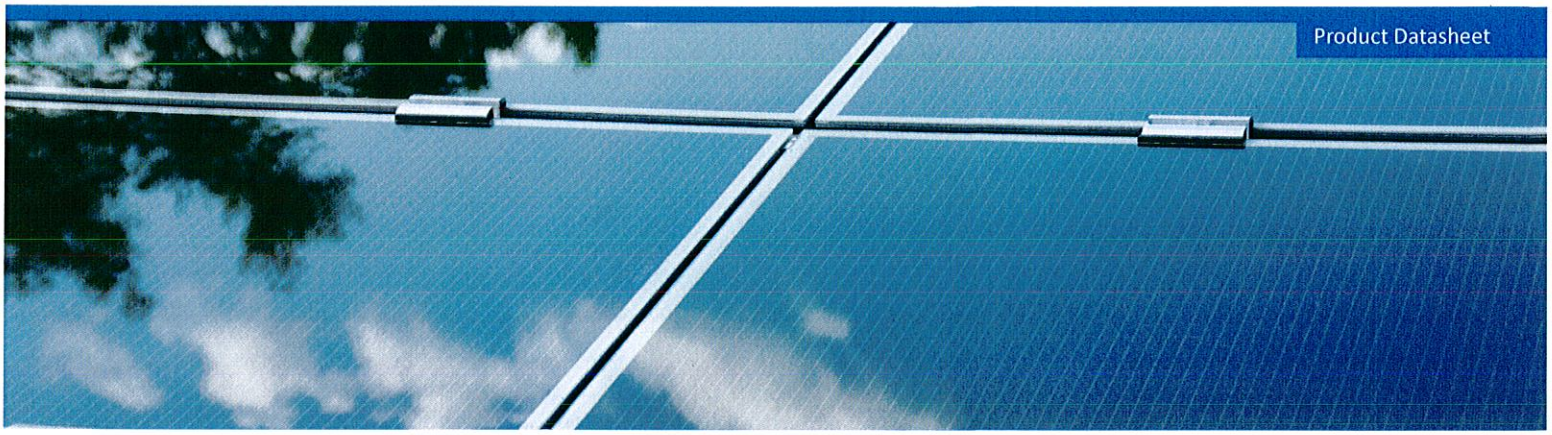
Section 8 CONCLUSIONS AND RECOMMENDED FINDINGS

PVSI recommends that the Commission approve this Petition For Amendment with the Conditions of Certification changes proposed. The Petition would enable the construction and operation of the world's largest PV solar plant. The use of PV technology, in every technical area, either reduces impacts or results in impacts that are the same as the original BSPP.

The Commission originally made override findings for the BSPP accepting some impacts in exchange for the benefits of the project. The underlying rationale for those findings remains unchanged. Therefore, the Petition should be approved.

APPENDIX A

PV MODULE SPECIFICATIONS



First Solar® FS Series 3™ PV Module

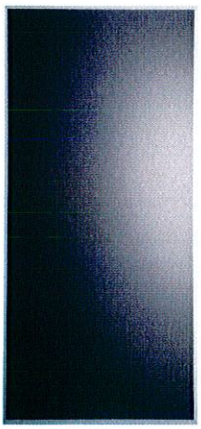
MECHANICAL DESCRIPTION	
Length	1200mm
Width	600mm
Weight	12kg
Thickness	6.8mm
Area	0.72m²
Leadwire	4.0mm², 610mm
Connectors	Solarline II type connector
Bypass Diode	None
Cell Type	CdS/CdTe semiconductor, 154 active cells
Frame Material	None
Cover Type	3.2mm heat strengthened front glass laminated to 3.2mm tempered back glass
Encapsulation	Laminate material with edge seal

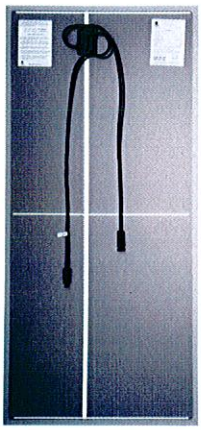
First Solar® FS Series 3™ PV Modules represent the latest advancements in thin film solar module technology. The Series 3 modules are IEC 61646 and IEC 61730 certified for use in systems up to 1000 VDC, UL Listed (600 VDC), and meet the requirements of Safety Class II. First Solar provides cost effective thin film module solutions to leading solar project developers and system integrators for large scale, grid-connected solar power plants. First Solar application engineers provide technical support and comprehensive product documentation to support the design, installation, and long term operations of high performance PV systems.

High Performance PV System Solutions

Key Features:

- Produces high energy output across a wide range of climatic conditions with excellent temperature response coefficient
- Proven to perform as predicted with a high Performance Ratio (PR)
- Frameless laminate is robust, cost-effective and recyclable, and does not require module grounding
- Manufactured in highly automated, state-of-the-art facilities certified to ISO 9001:2008 and ISO 14001:2004 quality and environmental management standards





Warranty:

- Material and workmanship warranty for five (5) years and a power output warranty of 90% of the nominal output power rating (P_{MPP}+/- 5%) during the first ten (10) years and 80% during twenty-five (25) years subject to the warranty terms and conditions.
- Modules are life cycle managed with a collection and recycling program, providing module owners with no cost, prefunded, end-of-life take back, and recycling of the modules.

All specifications and warranties apply only to products sold and installed in North America. For applications in Europe please refer to the EU datasheet (PD-5-401-03 EU).

Contact Info:

First Solar (US)
Tel: 877 850 3757
info@firstsolar.com

First Solar (Europe)
Tel: +49 (0)6131 1443-0
info@firstsolar.de

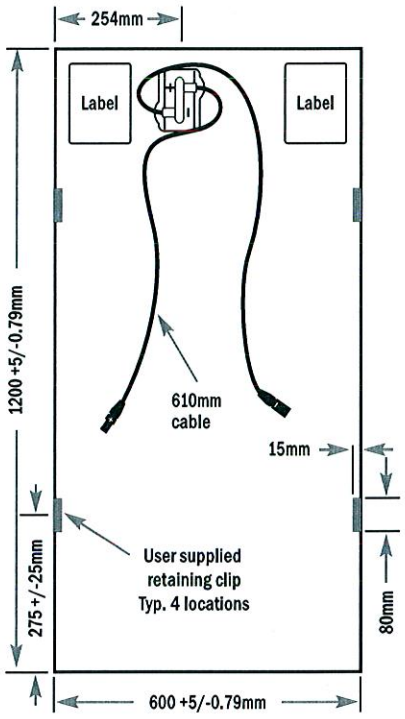
First Solar®

Electrical Specifications

MODEL NUMBERS AND RATINGS AT STC[1]*							
Nominal Values		**FS-370**	**FS-372**	**FS-375**	**FS-377**	**FS-380**	**FS-382**
Nominal Power(+/-5%)	P_{MPP}(W)	70.0	72.5	75.0	77.5	80.0	82.5
Voltage at P_{MAX}	V_{MPP}(V)	48.1	49.5	49.8	50.4	50.7	51.0
Current at P_{MAX}	I_{MPP}(A)	1.46	1.46	1.51	1.54	1.58	1.62
Open Circuit Voltage	V_{OC}(V)	60.6	61.4	61.6	61.7	61.7	62.0
Short Circuit Current	I_{SC}(A)	1.74	1.75	1.76	1.75	1.76	1.78
Maximum System Voltage	V_{SYS}(V)	1000 (600 UL[2])					
Temperature Coefficient of P_{MPP}	$T_K(P_{MPP})$	-0.25%/°C					
Temperature Coefficient of V_{OC}, high temp (>25°C)	$T_K(V_{OC, high\ temp})$	-0.27%/°C					
Temperature Coefficient of V_{OC}, low temp (-40°C to + 25°C)	$T_K(V_{OC, low\ temp})$	-0.20%/°C					
Temperature Coefficient of I_{SC}	$T_K(I_{SC})$	+0.04%/°C					
Limiting Reverse Current	I_R(A)	3.5					
Maximum Series Fuse	I_{CF}(A)	3.5					

MODEL NUMBERS AND RATINGS AT 800W/m², 45°C, AM 1.5*							
Nominal Values		**FS-370**	**FS-372**	**FS-375**	**FS-377**	**FS-380**	**FS-382**
Nominal Power(+/-5%)	P_{MPP}(W)	52.5	54.4	56.3	58.1	60.0	61.5
Voltage at P_{MAX}	V_{MPP}(V)	45	46	47	47	47	48
Current at P_{MAX}	I_{MPP}(A)	1.16	1.17	1.20	1.23	1.26	1.29
Open Circuit Voltage	V_{OC}(V)	56	57	57	57	57	58
Short Circuit Current	I_{SC}(A)	1.43	1.43	1.44	1.44	1.44	1.46

Mechanical Drawing



* All ratings +/-10%, unless specified otherwise. Specifications are subject to change.

[1] Standard Test Conditions (STC) 1000W/m², AM 1.5, 25°C

[2] Required to maintain UL compliance

Reliability and Safety

Tested by leading international institutes and certified for reliability and safety.

- Certified to IEC 61646
- Certified to IEC 61730
- CE Mark
- Safety Class II @ 1000 V
- UL 1703 and ULC 1703 Listed (Class C Fire Rating)
- Eligible CSI PV Module
- FSEC Certification

About First Solar

First Solar is a leading manufacturer of photovoltaic (PV) solar modules and provider of solar solutions. By continually driving down manufacturing costs, First Solar is delivering an economically viable alternative to fossil-fuel generation. From raw material sourcing through end-of-life collection and recycling, First Solar is focused on creating cost-effective, renewable energy solutions that protect and enhance the environment.

First Solar®

SUNPOWER

E19 / 425 SOLAR PANEL

MAXIMUM EFFICIENCY AND PERFORMANCE

BENEFITS

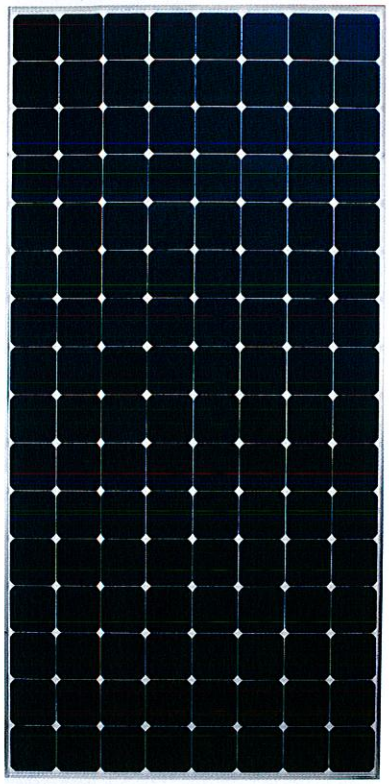
Highest Efficiency
SunPower™ Solar Panels are the most efficient photovoltaic panels on the market today.

More Power
Our panels produce more power in the same amount of space—up to 50% more than conventional designs and 100% more than thin film solar panels.

Reduced Installation Cost
More power per panel means fewer panels per install. This saves both time and money.

Reliable and Robust Design
Proven materials, tempered front glass, and a sturdy anodized frame allow panel to operate reliably in multiple mounting configurations.

SPR-425E-WHT-D

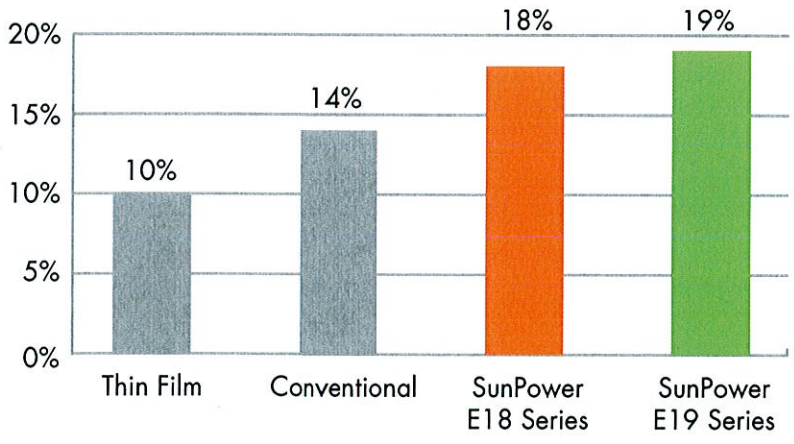


E19 SERIES

A new standard for power plants.

The SunPower® 425 Solar Panel provides today's highest efficiency and performance. Utilizing 128 back-contact solar cells, the SunPower 425 delivers a total panel conversion efficiency of 19.7%. The panel's reduced voltage-temperature coefficient, anti-reflective glass and exceptional low-light performance attributes provide outstanding energy delivery per peak power watt.

SunPower's High Efficiency Advantage



c UL us

SUNPOWER

E19 / 425 SOLAR PANEL

MAXIMUM EFFICIENCY AND PERFORMANCE

Electrical Data

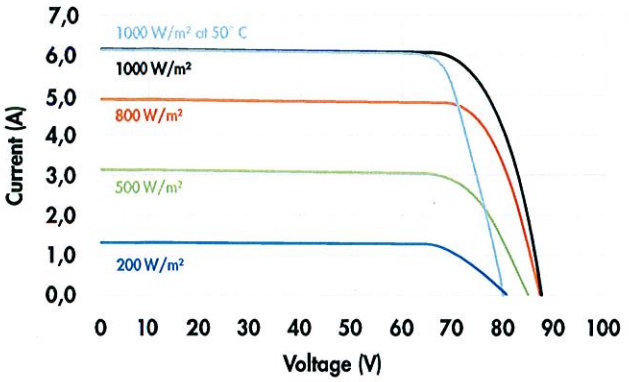
Measured at Standard Test Conditions (STC): irradiance of 1000W/m², AM 1.5, and cell temperature 25° C

Peak Power (+/-5%)	P_{max}	425 W
Efficiency	η	19.7 %
Rated Voltage	V_{mpp}	72.9 V
Rated Current	I_{mpp}	5.83 A
Open Circuit Voltage	V_{oc}	85.6 V
Short Circuit Current	I_{sc}	6.18 A
Maximum System Voltage	UL	600 V
Temperature Coefficients	Power (P)	-0.38% / K
	Voltage (V_{oc})	-235.5mV / K
	Current (I_{sc})	3.5mA / K
NOCT		45° C +/-2° C
Series Fuse Rating		15 A

Mechanical Data

Solar Cells	128 SunPower all-back contact monocrystalline
Front Glass	High transmission tempered glass with anti-reflective (AR) coating
Junction Box	IP-65 rated with 3 bypass diodes Dimensions: 32 x 155 x 128 (mm)
Output Cables	1000 mm length cables/ MultiContact (MC4) connectors
Frame	Anodized aluminum alloy type 6063 (silver); stacking pins
Weight	56.0 lbs. (25.4 kg)

I-V Curve



Current/voltage characteristics with dependence on irradiance and module temperature.

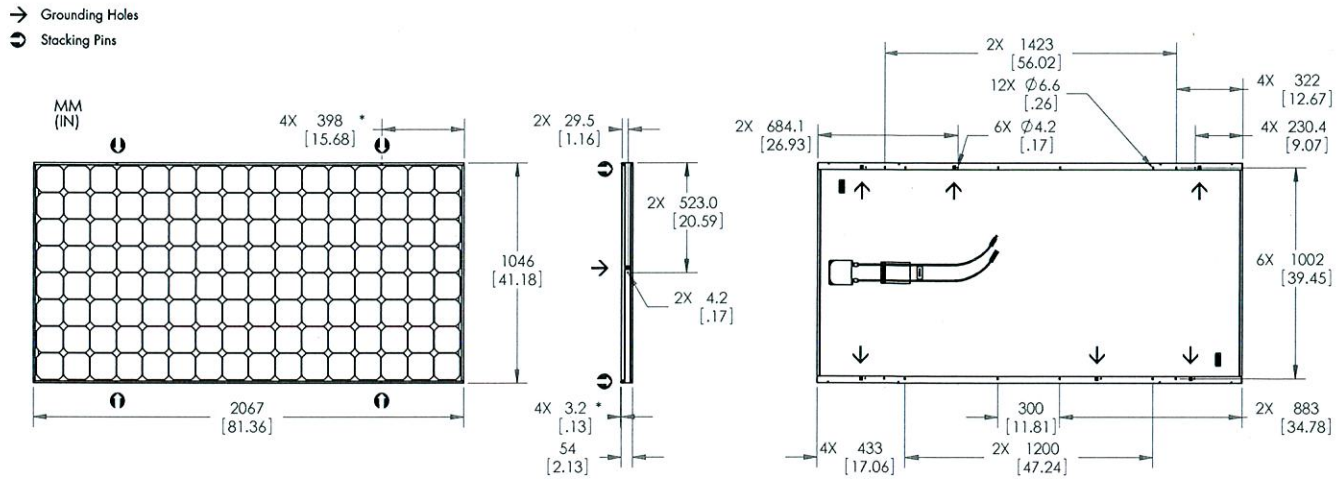
Tested Operating Conditions

Temperature	-40° F to +185° F (-40° C to + 85° C)
Max load	50 psf (245 kg/m²) (2400 Pa) front and back – e.g. wind
Impact Resistance	Hail 1 in (25 mm) at 52mph (23 m/s)

Warranties and Certifications

Warranties	25 year limited power warranty
	10 year limited product warranty
Certifications	Tested to UL 1703. Class C Fire Rating

Dimensions



CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

Visit sunpowercorp.com for details

sunpowercorp.com

Document #001-60698 Rev** / LTR_EN

SHARP®

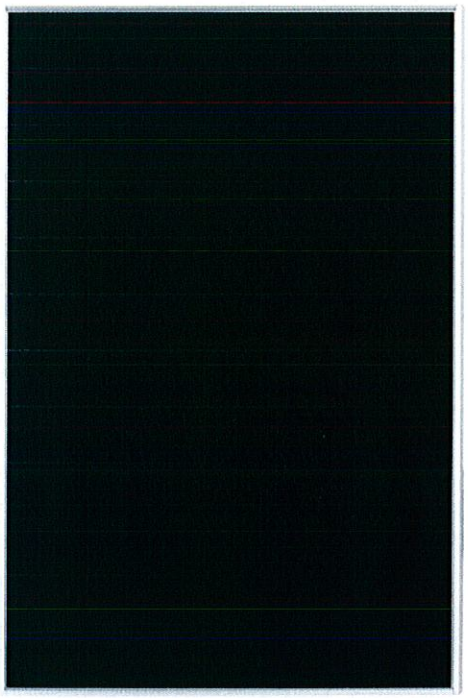
1,000-VOLT SYSTEMS

solar electricity

142/135 WATT

THIN FILM MODULE

Amorphous Silicon/Microcrystalline Silicon
IEC-Certified for 1,000-volt systems
For Behind-the-Fence Applications



NA-V142H5 | NA-V135H5

THIN FILM PHOTOVOLTAICS: THE NEXT EVOLUTION OF SOLAR TECHNOLOGY

Sharp's thin film product pairs amorphous silicon with a layer of microcrystalline silicon to achieve high stability and performance. Produced with less than one percent of the silicon used in crystalline solar cells, thin film products offer high performance with less semiconductor material. With a low temperature coefficient for output power, thin film generates greater energy than its crystalline silicon counterpart in geographic regions where temperatures are high. In warm climates, this translates into more kilowatt-hours per kilowatt. Certified to IEC 61646, these modules are for behind-the-fence applications.

Sharp: The first name in solar power.
The last word in solar innovation.
Offering one of the most efficient thin film photovoltaic products ever manufactured for multi-megawatt-scale power production.

ENGINEERING EXCELLENCE

Tandem-junction structure (amorphous silicon/microcrystalline silicon) captures a wider part of the solar spectrum, converting more sunlight into electricity.

HIGH VOLTAGE ADVANTAGE

Proprietary design increases reliability by minimizing losses caused by module output variation.

RELIABLE

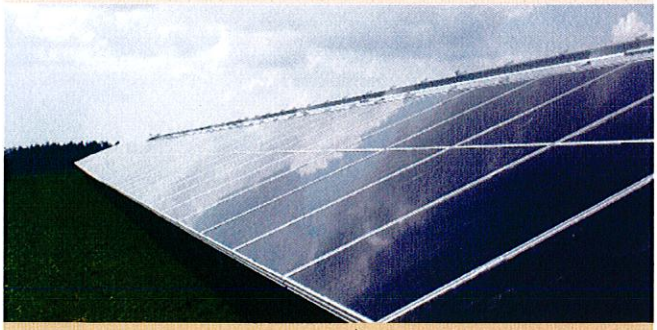
Microcrystalline layer provides superior long-term stability and higher module efficiency. 25-year limited warranty on power output.

DURABLE

Four bypass diodes ensure maximum output under non-uniform operating conditions.

INNOVATIVE

Single-layer glass with polymeric backskin lowers pounds per watt and transportation costs. Modules are sized to optimize the greatest amount of power, easily handled by one person.



1 MW thin film installation in Munich Germany, April 2009

LEADING THE FUTURE OF SOLAR

Since 1959, Sharp has led the solar electric industry with efficient, affordable systems and powers more homes and businesses than any other solar manufacturer in the world. From research and development, to system design, delivery, deployment and a more diverse product portfolio, Sharp is ready to partner with you to create customized solar solutions, with an unyielding commitment to quality control and customer service.

BECOME POWERFUL

142/135 WATT

NA-V142H5 | NA-V135H5

Amorphous Silicon/Microcrystalline Silicon
IEC-Certified for 1,000-volt systems (IEC 61646)

ELECTRICAL DATA

NAMEPLATE VALUES

		NA-V142H5	NA-V135H5
Maximum power	Pmax	142	135
Open-circuit voltage	Voc	249	249
Short-circuit current	Isc	0.89	0.87
Voltage at maximum power	Vpmax	192 V	188 V
Current at maximum power	Ipmax	0.74 A	0.72 A
Module efficiency	η	10.0%	9.5%
Temperature coefficient – open circuit voltage	β	-0.3%/°C	
Temperature coefficient – short circuit current	α	+0.07%/°C	
Temperature coefficient – power	γ	-0.24%/°C	

MADE IN JAPAN

The electrical data applies under standard test conditions (STC): Irradiance of 1,000 W/m² with an AM 1.5 spectrum at a cell temperature of 25° C.
The power output is subject to a manufacturing tolerance of + 5% / - 5%
Output values are post initial Stabler-Wronski decay; actual measured initial values will be greater than nominal value (by approximately 18% for power).

SPECIFICATIONS (I)

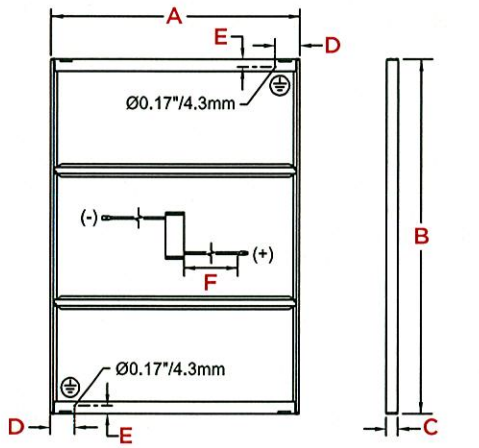
Cell	Tandem architecture of amorphous and microcrystalline silicon
Cell Circuit	45 cells in series by 6 in parallel per quadrant: 4 quadrants in series
Dimensions	39.7" x 55.5" x 1.8" (1009 x 1409 x 46 mm)
Weight	42 lbs
Connection type	Cable with MC-3 connector
Bypass diodes	4 (one per quadrant)
Fire Rating	Class C

SPECIFICATIONS (II)

Maximum system voltage	1,000	V_{DC}
Maximum mechanical load	2,400	Pa
Series Fuse Rating	2	A
Operating temperature (cell)	- 40 to +90	°C
Storage temperature	- 40 to +90	°C
Storage air humidity	Up to 90	%
Installation orientation	Portrait	

EXTERIOR DIMENSIONS

BACK VIEW SIDE VIEW



A	B	C
39.7"/1009 mm	55.5"/1409 mm	1.8"/46 mm
D	**E**	**F**
3.9"/100 mm	1.2"/30.5 mm	35.4"/900 mm

SHARP®

SHARP ELECTRONICS CORPORATION
5901 Bolsa Avenue, Huntington Beach, CA 92647
1-800-SOLAR-06 • Email: sharpsolar@sharpusa.com
www.sharpusa.com/solar

09F-043 • PC-08-09

APPENDIX B

PRELIMINARY HYDRAULIC EVALUATION

AECOM
5001 E. Commercenter Drive,
Suite 100
Bakersfield, California 93309
www.aecom.com

661 325 7253 tel
661 395 0359 fax

Memorandum

Date: September 26, 2011

To: Travis Peterson, Solar Millennium, Inc.

From: William Black, P.E.

Subject: Hydraulic Study: Blythe Solar Power Project

Purpose

The purpose of this report is to provide the following deliverables for use in permitting and design:

1. Display showing pre-development 100-year frequency storm flow velocities across the site.

2. Display showing pre-development 100-year frequency depth-of-flow across the site.

3. Display showing where cross slope exceeds 3% and 5% perpendicular to contours.

4. Conceptual level earthwork quantities for the west portion of the site.

Introduction

Solar Millennium AG and Solar Trust of America are in the process of obtaining environmental permits for a proposed 9,400 acre, 1,000 MW solar power facility, "Blythe Solar Power Project". The first phase of the project will consist of a 500 MW photovoltaic (PV) system (4 blocks at 125 MW each). The proposed project site is within unincorporated areas of Riverside County, approximately 8 miles west of Blythe.

Previously, the project was to consist of four solar-thermal plants. Both pre and post-development drainage studies were performed by AECOM in 2009[1] and 2010[2]. These reports included site hydrology and analysis of site drainage modifications using HEC-HMS and FLO-2D Version 2007.06. Several drainage channels were proposed to divert storm water flows around the planned facilities.

The proposed PV systems can be designed and constructed for overland storm water flows and would not require the diversion channels previously analyzed for the site. This memorandum was prepared to display estimated high water level elevations for the 100-

[1] "Blythe Solar Power Project – Pre-Development Drainage Conditions", AECOM, November 25, 2009.
[2] "Blythe Solar Power Project – Post-Development Drainage Conditions", AECOM, January 29, 2010.

year, 24-hour storm across the project site to be used in the preliminary design of the PV facilities and for environmental permitting with state and federal agencies. Analysis for pre and post-development drainage conditions at the site are presented in this memorandum using MIKE 21 by DHI, Inc. and the hydrology information provided in the previous reports.

Site Hydrology

As previously discussed the hydrology developed in the referenced reports are used to prepare the hydraulic model. The following paragraphs provide a brief description of the site hydrology and a summary of flow rate results used for the hydraulic analysis presented in this memorandum.

The project site is located on the Palo Verde Mesa to the east of the McCoy Mountains. The predominant drainage feature in the area is McCoy Wash located east of the project site. In general, the site receives runoff from the McCoy Mountains to the west. Flows travel across the site southerly in shallow, moderately defined channels towards the McCoy Wash.

The referenced 2010 reports provide existing hydrology estimates for the 100-year storm event. A summary of the calculated flow rates is presented below in Table 1. Locations of these channels can also be found in the previous referenced reports. These flow rates were used in the hydraulic model (MIKE 21).

Table 1
100 Year Existing Hydrology Calculations

Model Boundary Section	Total Flow Rate (cfs)
N2a	242.4
N3a	1,654.4
N4b	1,052.6
N5b	425.0
NW1	151.2
NW3	280.8
W1	1,217.9
SW5	1,282.7

Hydraulic Model

Flood depth across the site was determined using MIKE 21, a two dimensional hydraulic modeling software. The model consists of two parts, a mesh and boundary conditions. The mesh is a three dimensional representation of the ground surface, over which water will flow. The boundary conditions include both inflow and outflow criteria along the perimeter of the model.

A single model was constructed to represent the project site. A roughness coefficient of n = 0.025[3] was used to represent the estimated surface roughness of the site. The PV panel supports are assumed to be small diameter steel or aluminum members and are not anticipated to be a significant hindrance to flow and were not modeled.

Mesh

The mesh is composed of two parts, elements and nodes. A "node" is a point in space that contains both horizontal coordinates and vertical elevation data. The triangular area bounded by three points is an "element". Because multiple elements can share the same node, there are always more elements than nodes in a model. Figure 1 shows the relationship between element and node. The mesh was constructed using photogrammetric data, flown in 2007.

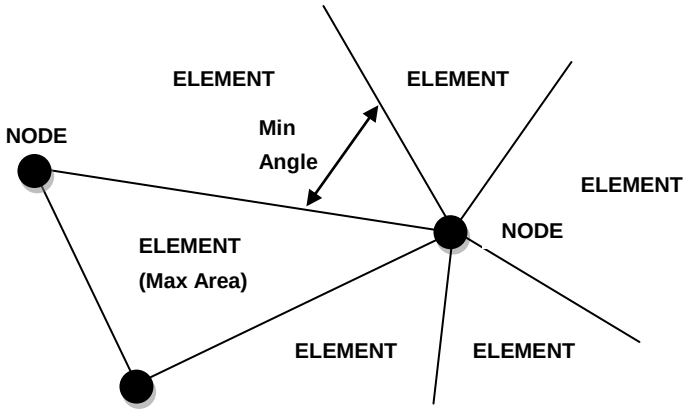


Figure 1 The relationship between the various MIKE 21 mesh components.

Coordinates and elevations for the nodes are interpolated from aerial LIDAR data. Because the nodes are interpolated, the number of nodes generated can be varied throughout the mesh. This allows areas of interest to be modeled at a higher resolution. Figure 2 shows the mesh generated for the site. Areas with greater detail are modeled at a higher resolution.

[3] The roughness coefficient of n = 0.025 was used for the MIKE 21 analysis to be consistent with the above referenced drainage studies by AECOM dated November 25, 2009 and January 29, 2010.

Figure 2 **MIKE 21 mesh representing the project site with areas of higher density indicated.**

The resolution of the mesh is determined by the maximum distance between nodes. MIKE 21 calculates node placement based upon the maximum area allowed for each element and the minimum angle required between sides of an element (see Figure 1). The mesh inputs and corresponding resolutions for the model are shown in Table 2.

Table 2 Mesh Statistics

	Density A	Density B
Max Area	2,000 m^2	1,000 m^2
Min Angle	26°	26°
Resolution	420 ft	297 ft

Total number of elements = 119,000
Total number of nodes = 60,200

Building Permit Requirements

We were unable to verify Riverside County Standards with regard to freeboard. The standard practice of agencies is to require a minimum 1 foot of freeboard from water surface to lowest extent of solar PV equipment.

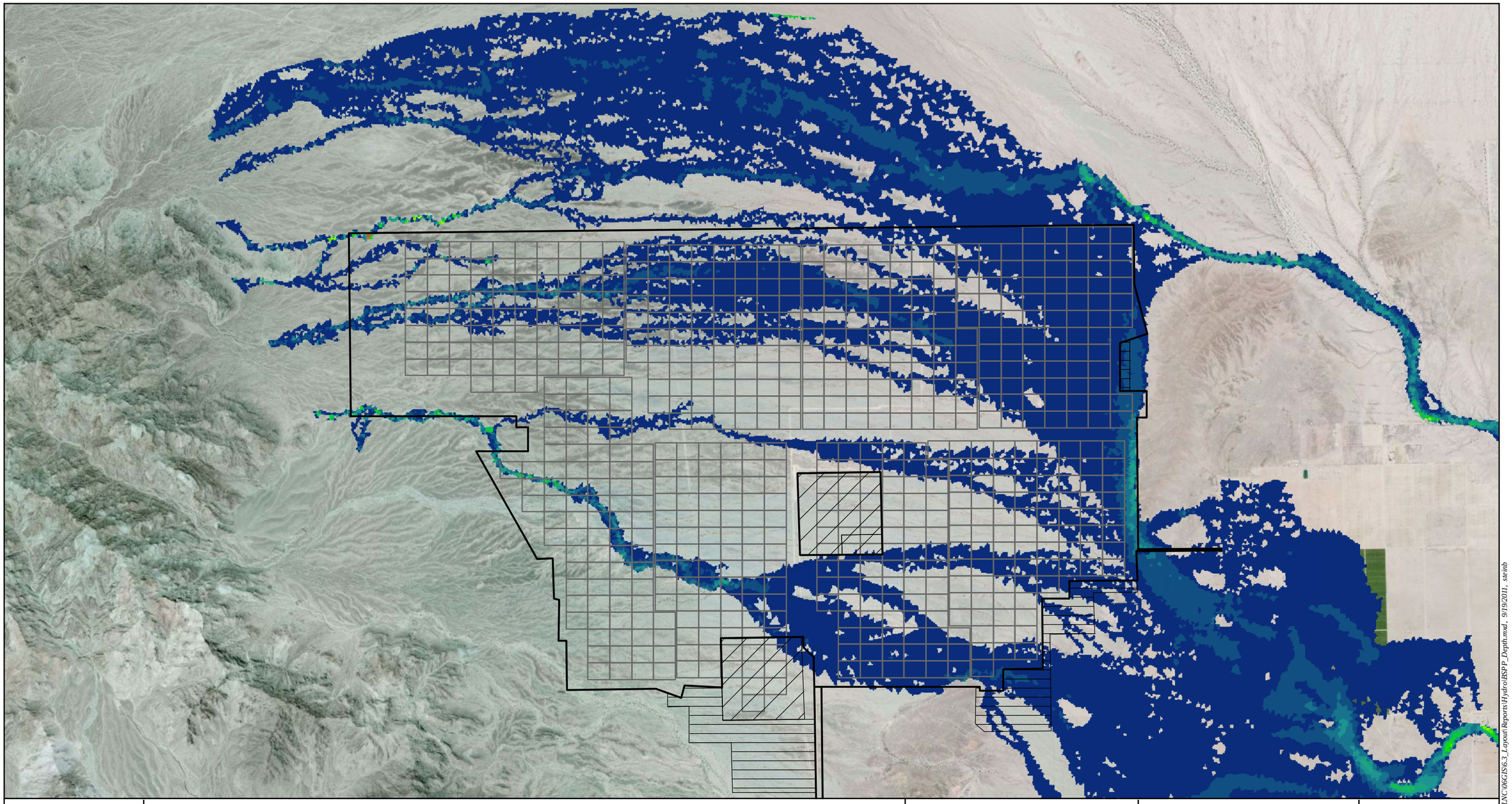
Water Depth and Velocity

The MIKE 21 analysis results were used to create two maps: one for water depth and one for water velocity. The region within these contours provides design data for the proposed foundations and PV panel height. See Figure 3 for the water depth and Figure 4 for the water velocity.

These values are based on existing topography only. Water retained by elevated roadways may increase the design depth in some areas and will need to be accounted for during final design. It should also be noted that the site is located on an alluvial fan. Because of this, it is possible that the existing channels tributary to the project site could meander. In the event that the channels meander, facilities designed for a smaller design depth and velocity could fail in a 100-year 24-hour storm.

On-Site Retention Requirements

Construction of proposed facilities will increase storm water runoff generated from the existing parcel without the implementation of Best Management Practices (BMPs). If onsite retention is required by the agency as mitigation for increased runoff, retention could be achieved by slightly elevating site access roads. Storm water could be impounded behind the roads.



Map Location

Legend

- Current ROW
- Private Property to be Acquired
- Potential Expansion Area
- Solar Arrays

Modeled Water Depth

Feet

- 0.03 - 0.5
- 0.6 - 1
- 1.1 - 1.5
- 1.6 - 2
- 2.1 - 2.5
- 2.6 - 3
- 3.1 - 3.5
- 3.6 - 4
- 4.1 - 4.5
- 4.6 - 5
- 5.1 - 5.5
- 5.6 - 6
- 6.1 - 6.5
- 6.6 - 7
- 7.1 - 7.5
- 7.6 - 8
- 8.1 - 8.5
- 8.6 - 9

Source: ESRI; AECOM 2011

N W E S

1 inch = 3,000 feet

0 3,000 6,000 Feet

Blythe Solar Power Project

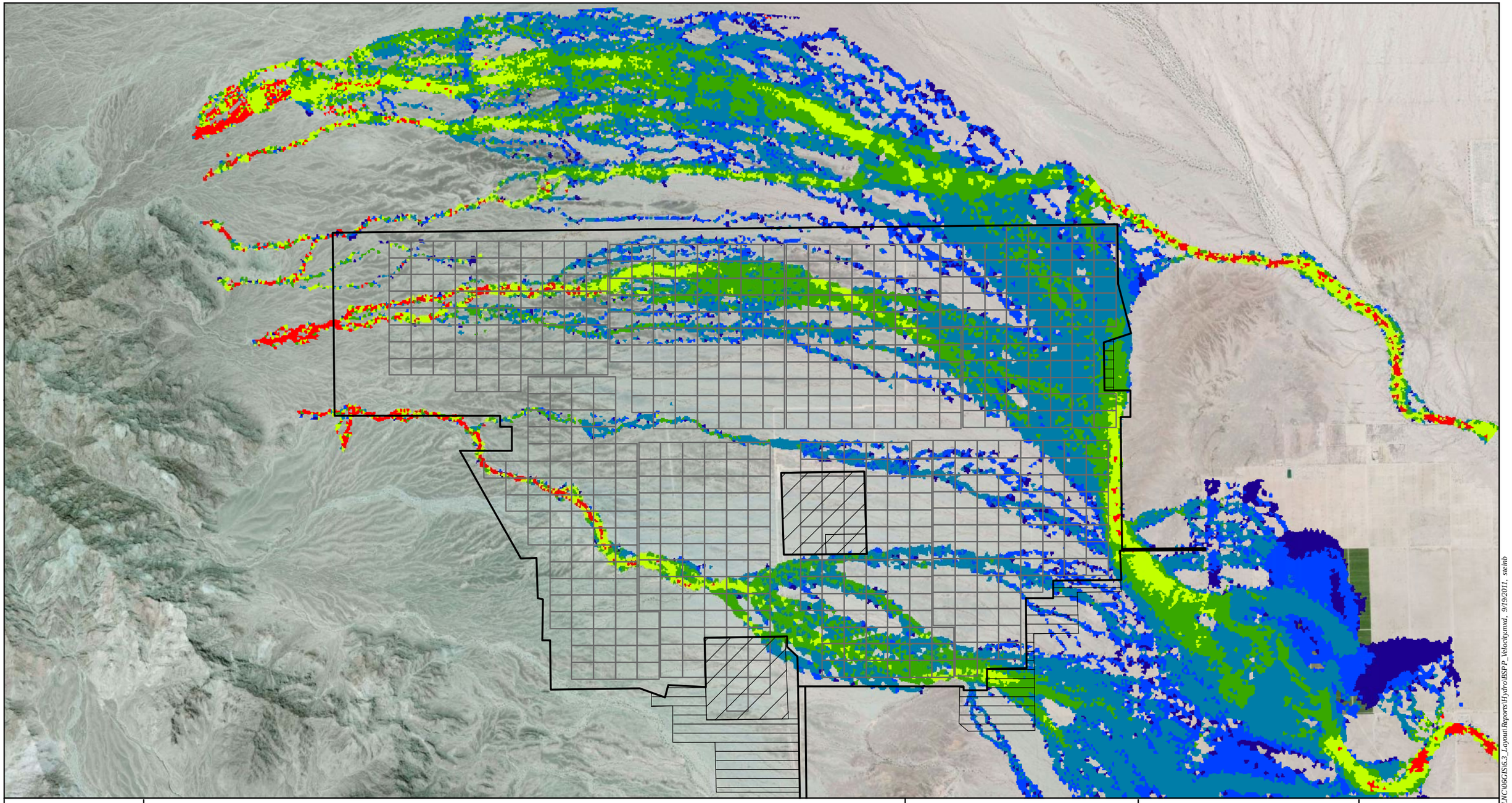
Figure 3
Modeled Water Depth

SOLAR TRUST OF AMERICA

AECOM

Date: September 2011

Path: P:\2011\11280150.01_BSPP_COMPLNC\06GIS\6.3_LayoutReports\HydrolBSPP_Depth.mxd, 9/19/2011, steinb


Map Location
OR
ID
NV
UT
CA
AZ
Legend
Current ROW
Private Property to be Acquired
Potential Expansion Area
Solar Arrays
Modeled Water Velocity
Feet/Second
0.001 - 0.5
0.5 - 1
1 - 2
2 - 3
3 - 5
> 5
Source: ESRI; AECOM 2011
N
W
E
S
1 inch = 3,000 feet
0
3,000
6,000
Feet
Blythe Solar Power Project
Figure 4
Modeled Water Velocity
SOLAR TRUST OF AMERICA
AECOM
Date: September 2011
Path: P:\2011\11280150.01_BSPP_COMPLNC\06GIS\6.3_LayoutReports\HydroBSPP_Velocity.mxd, 9/19/2011, steinb

Grading

Ideally, PV sites are selected so that grading is minimal. Under those conditions, site preparation usually involves vegetation removal and grading to smooth out minor natural swales, depressions and bumps. If the site is smooth and planar, this treatment would normally suffice unless there are excessive slopes in the north-south or east-west directions. If that is the case, extensive grading may be necessary to bring the surfaces close to level (less than 3% in the north-south direction and 5% in the east-west direction.).

Figures 5, 6, 7 and 8 address slope issues by displaying natural slope conditions under three categories: Less than 3% (green), between 3% and 5% (yellow) and greater than 5% (red). By comparing these with the solar block unit boundaries (Figure 9) it can be clearly seen that Units 1 through 5 are ideal for constructing solar arrays and Units 6, 7 and 8 require extensive grading for viable solar array development.

In Units 6, 7 and 8, the east-west oriented slopes are less than 5% and in most cases, less than 2%. Excessive slopes, however, are found as a result of deeply incised channels that traverse the site. Some of the channels were upwards of 20 feet deep and had very steep side slopes – not ideal for solar field development.

For Units 6, 7 and 8, AECOM prepared conceptual grading plans to satisfy slope criteria as described above (3% maximum N-S and 5% E-W). Figures 10, 11 and 12 display pre-development and conceptual post development surfaces[1]. Cut and fill quantities were developed by modeling the two surfaces using CAD. Rough quantities of cut and fill are listed for Units 6, 7 and 8 in Table 3 below:

Table 3 – Earthwork Quantities

Unit	Cut (Cubic Yards)	Fill (Cubic Yards)
6	500,000	400,000
7	800,000	700,000
8	1,100,000	900,000

The volume of cut is deliberately set to be in excess of fill volume by 15% to 25% to compensate for losses (grubbing, shrinkage and subsidence) that result in earthwork. Since the intent is to balance the site (no import or export) further adjustments may be necessary as a part of final design and will depend on soil and site conditions. Minor adjustments to finish grades can result in significant changes in earthwork volume[2].

[1] The grading plans are very rough and would need to be polished as part of final design. They were prepared for use in generating concept level cut and fill volumes.

[2] 0.1 feet of adjustment to a square mile will result in approximately 100,000 cubic yards of change in earthwork quantity.

Grading Cost

The cost of grading will depend on several factors; type of soil, maximum haul distance, if rock is present and water. For these sites, the maximum haul distance should be about ½ mile. Therefore the work can be done mainly with bull dozers, water trucks and scrapers. Based on this, for a project this size, the earthwork should cost about a dollar per cubic yard assuming favorable soils.

Water needed for earthwork will be considerable however. For a site like this water required for grading would be approximately 50 gallons per cubic yard of earth moved. For all three sites the water could be as much as 120 million gallons. The cost of developing a water well, piping water to the site from an assumed distance of 5 miles away, providing on-site water distribution, pre-watering, and running water trucks would add more than a dollar per cubic yard. Adding water, engineering, contingencies for rock and caliche, the cost per cubic yard could exceed $3.00. Without an extensive soils investigation, the cost number provided is only a very rough estimate.

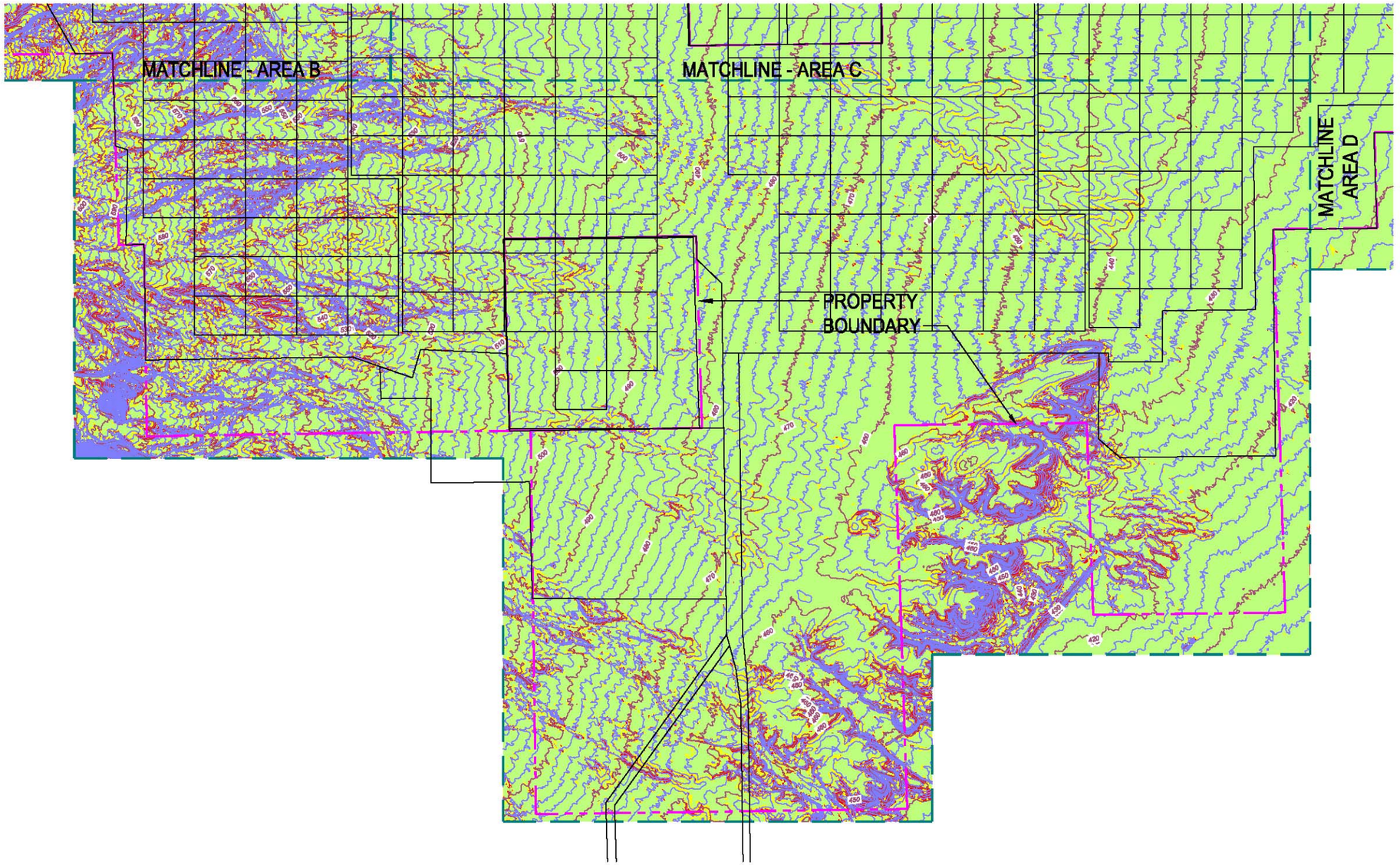
Erosion Control

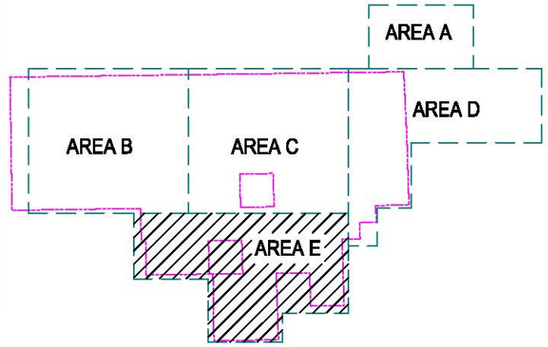
Erosion control for the finished site should consist of standard post construction best management practices (BMP's). A method that has been found acceptable on sites similar to this is to utilize the matrix of internal solar field access roads. In essence the roads can serve as check dams and could therefore, become a means of reducing sediment transfer. As check dams, the resulting small shallow basins can serve as stilling basins that will allow sediment loading to drop out. Where storm water is anticipated to cross roads (dips), those roads could be hardened with aggregate base to minimize stormwater incisions. Where well established natural channels exist, they could be avoided or augmented with rock slope protection[3].

Conclusions

1. Units 1 through 5 require minimal grading to develop as photovoltaic solar sites.
2. Units 6, 7 and 8 require extensive grading.
3. Erosion control can be accomplished by hardening on-site access roads at strategic locations.

[3] It is common practice to avoid significant natural channels when planning solar array construction. For this project, Solar Millennium intended to develop solar blocks without internal gaps for natural channels. Therefore, the practice of hardening internal access roads at strategic locations is one that should be considered.





SITE KEY

NOTES:

1. SLOPES DETERMINED PERPENDICULAR TO CONTOURS

LEGEND

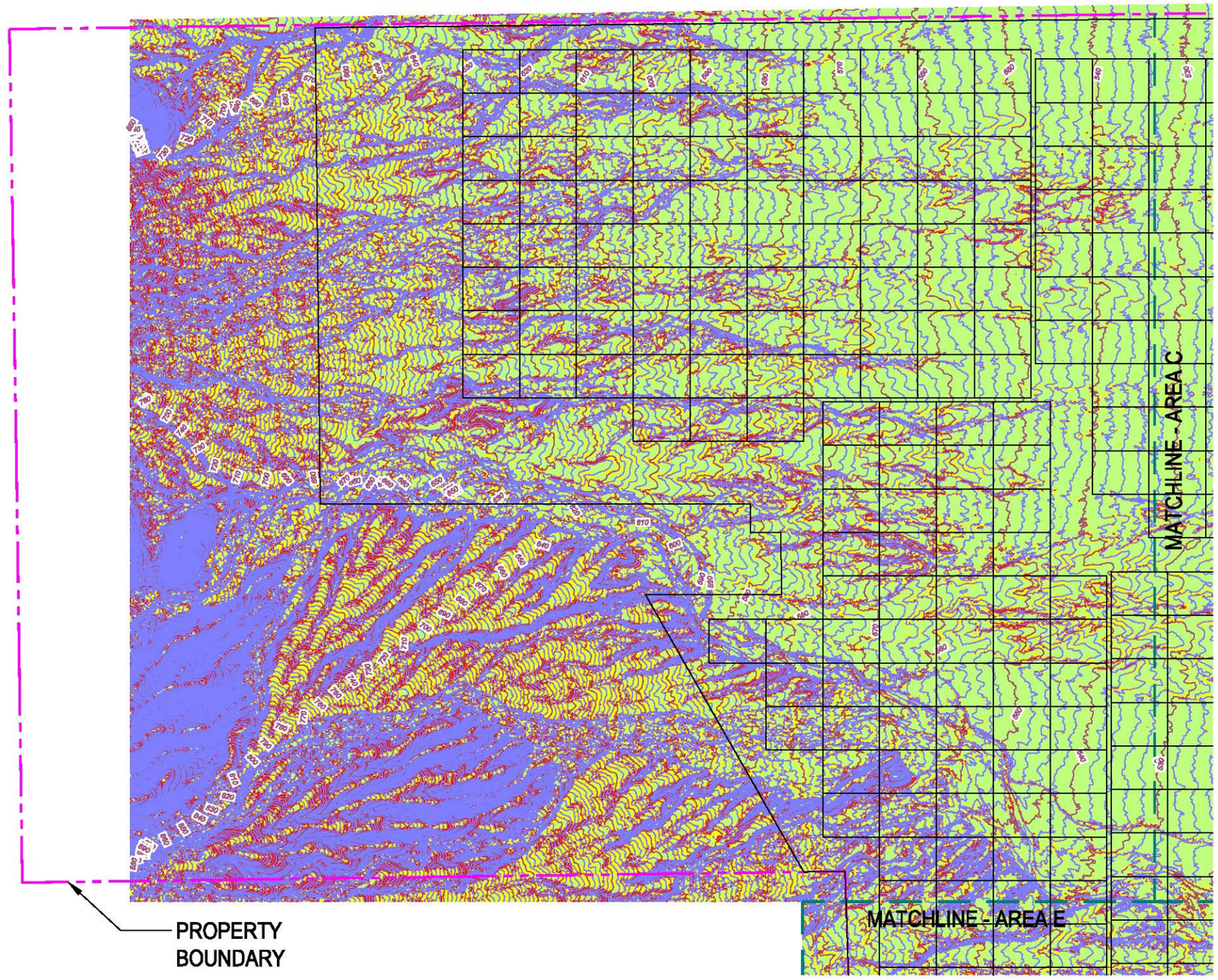
- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- MATCH LINE
- PROPERTY BOUNDARY
- SLOPES 0% TO 3%
- SLOPES 3% TO 5%
- SLOPES 5% AND GREATER

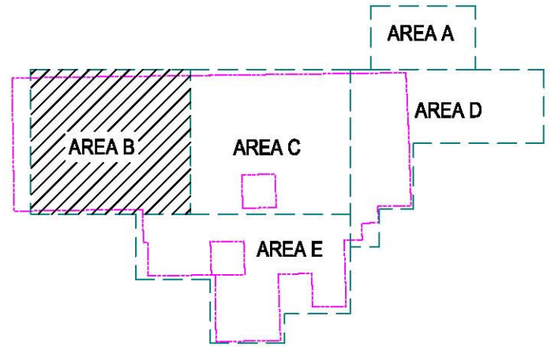
SCALE
0 400 800 1600
1 INCH = 800 FEET

AECOM
AECOM USA, Inc.
5001 E. Commercenter Dr. Suite 100
Bakersfield, California 93309
T 661.325.7253 F 661.395.0359
www.aecom.com

SOLAR MILLENNIUM - BLYTHE SITE
AREA E-1

FIGURE
5





SITE KEY

SCALE
0 400 800 1600
1 INCH = 800 FEET

NOTES:

1. SLOPES DETERMINED PERPENDICULAR TO CONTOURS

LEGEND

- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- MATCH LINE
- PROPERTY BOUNDARY
- SLOPES 0% TO 3%
- SLOPES 3% TO 5%
- SLOPES 5% AND GREATER

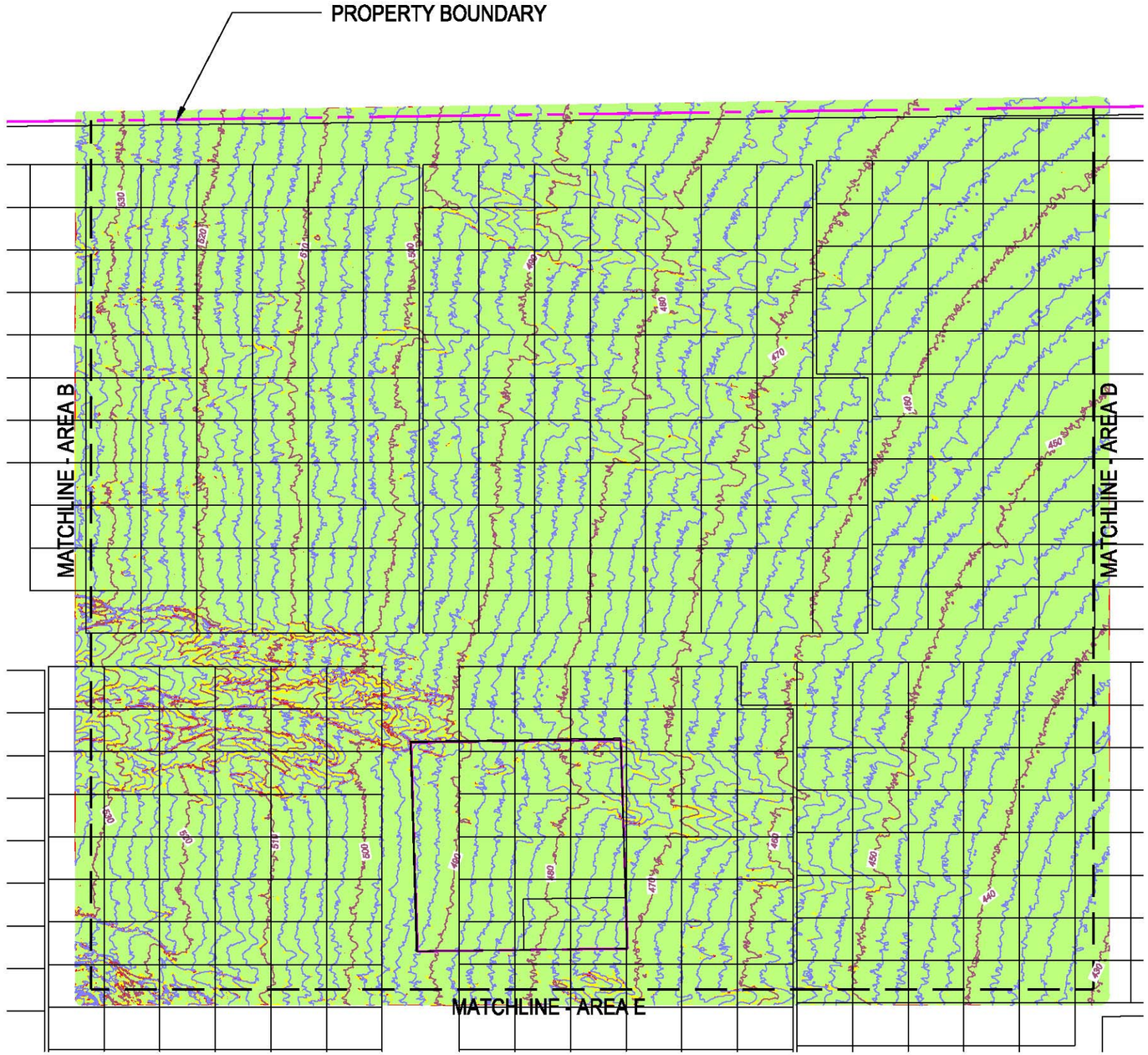
AECOM

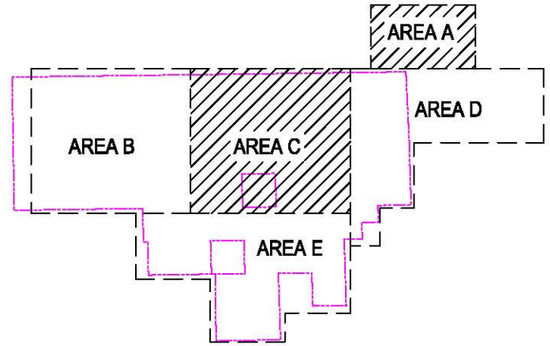
AECOM USA, Inc.
5001 E. Commercenter Dr. Suite 100
Bakersfield, California 93309
T 661.325.7253 F 661.395.0359

www.aecom.com

SOLAR MILLENNIUM - BLYTHE SITE
AREA B-1

FIGURE
6





SITE KEY

SCALE
0 800 1600
1 INCH = 800 FEET

NOTES:

1. SLOPES DETERMINED PERPENDICULAR TO CONTOURS.

LEGEND

- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- MATCH LINE
- PROPERTY BOUNDARY
- SLOPES 0% TO 3%
- SLOPES 3% TO 5%
- SLOPES 5% AND GREATER

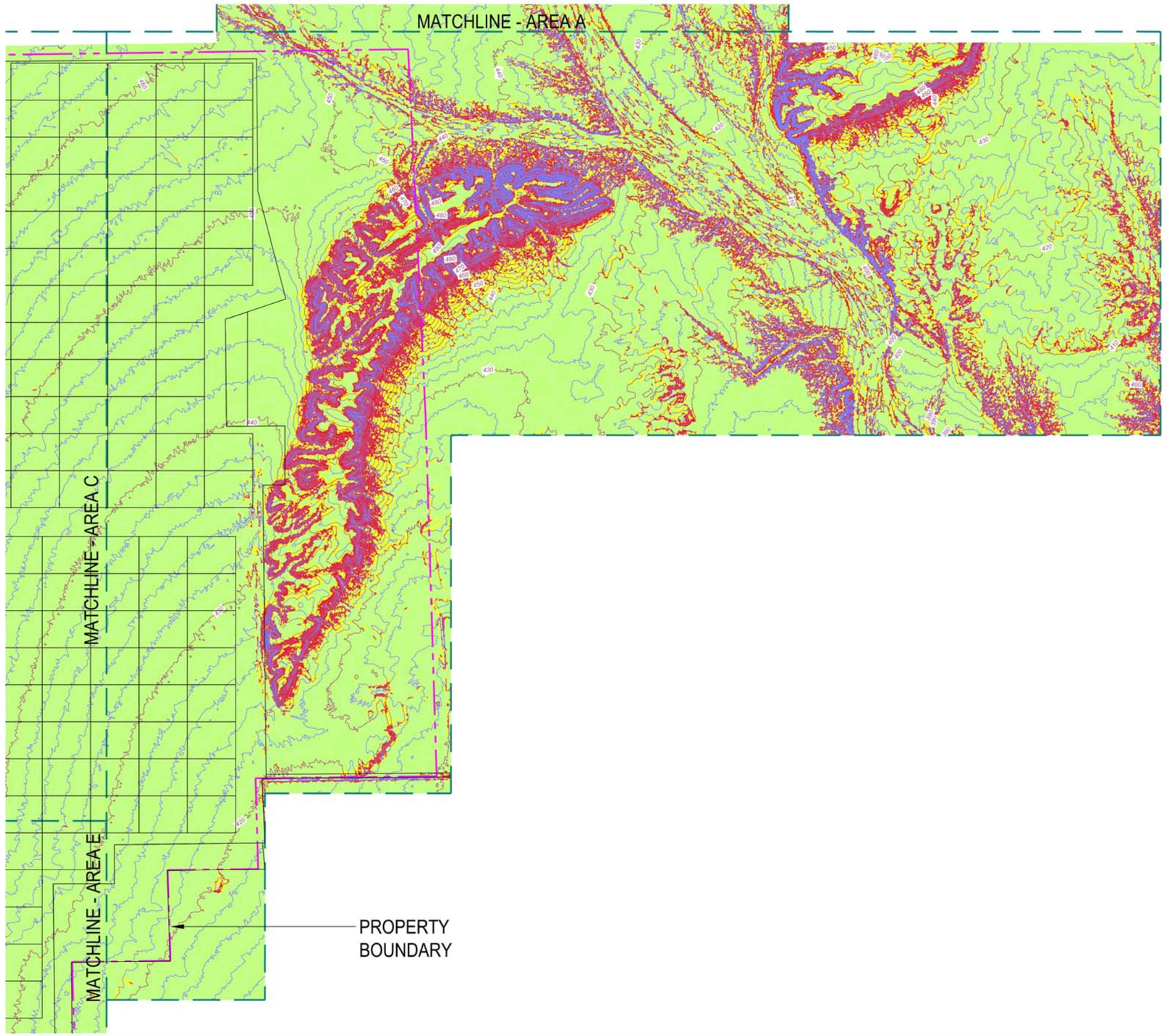
AECOM

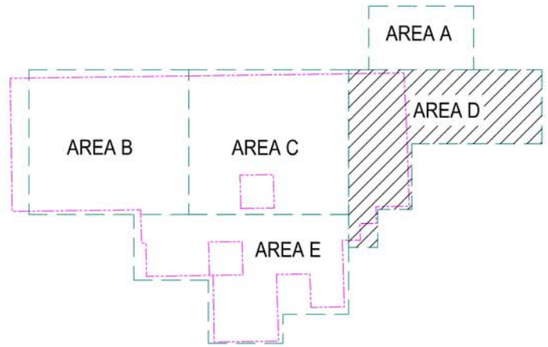
AECOM USA, Inc.
5001 E. Commercenter Dr. Suite 100
Bakersfield, California 93309
T 661.325.7253 F 661.395.0359

www.aecom.com

SOLAR MILLENNIUM - BLYTHE SITE
AREA C-1

FIGURE
7





SITE KEY

SCALE
0 400 800 1600
1 INCH = 800 FEET

NOTES:

1. SLOPES DETERMINED PERPENDICULAR TO CONTOURS

LEGEND

- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- MATCH LINE
- PROPERTY BOUNDARY
- SLOPES 0% TO 3%
- SLOPES 3% TO 5%
- SLOPES 5% AND GREATER

AECOM

AECOM USA, Inc.
5001 E. Commercenter Dr. Suite 100
Bakersfield, California 93309
T 661.325.7253 F 661.395.0359

www.aecom.com

SOLAR MILLENNIUM - BLYTHE SITE
AREA D-1

FIGURE
8

Blythe Solar Power Project

Alternative 1 - Conceptual Photovoltaic Design for Review

SOLARTRUST OF AMERICA
Powering America's Future℠
1111 Broadway, 5th Floor
Oakland, CA 94607
510-463-6518

Drafted: 09/14/2011

D:\GIS\Data\Project_Site\Blythe\Support\Development\PV\Typical_Layout\Alternative1\Mxd\Blythe_Conceptual_Layout_Alternative1_09142011R2.mxd

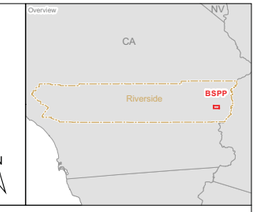
Current Blythe ROW
Private Property to be Aquired
Solar Unit
Photovoltaic Arrays
Switchyard
GSU
Warehouse Control Facility
Water Well Area
Generation Tie
Access Road

DRAFT: CONCEPTUAL DESIGN FOR REVIEW

0 500 1,000 1,500 2,000 2,500 Feet

0 0.5 1 Miles

N



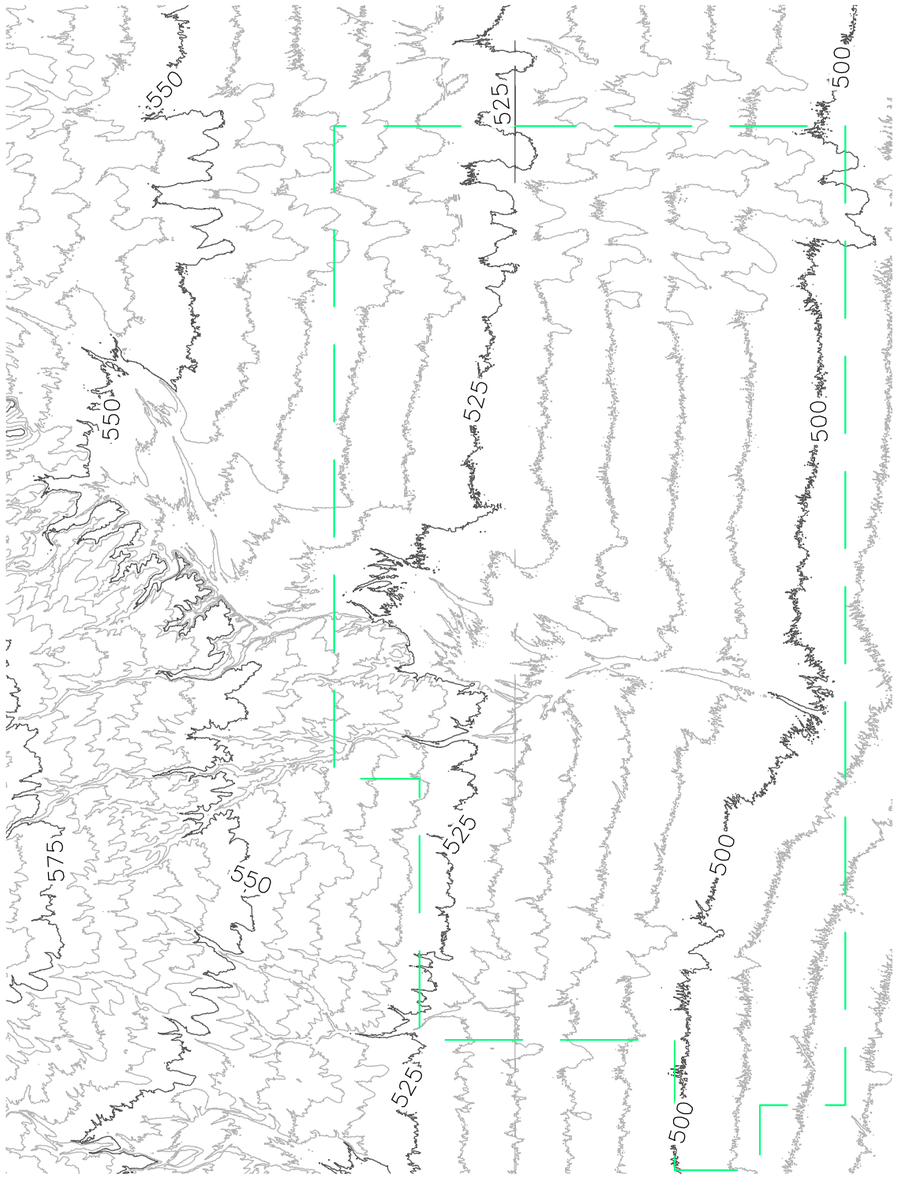
UNIT: 7
UNIT: 5
UNIT: 1
UNIT: 2
UNIT: 8
UNIT: 6
UNIT: 3
UNIT: 4
GSU 7
GSU 8
GSU 5
GSU 1
GSU 2
GSU 6
GSU 3
GSU 4
Warehouse Control Facility
Water Well Area

Alternative 1
DRAFT

FIGURE 9

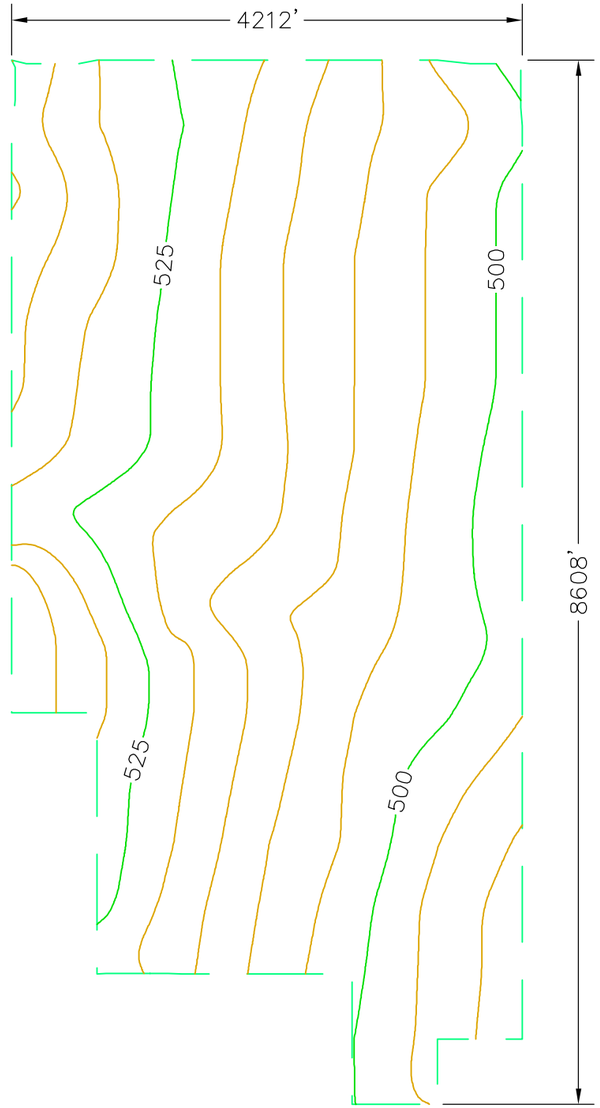
LEGEND

LINE	DESCRIPTION
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	PROPOSED SURFACE BOUNDARY



EXISTING SURFACE

NO SCALE



PROPOSED SURFACE

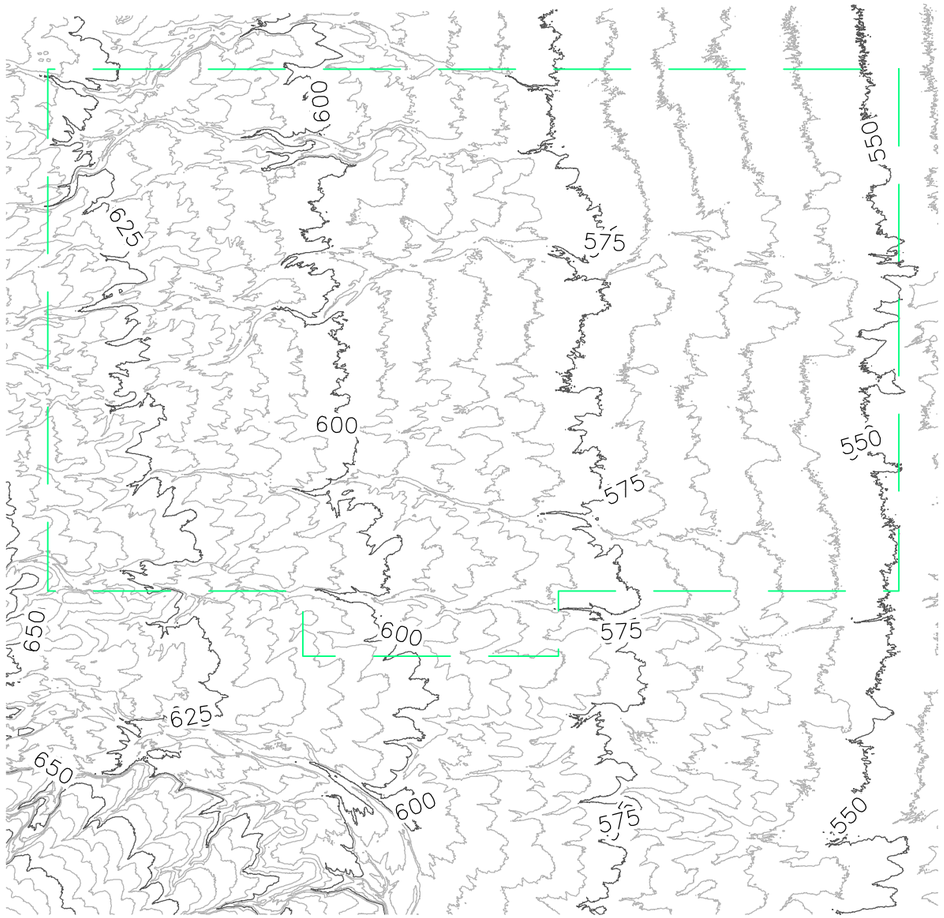
AECOM Technical Services, Inc.
5001 East Commercenter Drive
Suite 100
Bakersfield, CA 93309
T 661.325.7253
www.aecom.com

BLYTHE SOLAR POWER PROJECT
UNIT 6

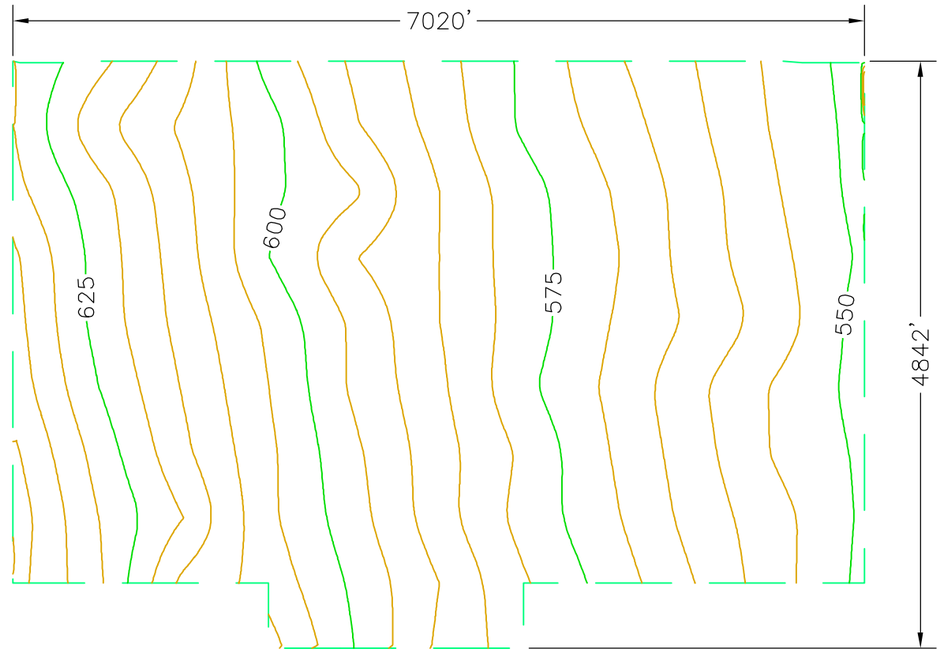
FIGURE
10

LEGEND

LINE	DESCRIPTION
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	PROPOSED SURFACE BOUNDARY



EXISTING SURFACE



PROPOSED SURFACE

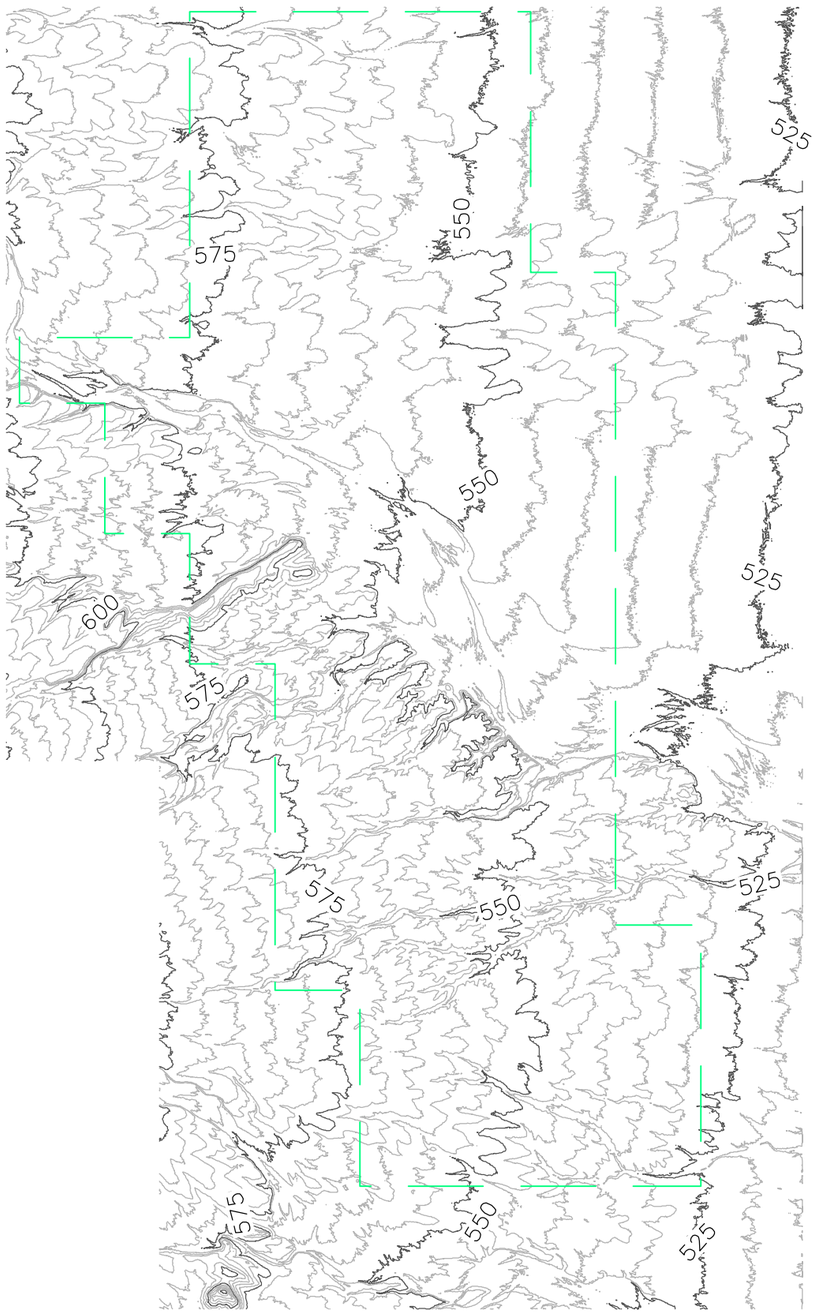
NO SCALE

AECOM Technical Services, Inc.
5001 East Commercenter Drive
Suite 100
Bakersfield, CA 93309
T 661.325.7253
www.aecom.com

AECOM

BLYTHE SOLAR POWER PROJECT
UNIT 7

FIGURE
11

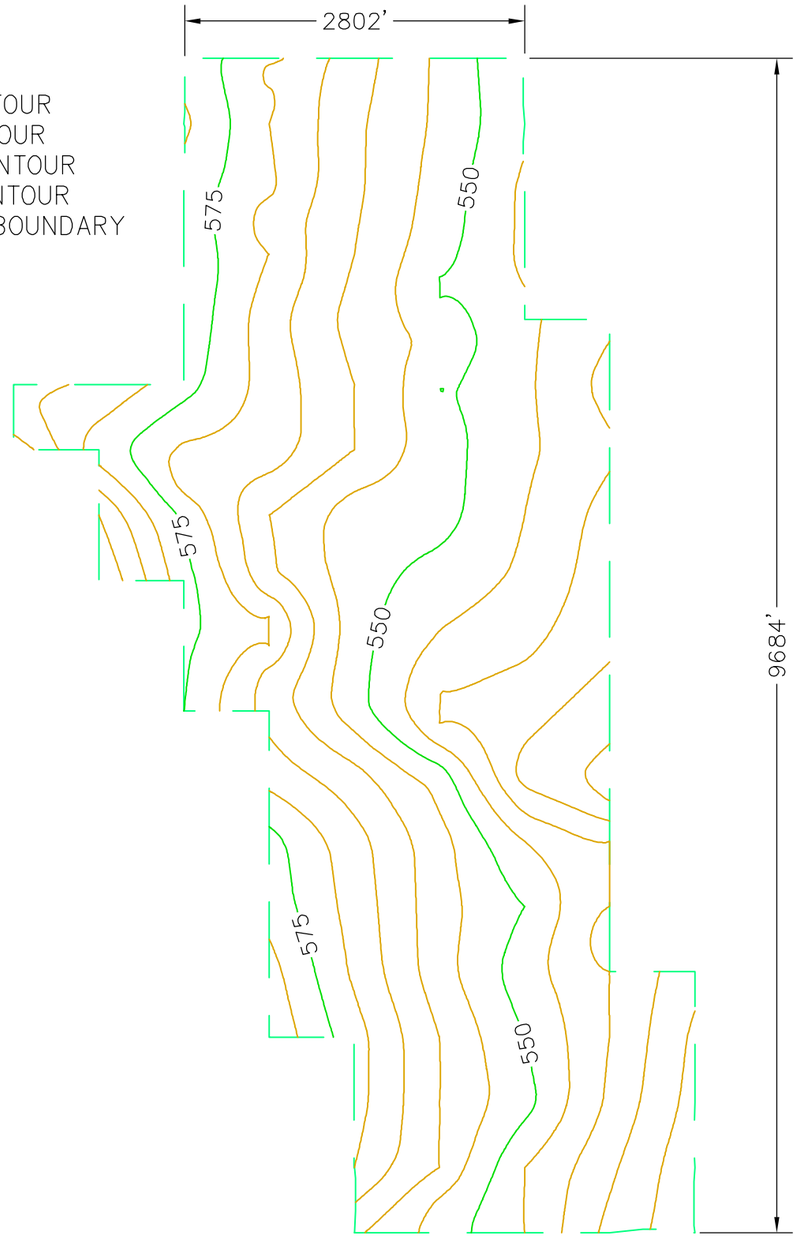


EXISTING SURFACE

LEGEND

LINE	DESCRIPTION
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	PROPOSED SURFACE BOUNDARY

NO SCALE



PROPOSED SURFACE

AECOM Technical Services, Inc.
5001 East Commercenter Drive
Suite 100
Bakersfield, CA 93309
T 661.325.7253
www.aecom.com

BLYTHE SOLAR POWER PROJECT
UNIT 8

FIGURE
12

AECOM
5001 E. Commercenter Drive,
Suite 100
Bakersfield, California 93309
www.aecom.com

661 325 7253 tel
661 395 0359 fax

Technical Memorandum

Date: September 29, 2011

To: Travis Peterson, Solar Millennium, Inc.

From: William Black, P.E.

Subject: Hydraulic Study: Blythe Solar Power Project

Purpose

The purpose of this report is to provide the following deliverables for use in permitting and design:

1. Display showing pre-development 100-year frequency storm flow velocities across the site.

2. Display showing pre-development 100-year frequency depth-of-flow across the site.

3. Display showing where cross-slopes exceed 3% and 5% perpendicular to contours.

4. Conceptual level earthwork quantities for the west portion of the site.

5. Order of Magnitude cost estimates for grading.

Introduction

Solar Millennium AG and Solar Trust of America are in the process of obtaining environmental permits for a proposed 9,400 acre, 1,000 MW solar power facility, “Blythe Solar Power Project”. The first phase of the project will consist of a 500 MW photovoltaic (PV) system (4 blocks at 125 MW each). The proposed project site is within unincorporated areas of Riverside County, approximately 8 miles west of Blythe.

Previously, the project was to consist of four solar-thermal plants. Both pre and post-development drainage studies were performed by AECOM in 2009[1] and 2010[2]. These reports included site hydrology and analysis of site drainage modifications using HEC-HMS

[1] “Blythe Solar Power Project – Pre-Development Drainage Conditions”, AECOM, November 25, 2009.

[2] “Blythe Solar Power Project – Post-Development Drainage Conditions”, AECOM, January 29, 2010. See also Figure 3 of this memorandum for a visual display from that report.

and FLO-2D Version 2007.06. Several drainage channels were proposed to divert storm water flows around the planned facilities.

The proposed PV systems can be designed and constructed for overland storm water flows and would not require the diversion channels previously analyzed for the site. This memorandum was prepared to display estimated high water level elevations for the 100-year, 24-hour storm across the project site to be used in the preliminary design of the PV facilities and for environmental permitting with state and federal agencies. Analysis for pre and post-development drainage conditions at the site are presented in this memorandum using MIKE 21 by DHI, Inc. and the hydrology information provided in the previous reports.

Site Hydrology

As previously discussed the hydrology developed in the referenced reports are used to prepare the hydraulic model. The following paragraphs provide a brief description of the site hydrology and a summary of flow rate results used for the hydraulic analysis presented in this memorandum.

The project site is located on the Palo Verde Mesa to the east of the McCoy Mountains. The predominant drainage feature in the area is McCoy Wash located east of the project site. In general, the site receives runoff from the McCoy Mountains to the west. Flows travel across the site southerly in shallow, moderately defined channels towards the McCoy Wash.

The referenced 2010 reports provide existing hydrology estimates for the 100-year storm event. A summary of the calculated flow rates is presented below in Table 1 below. Locations of these channels can also be found in the previous referenced reports. These flow rates were used in the hydraulic model (MIKE 21) by matching the flow rates to the existing channels entering the site at the same locations previously shown on the referenced report.

Table 1
100 Year Existing Hydrology Calculations

Model Boundary Section	Total Flow Rate (cfs)
N2a	242.4
N3a	1,654.4
N4b	1,052.6
N5b	425.0
NW1	151.2
NW3	280.8
W1	1,217.9
SW5	1,282.7

Hydraulic Model

Flood depth across the site was determined using MIKE 21, a two dimensional hydraulic modeling software. The model consists of two parts, a mesh and boundary conditions. The mesh is a three dimensional representation of the ground surface, over which water will flow. The boundary conditions include both inflow and outflow criteria along the perimeter of the model.

A single model was constructed to represent the project site. A roughness coefficient of n = 0.025 was used[3] to represent the estimated surface roughness of the site. The PV panel supports are assumed to be small diameter steel or aluminum members and are not anticipated to be a significant hindrance to flow and were not modeled.

Mesh

The mesh is composed of two parts, elements and nodes. A "node" is a point in space that contains both horizontal coordinates and vertical elevation data. The triangular area bounded by three points is an "element". Because multiple elements can share the same node, there are always more elements than nodes in a model. Figure 1 shows the relationship between element and node. The mesh was constructed using photogrammetric data, flown in 2007.

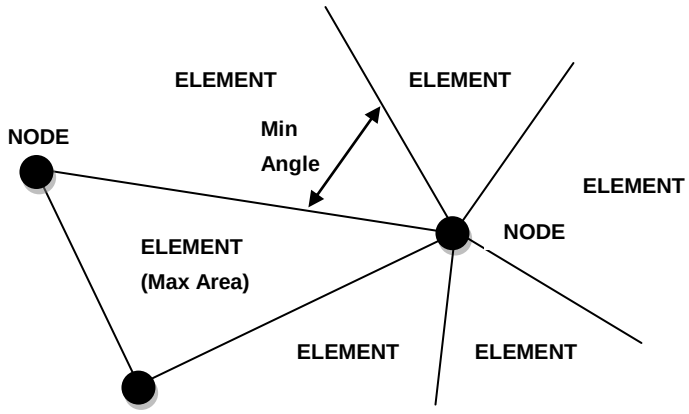


Figure 1 The relationship between the various MIKE 21 mesh components.

Coordinates and elevations for the nodes are interpolated from aerial LIDAR data. Because the nodes are interpolated, the number of nodes generated can be varied throughout the

[3] The roughness coefficient of n = 0.025 was used for the MIKE 21 analysis to be consistent with the above referenced drainage studies by AECOM dated November 25, 2009 and January 29, 2010.

mesh. This allows areas of interest to be modeled at a higher resolution. Figure 2 shows the mesh generated for the site. Areas with greater detail are modeled at a higher resolution.

Figure 2 **MIKE 21 mesh representing the project site with areas of higher density indicated.**

The resolution of the mesh is determined by the maximum distance between nodes. MIKE 21 calculates node placement based upon the maximum area allowed for each element and the minimum angle required between sides of an element (see Figure 1). The mesh inputs and corresponding resolutions for the model are shown in Table 2.

Table 2 Mesh Statistics

	Density A	Density B
Max Area	22,000 ft^2	11,000 ft^2
Min Angle	26^o	26^o
Resolution	420 ft	297 ft

Total number of elements = 119,000
Total number of nodes = 60,200

Building Permit Requirements

We were unable to verify Riverside County Standards with regard to freeboard. The standard practice of agencies is to require a minimum 1 foot of clearance from the calculated 100-year stormwater surface to the lowest extent of solar PV equipment.

Water Depth and Velocity

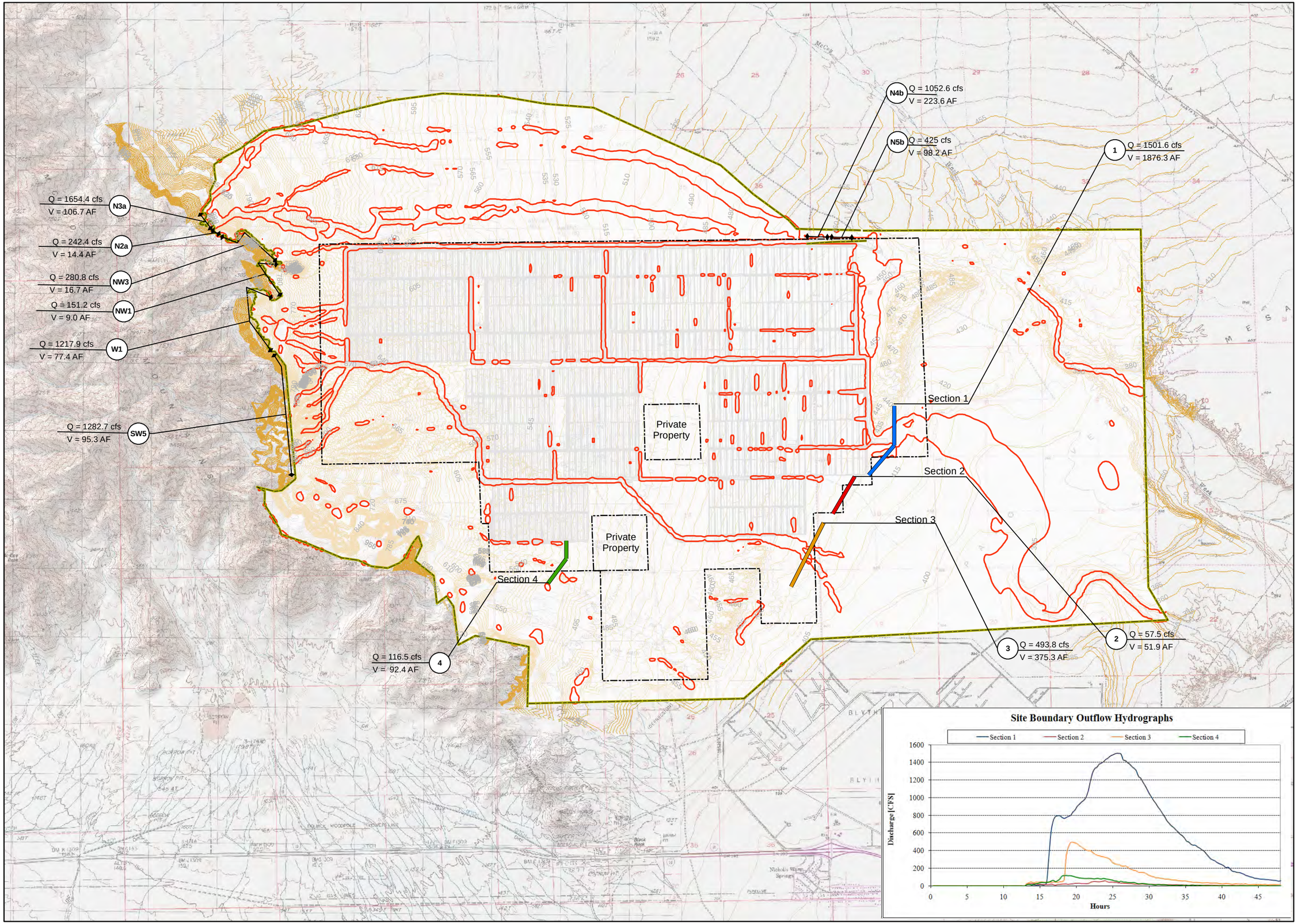
The MIKE 21 analysis results were used to create two maps: one for water depth and one for water velocity. The region within these contours provides design data for the proposed foundations and PV panel height. See Figure 3 for peak flow rates entering various locations of the site[4] and Figures 4 A and 4 B for respective water depth and velocity.

These values are based on existing topography only. Water retained by elevated roadways may increase the design depth in some areas and will need to be accounted for during final design. It should also be noted that the site is located on an alluvial fan. Because of this, it is possible that the existing channels tributary to the project site could meander. In the event that the channels meander, facilities designed for a smaller design depth and velocity could fail in a 100-year 24-hour storm.

On-Site Retention Requirements

Construction of proposed facilities may result in a slight change in storm water runoff generated from the existing site without the implementation of Best Management Practices (BMPs). The reason is that clearing and smoothing the site could result in a change of infiltration rates. The runoff volume difference can be mitigated through the use of BMP(s). For example, by slightly elevating on-site access roads, stormwater could be impounded. In effect the project area would have a series of small, shallow retention basins which could thereby mitigate the runoff volume difference[5].

[4] "Blythe Solar Power Project – Post-Development Drainage Conditions", AECOM, January 29, 2010.
[5] Please also refer to the erosion control commentary on page 9 of this memorandum.



AECOM Inc.
999 Town & Country Road
Orange, CA 92686

www.aecom.com

Figure 3

Designed:
Checked:
Drawn:
Record Drawing by/date:

Revisions:

#	DATE	DESCRIPTION

Prepared for:

Solar Millennium LLC

LEGEND:

Q = Peak Flow
V = Total 24-hour Volume

Flow Analysis Section

1
2
3
4

Model Boundary
Site Boundary
Area of Concentrated Flow*
Blythe_SitePlan_CAD_2
Surface Contours

*** Area of maximum concentrated flow with water depth exceeding 0.3 feet**

N

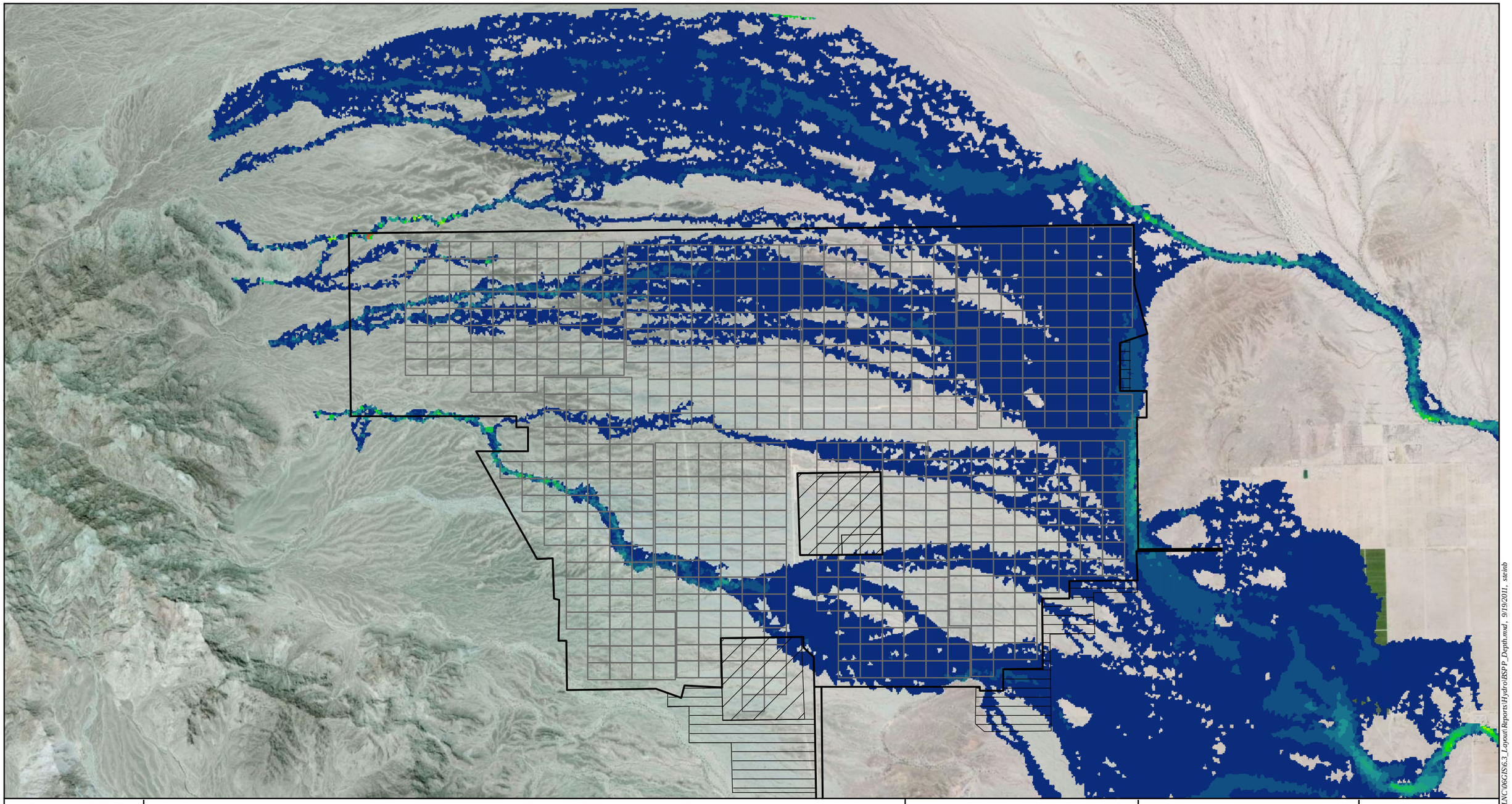
0 1,300 2,600 5,200
Feet

Blythe Solar Power Plant

Riverside County, California

Proposed Conditions
100-Yr Storm
Max. Water Surface

Date: 01/28/10
Sheet: 3 of 3



Map Location

Legend

- Current ROW
- Private Property to be Acquired
- Potential Expansion Area
- Solar Arrays

Modeled Water Depth

Feet

- 0.03 - 0.5
- 0.6 - 1
- 1.1 - 1.5
- 1.6 - 2
- 2.1 - 2.5
- 2.6 - 3
- 3.1 - 3.5
- 3.6 - 4
- 4.1 - 4.5
- 4.6 - 5
- 5.1 - 5.5
- 5.6 - 6
- 6.1 - 6.5
- 6.6 - 7
- 7.1 - 7.5
- 7.6 - 8
- 8.1 - 8.5
- 8.6 - 9

Source: ESRI; AECOM 2011

N W E S

1 inch = 3,000 feet

0 3,000 6,000 Feet

Blythe Solar Power Project

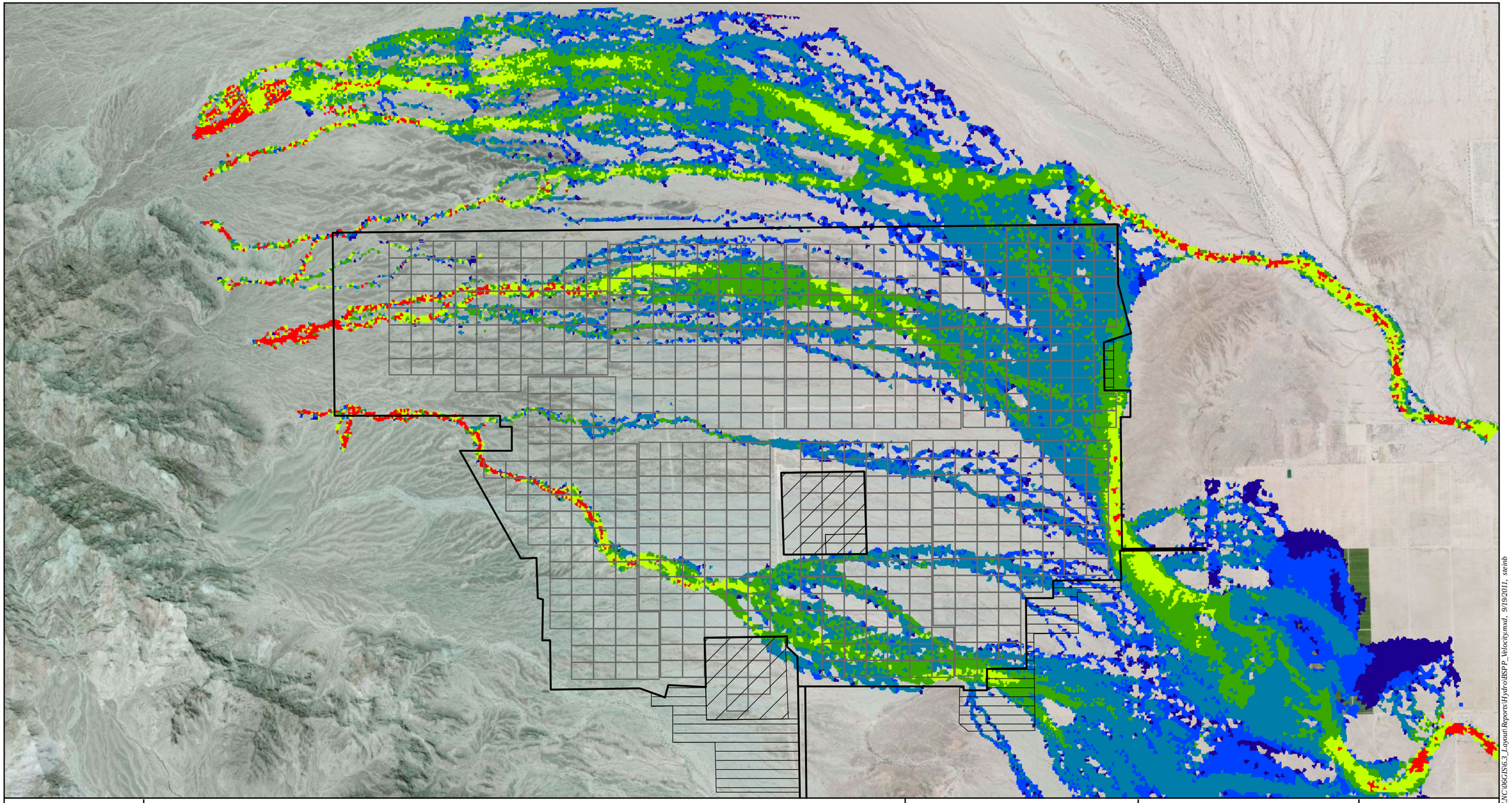
Figure 4A
Modeled Water Depth

SOLAR TRUST OF AMERICA

AECOM

Date: September 2011

Path: P:\2011\11280150.01_BSPP_COMPLNC\06GIS\6.3_LayoutReports\HydroIBSPP_Depth.mxd, 9/19/2011, steinb


Map Location
OR
ID
NV
UT
CA
AZ
Legend
Current ROW
Private Property to be Acquired
Potential Expansion Area
Solar Arrays
Modeled Water Velocity
Feet/Second
0.001 - 0.5
0.5 - 1
1 - 2
2 - 3
3 - 5
> 5
Source: ESRI; AECOM 2011
N
W
E
S
1 inch = 3,000 feet
0
3,000
6,000
Feet
Blythe Solar Power Project
Figure 4B
Modeled Water Velocity
SOLAR TRUST OF AMERICA
AECOM
Date: September 2011
Path: P:\2011\11280150.01_BSPP_COMPLNC\06GIS\6.3_LayoutReports\HydroBSPP_Velocity.mxd, 9/19/2011, steinb

Grading

Ideally, PV sites are selected so that grading is minimal. Under those conditions, site preparation usually involves vegetation removal and grading to smooth out minor natural swales, depressions and bumps. If the site is smooth and planar, this treatment would normally suffice unless there are excessive slopes in the north-south or east-west directions. If that is the case, extensive grading may be necessary to bring the surfaces close to level (less than 3% in the north-south direction and 5% in the east-west direction.).

Figures 5, 6, 7 and 8 address slope issues by displaying natural slope conditions under three categories: Less than 3% (green), between 3% and 5% (yellow) and greater than 5% (red). By comparing these with the solar block unit boundaries (Figure 9) it can be clearly seen that Units 1 through 5 are ideal for constructing solar arrays and Units 6, 7 and 8 require extensive grading for viable solar array development.

In Units 6, 7 and 8, the east-west oriented slopes are less than 5% and in most cases, less than 2%. Excessive slopes, however, are found as a result of deeply incised channels that traverse the site. Some of the channels were upwards of 20 feet deep and had very steep side slopes – not ideal for solar field development.

For Units 6, 7 and 8, AECOM prepared conceptual grading plans to satisfy slope criteria as described above (3% maximum N-S and 5% E-W). The conceptual grading plans were developed to smooth significant irregularities while maintaining stream flow within original natural channel alignments. In that manner, stormwater will enter and exit the site following development as it currently does without diverting or increasing[1] flow from one channel to another.

Figures 10, 11 and 12 display pre-developed and conceptual post-developed surfaces[2]. Cut and fill quantities were calculated by modeling the two surfaces using CAD. Rough quantities of cut and fill are listed for Units 6, 7 and 8 in Table 3 below:

Table 3 – Earthwork Quantities

Unit	Cut (Cubic Yards)	Fill (Cubic Yards)
6	500,000	400,000
7	800,000	700,000
8	1,100,000	900,000

The volume of cut is deliberately set to be in excess of fill volume by 15% to 25% to compensate for losses (grubbing, shrinkage and subsidence) that result in earthwork. Since the intent is to balance the site (no import or export) further adjustments may be necessary

[1] Refer to "**Onsite Retention Requirements**" page 5 of this memorandum.

[2] The grading plans are very rough and would need to be polished as part of final design. They were prepared for use in generating concept level cut and fill volumes.

as a part of final design and will depend on soil and site conditions. Minor adjustments to finish grades can result in significant changes in earthwork volume[3].

Grading Cost

The cost of grading will depend on several factors; type of soil, maximum haul distance, if rock is present and water. For these sites, the maximum haul distance should be about ½ mile. Therefore the work can be done mainly with bull dozers, water trucks and scrapers. Based on this, for a project this size, the earthwork should cost about a dollar per cubic yard assuming favorable soils.

Water needed for earthwork will be considerable however. For a site like this water required for grading would be approximately 50 gallons per cubic yard of earth moved. For all three sites the water could be as much as 120 million gallons. The cost of developing a water well, piping water to the site from an assumed distance of 5 miles away, providing on-site water distribution, pre-watering, and running water trucks would add more than a dollar per cubic yard. Adding water, engineering, contingencies for rock and caliche, and the cost per cubic yard could exceed $3.00. Without an extensive soils investigation, the cost number provided is only a very rough estimate.

Erosion Control

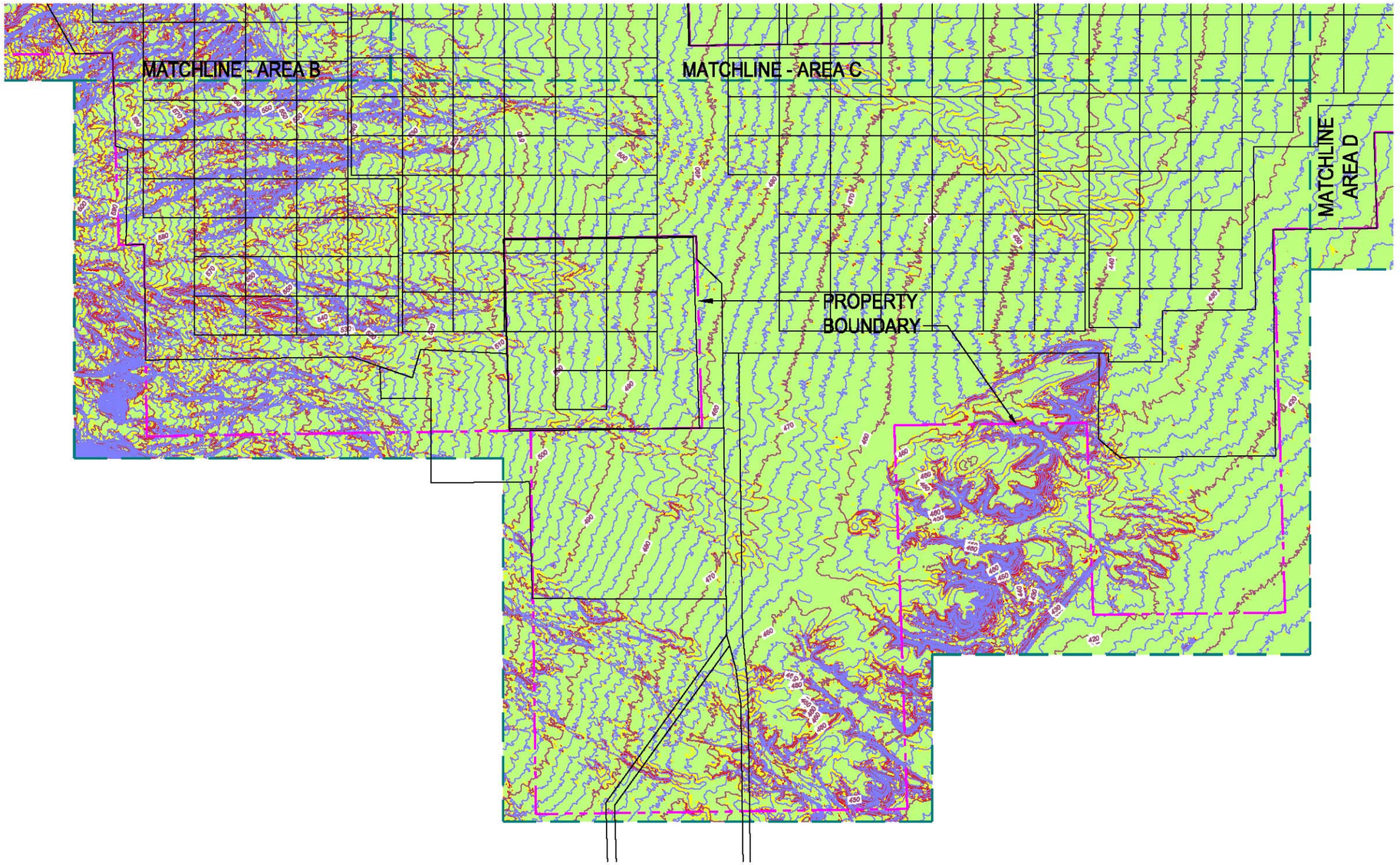
Erosion control for the finished site should consist of standard post construction best management practices (BMP's). A method that has been found acceptable on sites similar to this is to utilize the matrix of internal solar field access roads. In essence the roads can serve as check dams and could therefore, become a means of reducing sediment transfer. As check dams, the resulting small shallow basins can serve as stilling basins that will allow sediment loading to drop out. Where storm water is anticipated to cross roads (dips), those roads could be hardened with aggregate base to minimize stormwater incisions. Where well established natural channels exist, they could be avoided or augmented with rock slope protection[4].

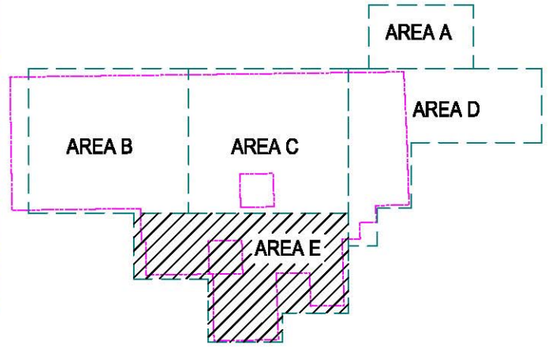
Conclusions

1. Units 1 through 5 require minimal grading to develop as photovoltaic solar sites.
2. Units 6, 7 and 8 require extensive grading.
3. Through the implementation of post construction BMP's, no significant stormwater runoff volume differences will occur between pre and post developed sites.
4. Erosion control can be done by hardening on-site access roads at stream crossing locations.

[3] 0.1 feet of adjustment to a square mile will result in approximately 100,000 cubic yards of change in earthwork quantity.

[4] It is common practice to avoid significant natural channels when planning solar array construction. For this project, Solar Millennium intended to develop solar blocks without internal gaps for natural channels. Therefore, the practice of hardening internal access roads at strategic locations is one that should be considered.





SITE KEY

NOTES:

1. SLOPES DETERMINED PERPENDICULAR TO CONTOURS

LEGEND

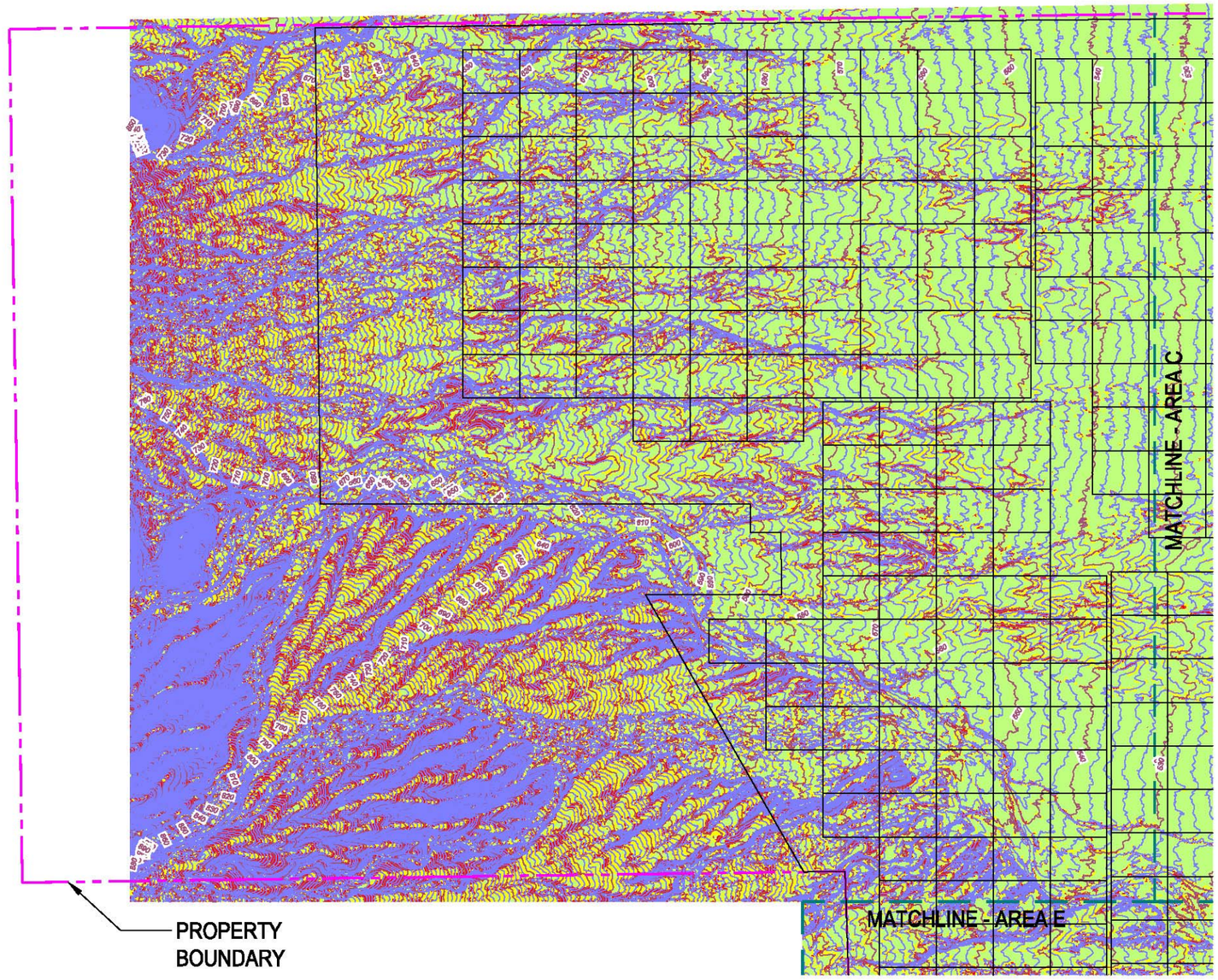
- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- MATCH LINE
- PROPERTY BOUNDARY
- SLOPES 0% TO 3%
- SLOPES 3% TO 5%
- SLOPES 5% AND GREATER

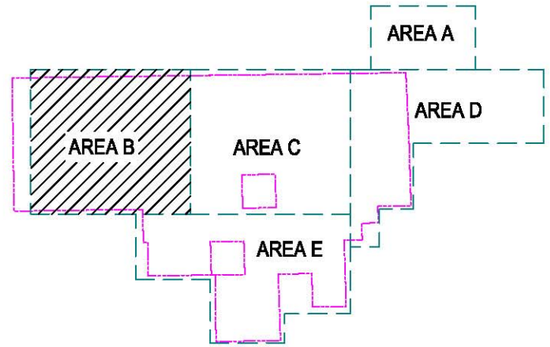
SCALE
0 400 800 1600
1 INCH = 800 FEET

AECOM
AECOM USA, Inc.
5001 E. Commercenter Dr. Suite 100
Bakersfield, California 93309
T 661.325.7253 F 661.395.0359
www.aecom.com

SOLAR MILLENNIUM - BLYTHE SITE
AREA E-1

FIGURE
5





SITE KEY

SCALE
0 400 800 1600
1 INCH = 800 FEET

NOTES:

1. SLOPES DETERMINED PERPENDICULAR TO CONTOURS

LEGEND

- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- MATCH LINE
- PROPERTY BOUNDARY
- SLOPES 0% TO 3%
- SLOPES 3% TO 5%
- SLOPES 5% AND GREATER

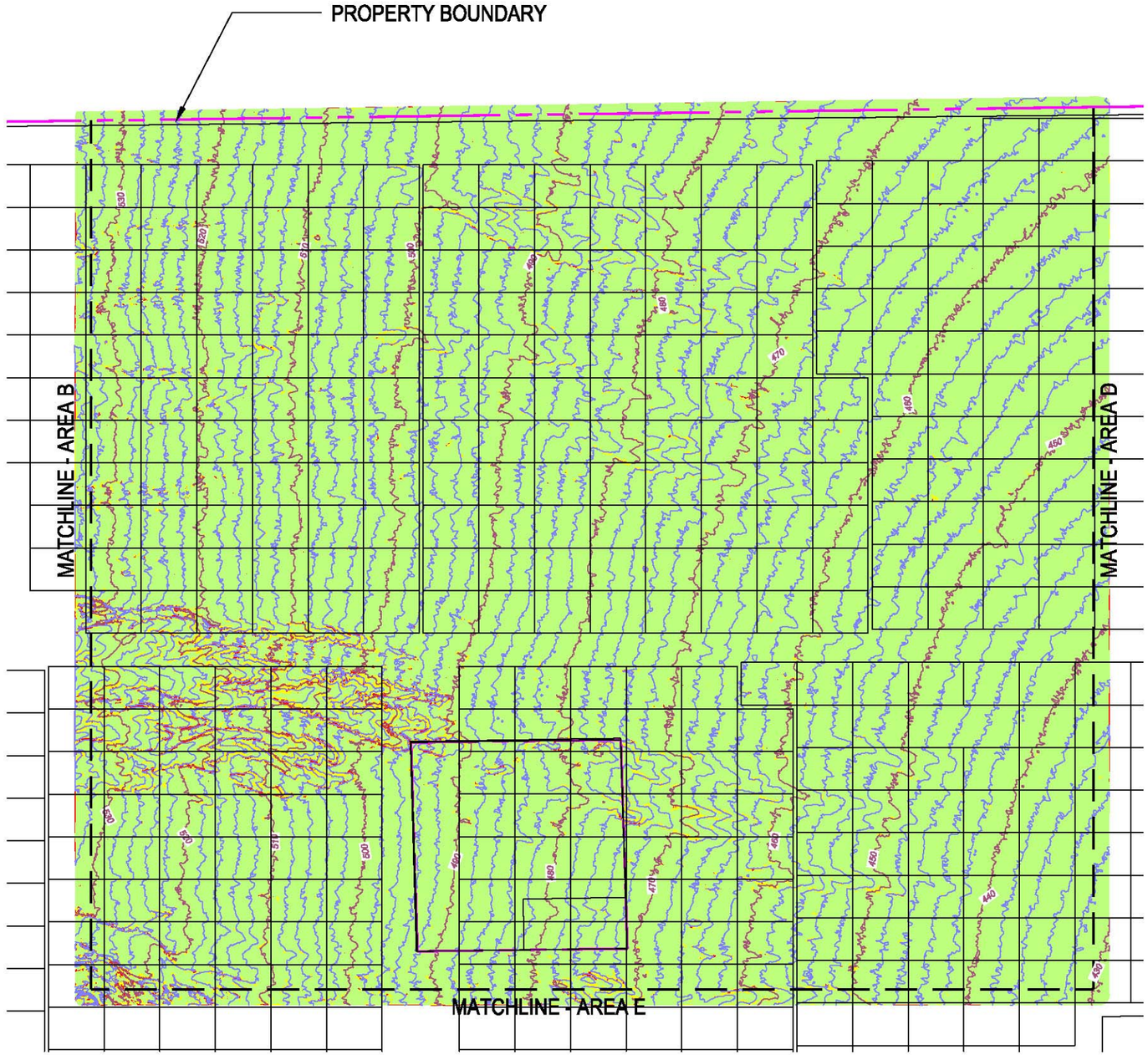
AECOM

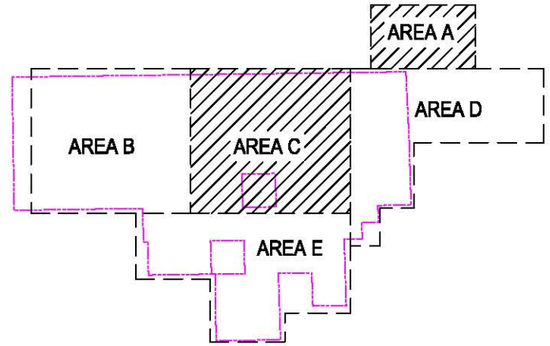
AECOM USA, Inc.
5001 E. Commercenter Dr. Suite 100
Bakersfield, California 93309
T 661.325.7253 F 661.395.0359

www.aecom.com

SOLAR MILLENNIUM - BLYTHE SITE
AREA B-1

FIGURE
6





SITE KEY

SCALE
0 800 1600
1 INCH = 800 FEET

NOTES:

1. SLOPES DETERMINED PERPENDICULAR TO CONTOURS.

LEGEND

- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- MATCH LINE
- PROPERTY BOUNDARY
- SLOPES 0% TO 3%
- SLOPES 3% TO 5%
- SLOPES 5% AND GREATER

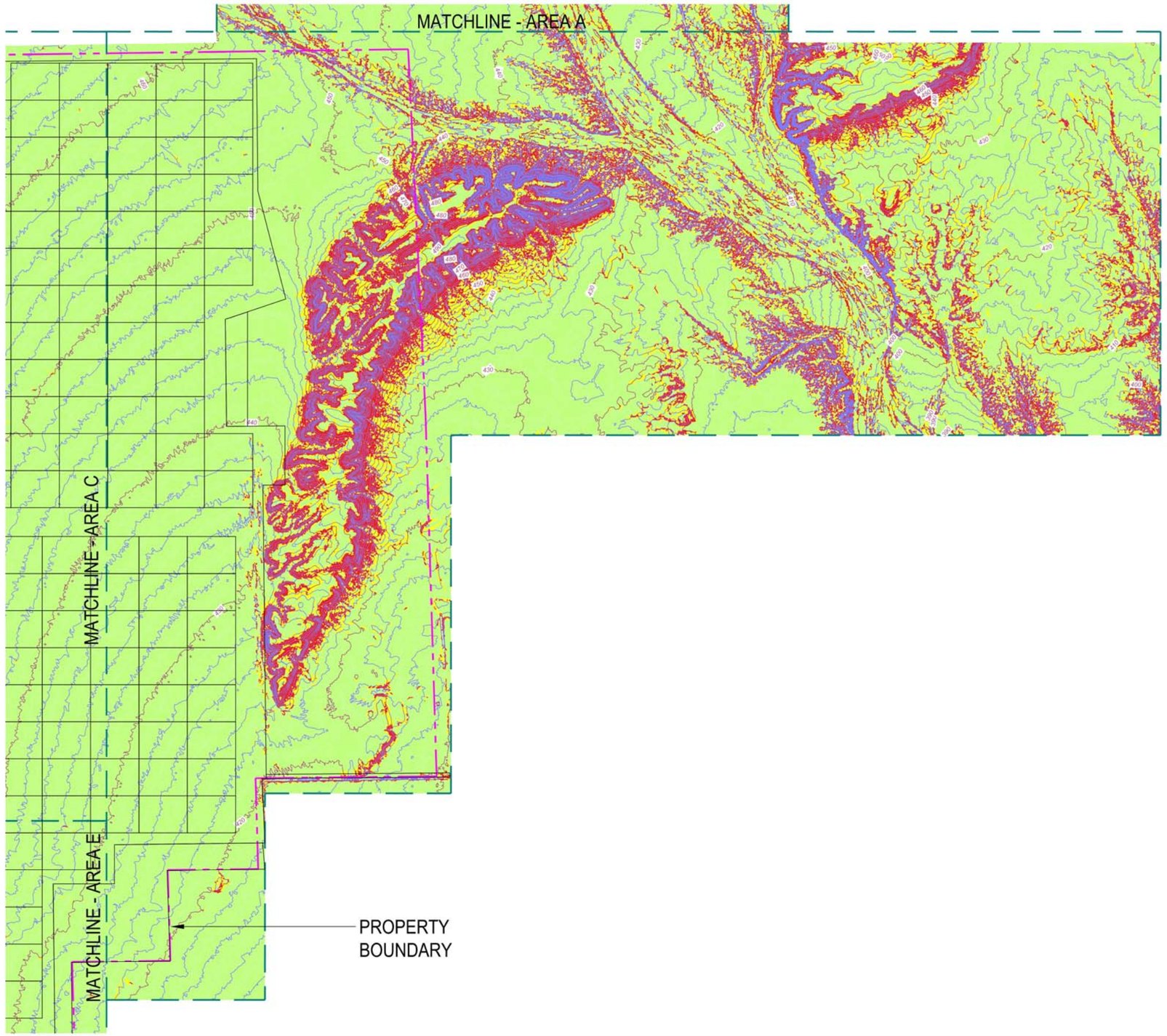
AECOM

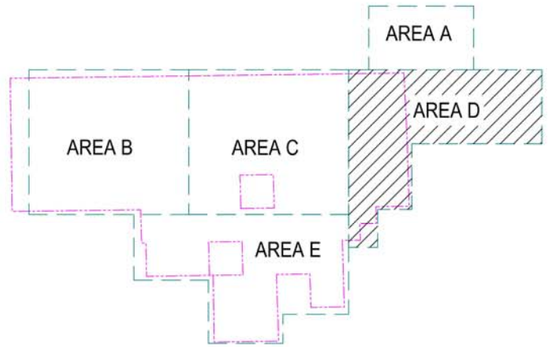
AECOM USA, Inc.
5001 E. Commercenter Dr. Suite 100
Bakersfield, California 93309
T 661.325.7253 F 661.395.0359

www.aecom.com

SOLAR MILLENNIUM - BLYTHE SITE
AREA C-1

FIGURE
7





SITE KEY

SCALE
0 400 800 1600
1 INCH = 800 FEET

NOTES:

1. SLOPES DETERMINED PERPENDICULAR TO CONTOURS

LEGEND

- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- MATCH LINE
- PROPERTY BOUNDARY
- SLOPES 0% TO 3%
- SLOPES 3% TO 5%
- SLOPES 5% AND GREATER

AECOM

AECOM USA, Inc.
5001 E. Commercenter Dr. Suite 100
Bakersfield, California 93309
T 661.325.7253 F 661.395.0359

www.aecom.com

SOLAR MILLENNIUM - BLYTHE SITE
AREA D-1

FIGURE
8

Blythe Solar Power Project

Alternative 1 - Conceptual Photovoltaic Design for Review

SOLARTRUST OF AMERICA
Powering America's Future℠
1111 Broadway, 5th Floor
Oakland, CA 94607
510-463-6518

Drafted: 09/14/2011

D:\GIS\Data\Project_Site\Blythe\Support\Development\PV\Typical_Layout\Alternative1\Mxd\Blythe_Conceptual_Layout_Alternative1_09142011R2.mxd

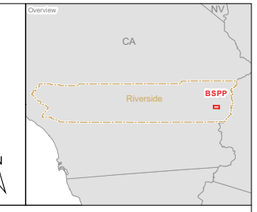
Current Blythe ROW
Private Property to be Aquired
Solar Unit
Photovoltaic Arrays
Switchyard
GSU
Warehouse Control Facility
Water Well Area
Generation Tie
Access Road

DRAFT: CONCEPTUAL DESIGN FOR REVIEW

0 500 1,000 1,500 2,000 2,500 Feet

0 0.5 1 Miles

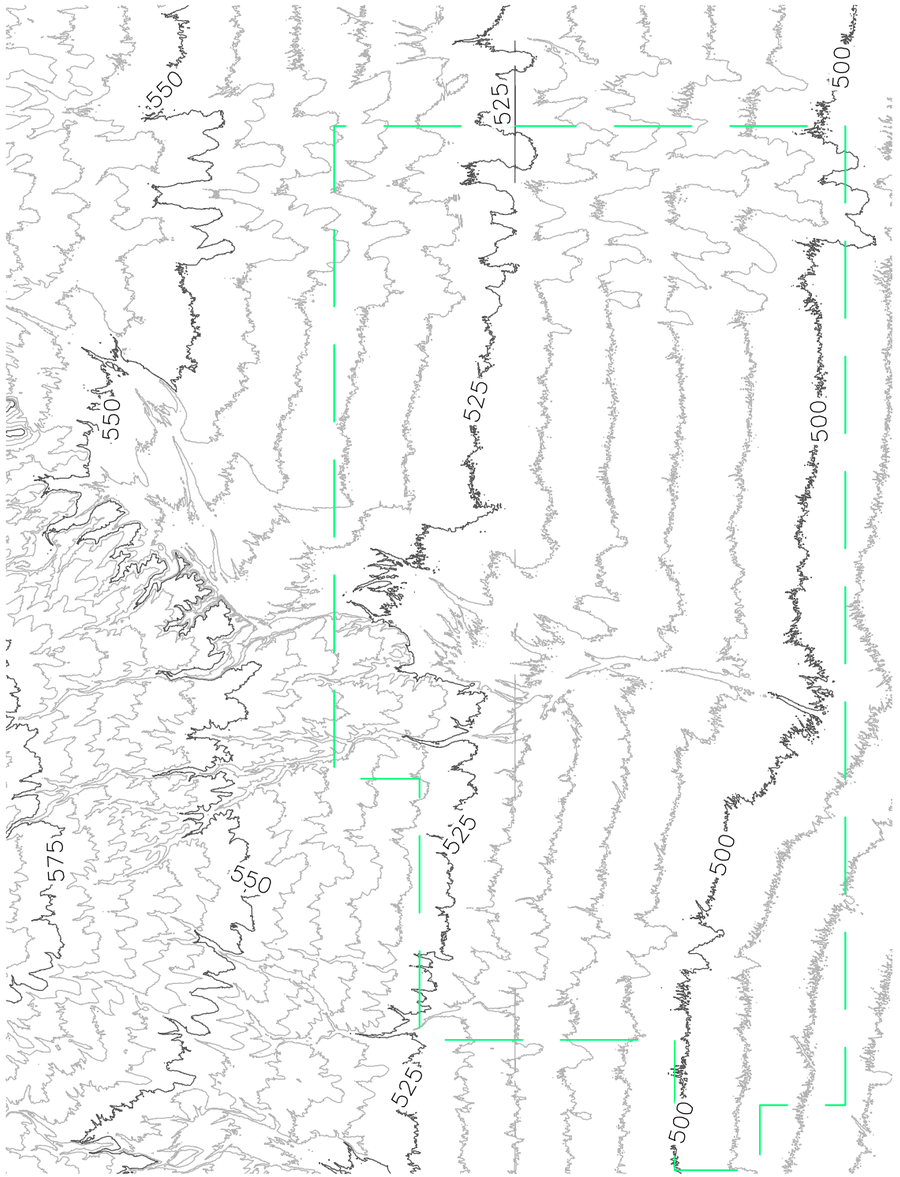
N



UNIT: 7
UNIT: 5
UNIT: 1
UNIT: 2
UNIT: 8
UNIT: 6
UNIT: 3
UNIT: 4
GSU 7
GSU 8
GSU 5
GSU 1
GSU 2
GSU 6
GSU 3
GSU 4
Warehouse Control Facility
Water Well Area

Alternative 1
DRAFT

FIGURE 9



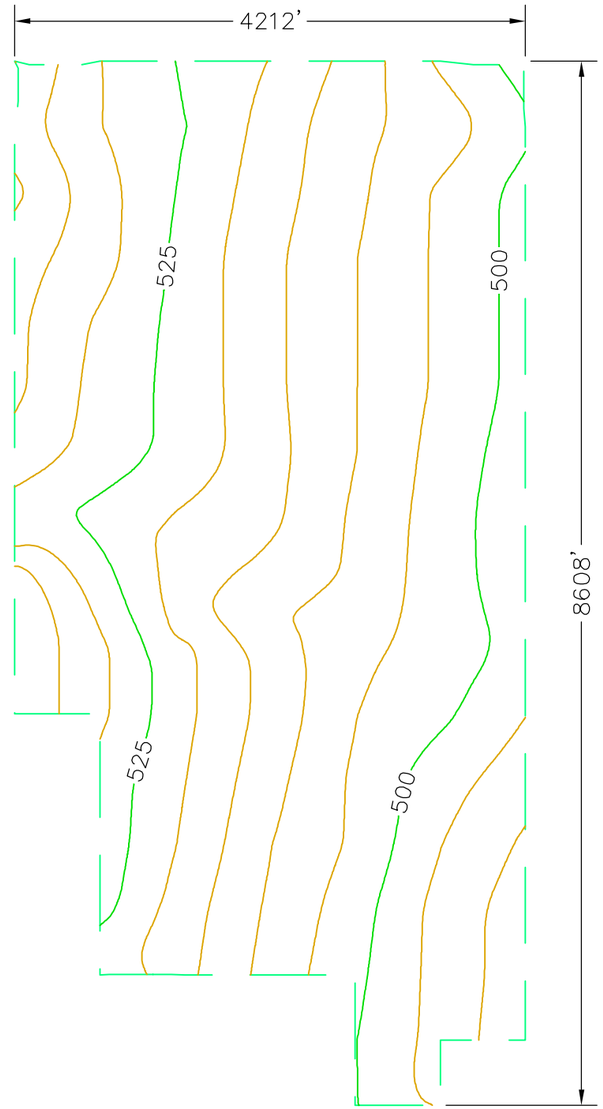
EXISTING SURFACE

LEGEND

LINE	DESCRIPTION
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	PROPOSED SURFACE BOUNDARY

NO SCALE

CONTOUR INTERVAL = 5'



PROPOSED SURFACE
(CONCEPTUAL)

AECOM Technical Services, Inc.
5001 East Commercenter Drive
Suite 100
Bakersfield, CA 93309
T 661.325.7253
www.aecom.com

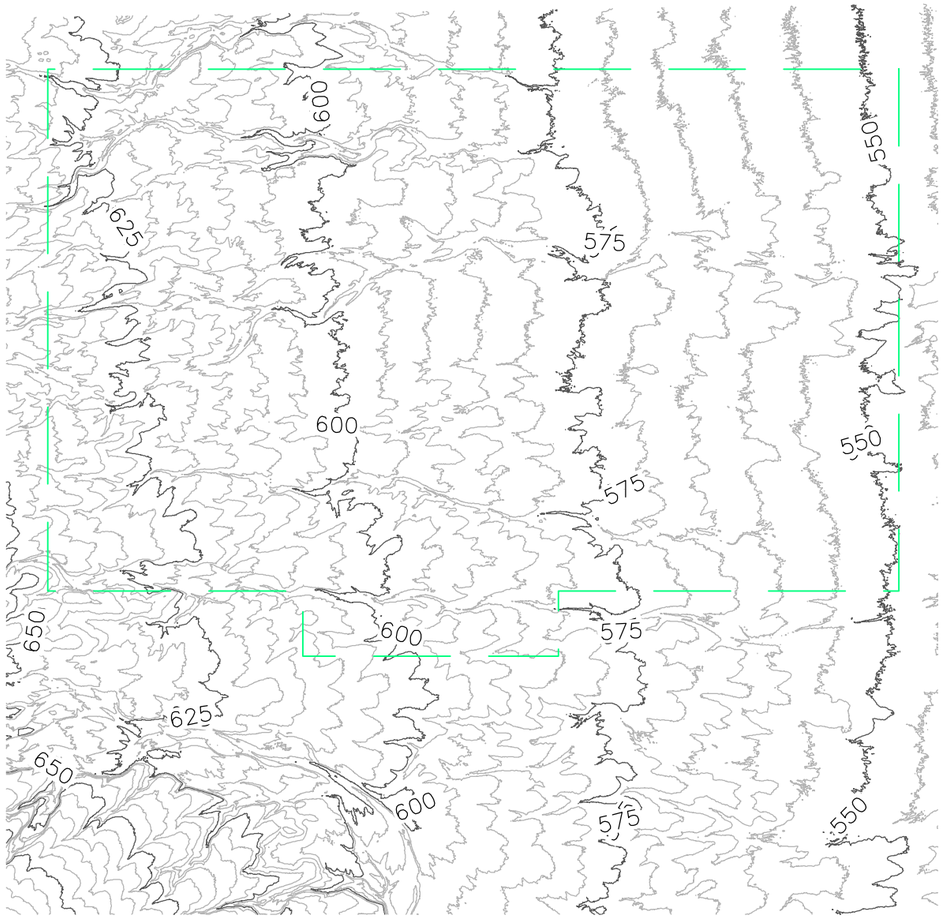
BLYTHE SOLAR POWER PROJECT
UNIT 6

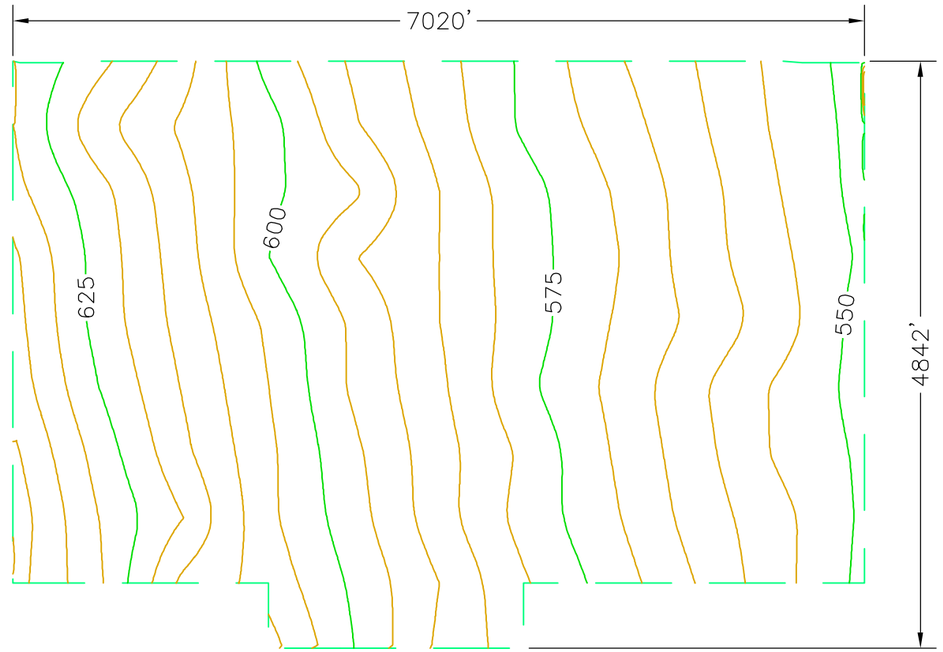
FIGURE
10

LEGEND

LINE	DESCRIPTION
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	PROPOSED SURFACE BOUNDARY

CONTOUR INTERVAL = 5'





NO SCALE

EXISTING SURFACE

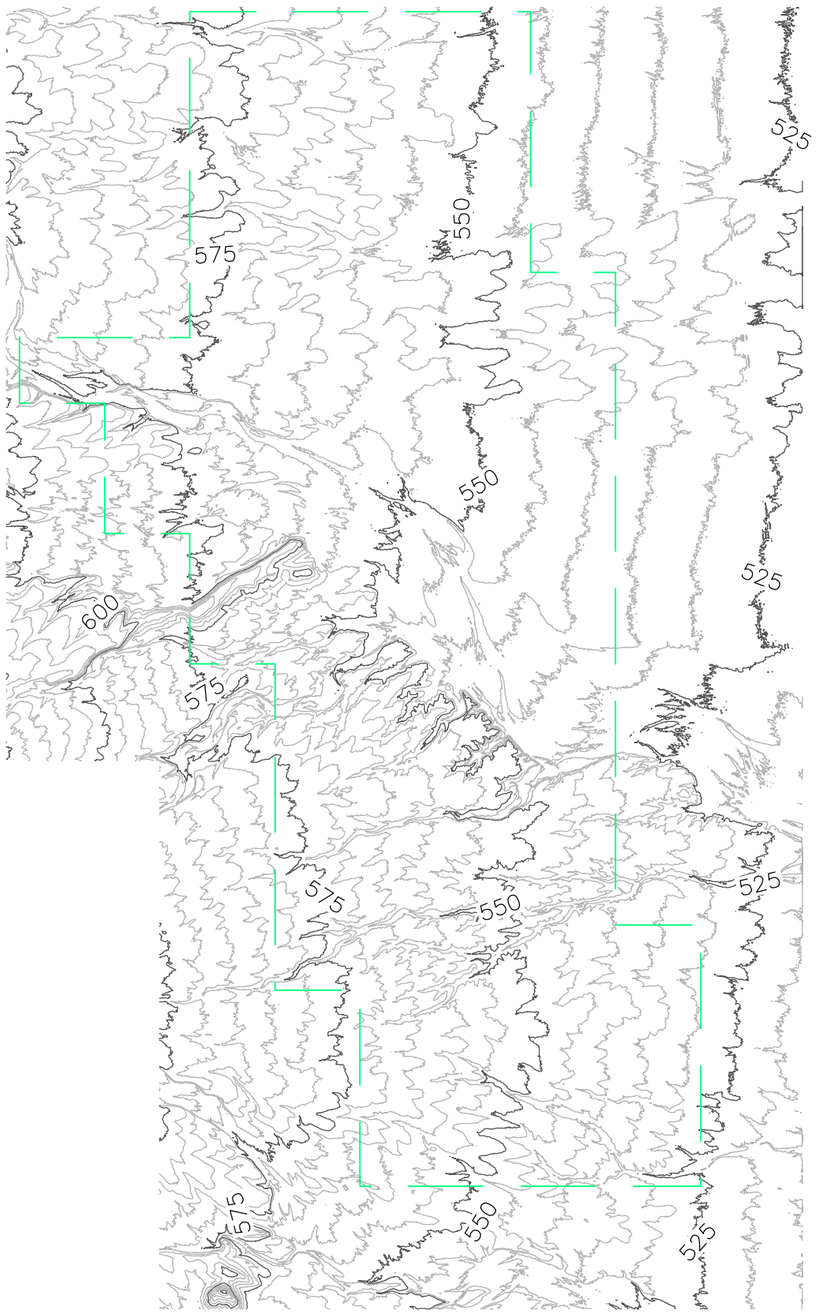
PROPOSED SURFACE
(CONCEPTUAL)

AECOM Technical Services, Inc.
5001 East Commercenter Drive
Suite 100
Bakersfield, CA 93309
T 661.325.7253
www.aecom.com

AECOM

BLYTHE SOLAR POWER PROJECT
UNIT 7

FIGURE
11



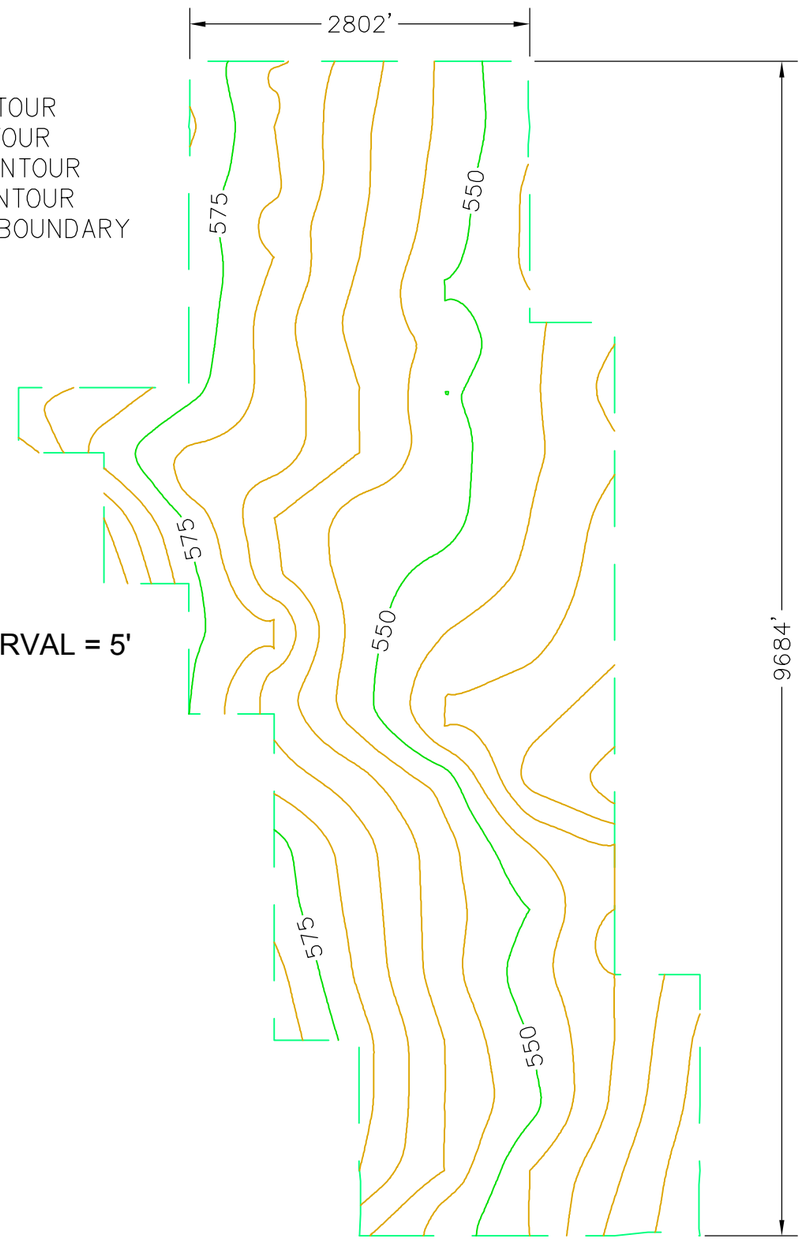
EXISTING SURFACE

LEGEND

LINE	DESCRIPTION
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	PROPOSED SURFACE BOUNDARY

CONTOUR INTERVAL = 5'

NO SCALE



PROPOSED SURFACE
(CONCEPTUAL)

AECOM Technical Services, Inc.
5001 East Commercenter Drive
Suite 100
Bakersfield, CA 93309
T 661.325.7253
www.aecom.com

AECOM

BLYTHE SOLAR POWER PROJECT
UNIT 8

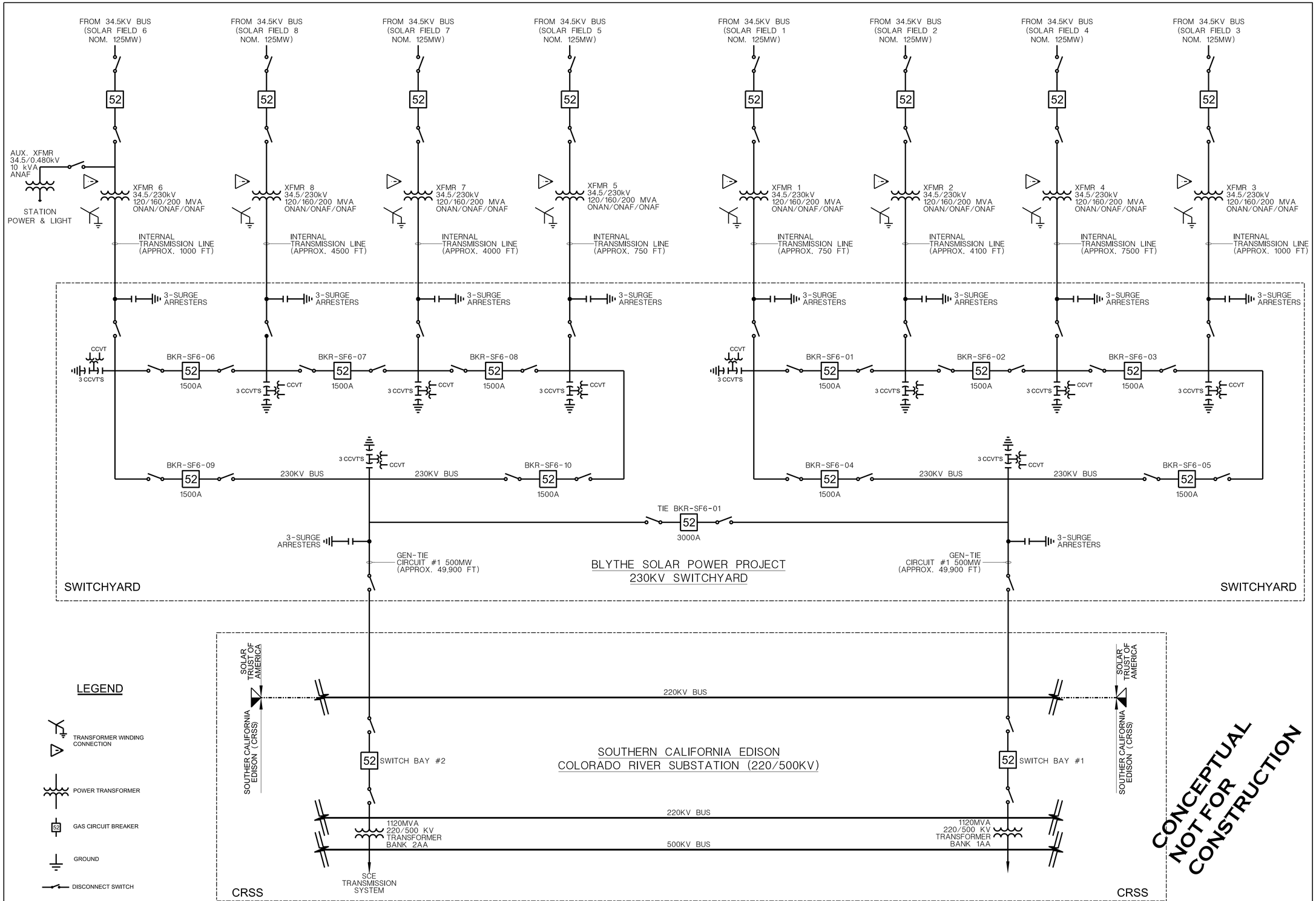
FIGURE
12

APPENDIX C

PRELIMINARY ONE-LINE DIAGRAM

AND

PRELIMINARY SWITCHYARD LAYOUT



SOLAR TRUST OF AMERICA

SOLAR TRUST OF AMERICA
1111 Broadway, 5th Floor
Oakland, CA 94607
TEL: 510 563-6501

LICENSE STAMP:

SCALE: 1/2"= 1'-0" (UNLESS NOTED)

DRAWN BY RKK
CHECKED BY DGG
APPROVED BY

DATE:	DESCRIPTION:
9/9/2011	CONCEPTUAL REVIEW

PROJECT:

BLYTHE SOLAR POWER PROJECT

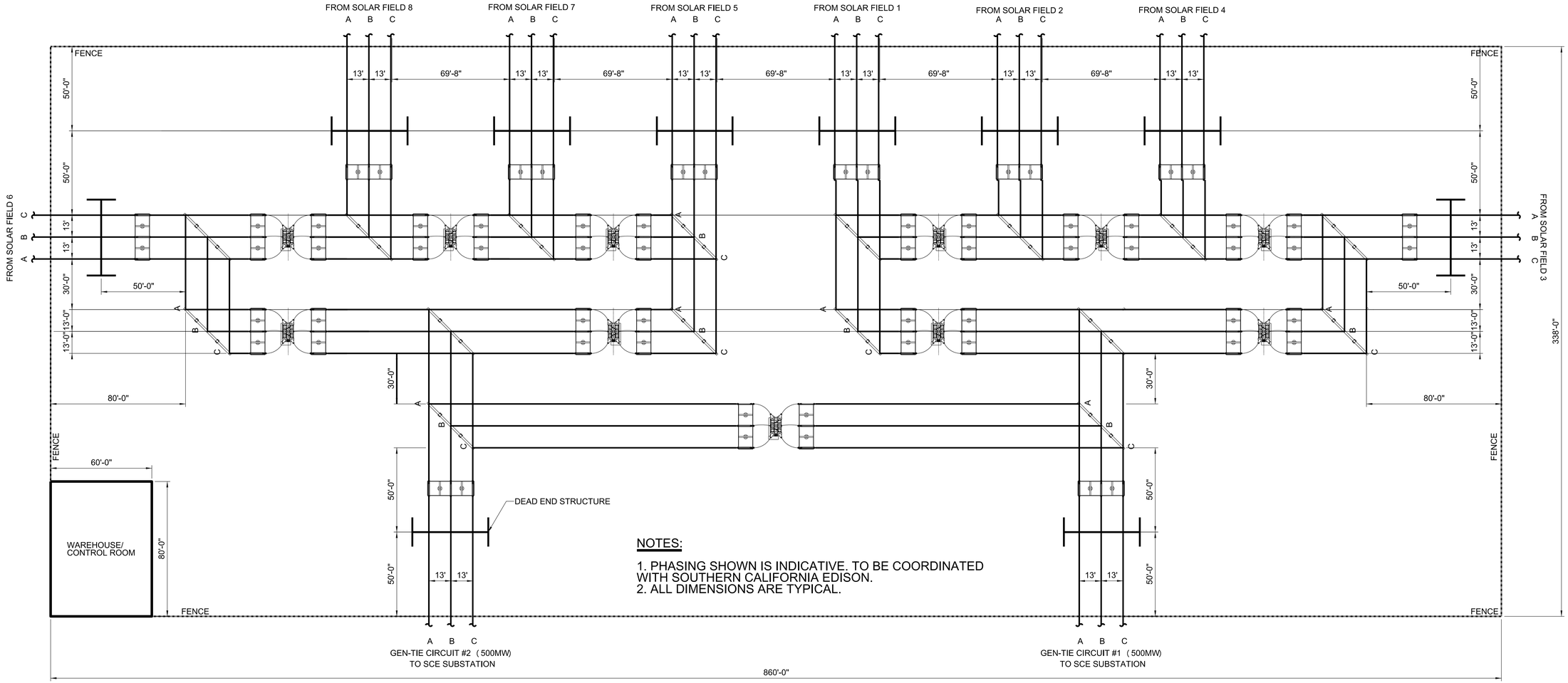
1000 MW SOLAR PHOTO-VOLTAIC

CLIENT
BSPP

SHEET TITLE:

CONCEPTUAL HIGH VOLTAGE SINGLE LINE DIAGRAM

SHEET NO.:
E1



PLAN

CONCEPTUAL
NOT FOR
CONSTRUCTION

SOLAR TRUST OF AMERICA
1111 Broadway, 5th Floor
Oakland, CA 94607
TEL: 510 563–6501

LICENSE STAMP:

SCALE: 1/32"= 1'-0"
(UNLESS NOTED)

DRAWN BY RKK
CHECKED BY DGG
APPROVED BY

DATE:	DESCRIPTION:
9/9/2011	CONCEPTUAL REVIEW

PROJECT:

BLYTHE SOLAR POWER PROJECT

1000 MW SOLAR PHOTO-VOLTAIC

CLIENT
BSPP

SHEET TITLE:

CONCEPTUAL 230KV SWICHYARD PLAN

SHEET NO.:

E3

APPENDIX D

AIR QUALITY AND PUBLIC HEALTH CONSTRUCTION

EMISSIONS AND IMPACT ANALYSIS

Construction Emissions and Impact Analysis

Construction Phases

Construction of the Project is expected to last approximately 75 months (6.25 years). The construction will occur in the following main phases:

- Transmission line construction – 12 months (Months 1-12)
- Access road construction – 3 months (Months 6-8)
- Phase 1 civil (site preparation) – 5 months (Months 9-13)
- Phase 1 PV field erection – 7 months (Months 14-20)
- Each successive Phase 2 through 8 (same period as Phase 1) but stepped over the period from Months 17-75), see Table 7 for construction line schedule.

The estimated Project ROW, as leased from BLM is 9,400 acres. The final development portion of the site is approximately 6946 acres in size and is located in fairly flat desert terrain. Each Phase (1-8) will consist of approximately 868 acres. All of the phase acres will actually be disturbed during the construction phase, with only 30 acres subject to construction activities on any given day during the civil-site preparation sub-phase, and approximately 15 acres subject to activity during the erection sub-phase. The site is currently vacant. As such, the site will require moderate grading and leveling prior to construction of the power blocks, support systems, and site buildings. Site preparation (civil work) includes initial and finish grading, cut and fill activities, excavation of footings and foundations, and backfilling operations. After site preparation is finished, the construction-erection sub-phase of the PV fields and structures is expected to begin. It should be noted that the site access road, which is approximately 1.5 miles in length, will be constructed and paved prior to the start of construction on Phase 1. This road has already experienced a preliminary level of construction activity, i.e., initial grading and compaction, and clearing of ROWs.

Fugitive dust emissions from the construction of the Project will result from:

- Dust entrained during site preparation and finish grading/excavation at the construction site;
- Dust entrained during onsite travel on paved and unpaved surfaces;
- Dust entrained during aggregate and soil loading and unloading operations; and
- Wind erosion of areas disturbed during construction activities.

Combustion emissions during construction will result from:

- Exhaust from the gasoline and diesel construction equipment used for site preparation, grading, excavation, and construction of onsite structures;
- Exhaust from water trucks used to control construction dust emissions;
- Exhaust from gasoline or diesel-powered welding machines, electric generators, air compressors, and water pumps;

- Exhaust from gasoline pickup trucks and diesel trucks used to transport workers and materials around the construction site;
- Exhaust from diesel trucks used to deliver concrete, fuel, and construction supplies to the construction site; and,
- Exhaust from automobiles used by workers to commute to the construction site.

To determine the potential worst-case daily construction impacts, exhaust and dust emission rates have been evaluated for each source of emissions. Worst-case daily onsite exhaust and dust emissions are expected to occur during the overlap of the civil phase of Unit 8, as this phase has the largest amount of cut and fill activity due to its proximity to the alluvial foothills on the western edge of the site, and the end of the erection phase of Unit 7.

Worst-case daily offsite dust and exhaust emissions are expected to occur during the overlap period of the gentie and access road construction phases, i.e., 3 months.

Construction related fugitive dust emissions are based on a modified version of the EPA AP-42, Section 13.2.3 procedure, as implemented in the MRI Level II analysis. This procedure essentially uses an emissions factor in terms of tons/acre/month of construction activity. The MRI Level II analysis also includes an estimation procedure for quantifying fugitive dust emissions from construction related cut and fill activities. This procedure is widely used (and approved for use) per the following documents and programs:

- MRI Report No. 95040, SCAQMD Project, March 1996.
- URBEMIS Model, Version 9.2.4, Users Manual, Appendix A, Page A-6.
- CARB Area Source Methodology Manual, Section 7.7, 9/02.
- Western Regional Air Partnership, Fugitive Dust Handbook, 9/06.
- USEPA, AP-42, Section 13.2.3, 2/10.
- Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.

This estimation procedure has been used in numerous AFC construction related analyses, as well as a wide range of CEQA and NEPA analyses for projects ranging in size from less than 5 acres to large power (thermal, solar, and wind) and transmission line construction projects involving site or project acreages from 300 to over 6000 acres.

In addition to the above, the equipment use rates for the various project phases were derived in part from the following reference, and reviewed by the Applicant: *Plan of Development, Amargosa North Solar PV Project (ANSP), NVN 084465, Nye County, Nevada, Pacific Solar Investments, Inc., Sept 2009*

The ANSP is a 150 MW PV solar facility subject to NEPA, reviewed by the BLM (Las Vegas Field Office). The equipment use rates for phases applicable to the BSPP were adjusted based on the following parameters:

1. Ratio of project MW rating.
2. Construction schedule and phase differences.
3. Acreage differences.
4. Applicant review of final equipment list for each phase.

The following basic manpower estimates are applicable to the various project construction components:

- The transmission (gentie) line construction crew will consist of 40 workers (maximum) per day.
- The road construction crew will consist of 30 workers (maximum) per day.
- The civil-land preparation sub-phase for each power block area will have approximately 30 workers (maximum) on site per day.
- The erection-installation sub-phase for each power block will have 200 workers (maximum) on site per day.

Other data for construction, by area, is as follows:

- The transmission line (gentie line) will consist of a maximum of 90 monopole structures (sites). This is based on the maximum gentie route length of 6.5 miles, and a span distance between monopoles of 400 ft. Each monopole site will have a disturbance area of 400 sq.ft., and a spur road (unpaved) of 100 ft. in length and 15 ft. in width. Monopoles require a single foundation bore-hole for installation.
- The plant access road off of Black Rock Rd. to the site entrance will be approximately 1.5 miles long, and 24 ft. wide. This road will be built to County specifications with an asphalt concrete cover. This road will be paved prior to the start of the power block construction phases (1-8).
- Each power block (Phases 1-8) will have approximately 10% of its total area paved by asphalt concrete, with an additional 10% covered by a coarse gravel surface, and the remaining 80%(primarily the PV fields) will be unpaved native soil.

Cautionary note: Reviewers should not compare the construction emissions estimates for the proposed PV facility to the previous solar/thermal at the same site, due to the following:

- Differences in site arrangement, solar field equipment, and deletion of the thermal power block processes.
- Differences in the construction schedules and phasing.
- Differences in the construction manpower requirements for the new facility.
- Differences in the construction equipment types and use rates.
- Differences in the processes proposed, i.e. PV vs. solar/thermal.
- Differences in the proposed offsite linears, i.e., no need for a utility corridor for natural gas pipeline.

Available Mitigation Measures

The following mitigation measures are proposed to control exhaust emissions from the gasoline and diesel construction equipment used during construction of BSPP:

- Operational measures, such as limiting time spent with the engine idling by shutting down equipment when not in use;
- Regular preventive maintenance to prevent emission increases due to engine problems;

- Use of low sulfur and low aromatic fuel meeting California standards for motor vehicle diesel fuel; and
- Use of low-emitting gas and diesel engines meeting state and federal emissions standards (Tier I, II, or III based on HP rating and mfg year) for construction equipment, including, but not limited to catalytic converter systems and particulate filter systems.

The following mitigation measures are proposed to control fugitive dust emissions during construction of the project:

- Use either water application or chemical dust suppressant application to control dust emissions from on-site unpaved road travel and unpaved parking areas;
- Use vacuum sweeping and/or water flushing of paved road surface to remove buildup of loose material to control dust emissions from travel on the paved access road (including adjacent public streets impacted by construction activities) and paved parking areas;
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard;
- Limit traffic speeds on all unpaved site road areas to 5 mph;
- Install sandbags or other erosion control measures to prevent silt runoff to roadways;
- Replant vegetation in disturbed areas as quickly as possible;
- Use wheel washers or wash off tires of all trucks exiting construction site; and
- Mitigate fugitive dust emissions from wind erosion of areas disturbed from construction activities (including storage piles) by application of either water or chemical dust suppressant.

Estimation of Emissions with Mitigation Measures

Tables 1 and 2 show the estimated daily, period, and annualized heavy equipment exhaust and fugitive dust emissions. Detailed emission calculations are included in Table 9.

Table 1 presents the summary of off-site daily, period and annual emissions (normalized) for the construction phases of the project.

Table 1 Offsite Emissions Summary (lbs/day)

Category	NOx	CO	VOC	SOx	PM10	PM2.5
T-Line Equipment Exhaust	24.3	31.2	3.8	.038	1.48	1.47
Access Road Construction Exhaust	37.2	58.7	5.6	.056	2.32	2.3
T-Line Construction Fugitive Dust	-	-	-	-	.52	.11
Access Road Construction Fugitive Dust	-	-	-	-	.65	.14
Paved Road Dust-Civil Period (each phase 1-8)	-	-	-	-	.41	.07
Paved Road Dust-Erection Period (each phase 1-8)	-	-	-	-	10.59	1.79
Unpaved Road Dust-Civil Period (each phase 1-8)	-	-	-	-	4.44	.44
Unpaved Road Dust-Erection Period (each phase 1-8)	-	-	-	-	31.85	3.13
Truck Delivery/Site Support Exhaust (each phase)	44.1	17.6	3.3	.009	2.1	2.06
Truck Delivery/Site Support Exhaust (T-line)	.96	1.06	.1	.0015	.05	.05
Truck Delivery/Site Support Exhaust (access road)	4.5	2.3	.35	.0022	.22	.21
Worker Travel Exhaust (each civil phase 1-8)	.36	3.95	.15	.01	.06	.06
Worker Travel Exhaust (each erection phase 1-8)	2.61	28.94	1.11	.05	.44	.43

Worker Travel Exhaust (T-line const)	.48	5.26	.2	.01	.08	.08
Worker Travel Exhaust (access road const)	.36	3.95	.15	.01	.06	.06
Track-out Fugitive Dust (each phase)	-	-	-	-	.48	.08
Tons/period						
T-Line Equipment Exhaust	3.8	4.9	.6	.006	.23	.23
Access Road Construction Exhaust	1.5	2.3	.2	.002	.09	.09
T-Line Construction Fugitive Dust	-	-	-	-	.077	.016
Access Road Construction Fugitive Dust	-	-	-	-	.024	.005
Paved Road Dust-Civil Period (each phase 1-8)	-	-	-	-	.03	0
Paved Road Dust-Erection Period (each phase 1-8)	-	-	-	-	.91	.15
Unpaved Road Dust-Civil Period (each phase 1-8)	-	-	-	-	.27	.03
Unpaved Road Dust-Erection Period (each phase 1-8)	-	-	-	-	2.74	.27
Truck Delivery/Site Support Exhaust (each phase)	4.6	1.8	.34	.002	.22	.22
Truck Delivery/Site Support Exhaust (T-line)	.15	.16	.015	.0003	.008	.008
Truck Delivery/Site Support Exhaust (access road)	.18	.09	.014	.0001	.008	.008
Worker Travel Exhaust (each civil phase 1-8)	.023	.257	.01	.0001	.004	.004
Worker Travel Exhaust (each erection phase 1-8)	.239	2.65	.10	.004	.04	.04
Worker Travel Exhaust (T-line const)	.074	.82	.032	.001	.01	.01
Worker Travel Exhaust (access road const)	.014	.15	.006	0	.002	.002
Track-out Fugitive Dust (each phase)	-	-	-	-	.07	.012
Tons/Year (normalized)						
All Offsite Categories	7.2	7.6	.71	.01	5.5	1
Normalized emissions data: Each PV phase (1-8) = 12 months (civil portion=5 months, erection portion=7 months) T-line = 12 months Access road = 3 months Total project = 6.25 years						

Table 2 presents the summary of <u>on-site</u> daily, period and annual emissions (normalized) for the construction phases of the project.

Table 2 On-site Emissions Summary (lbs/day)						
Category	NOx	CO	VOC	SOx	PM10	PM2.5
Phases 1-5 Exhaust-Civil Subphase	103.2	106.5	14.5	.14	6.06	6.01
Phase 6 Exhaust-Civil Subphase	138	119	18.6	.178	7.67	7.6
Phase 7 Exhaust-Civil Subphase	174.4	132.7	22.7	.22	9.19	9.11
Phase 8 Exhaust-Civil Subphase*	189.2	137.3	24.4	.237	9.76	9.68
Phases 1-8 Exhaust-Erection Subphase (Avg)*	98.5	126.8	16.6	.166	6.26	6.2
Phases 1-8 Exhaust-Erection Subphase (Max)	198.4	254.8	33.4	.335	12.57	12.46
Phases 1-5 Fugitive Dust-Civil Subphase	-	-	-	-	9.54	2
Phase 6 Fugitive Dust-Civil Subphase	-	-	-	-	12.1	2.54
Phase 7 Fugitive Dust-Civil Subphase	-	-	-	-	14.9	3.13
Phase 8 Fugitive Dust-Civil Subphase*	-	-	-	-	17.26	3.62
Phases 1-8 Fugitive Dust-Erection Subphase*	-	-	-	-	3.92	.82
Onsite Paved Road Fugitive Dust*	-	-	-	-	.16	.03

Onsite Unpaved Road Fugitive Dust*	-	-	-	-	3.61	.36
Soil Storage Piles-Fugitive Dust*	-	-	-	-	.52	.21
Maximum Onsite Daily Emissions, lbs/day						
*Total of * categories above*	*287.7*	*264.1*	*41*	*.4*	*41.5*	*20.9*
Explanatory notes for maximum onsite daily emissions: *1. The maximum daily emissions would occur at the overlap of the end of the Phase 7 erection phase and the beginning of the Phase 8 civil phase (4 month period).* *2. Average erection Phase 7 exhaust emissions were used, as the probability that the maximum daily exhaust emissions would occur during the overlap period is very low.* *3. These emissions would be spread over two distinct project phases and areas, i.e., approximately 1736 acres.*						
Tons/period						
Phases 1-5 Exhaust-Civil Subphase	6.7	6.9	.9	.009	.39	.39
Phase 6 Exhaust-Civil Subphase	9	7.7	1.2	.012	.5	.49
Phase 7 Exhaust-Civil Subphase	11.3	8.6	1.5	.014	.6	.59
Phase 8 Exhaust-Civil Subphase	12.3	8.9	1.6	.015	.63	.63
Phases 1-8 Exhaust-Erection Subphase (Avg)	9	11.5	1.5	.015	.57	.56
Phases 1-8 Exhaust-Erection Subphase (Max)	18.1	23.2	3	.03	1.14	1.13
Phases 1-5 Fugitive Dust-Civil Subphase	-	-	-	-	.59	.123
Phase 6 Fugitive Dust-Civil Subphase	-	-	-	-	.74	.16
Phase 7 Fugitive Dust-Civil Subphase	-	-	-	-	.92	.2
Phase 8 Fugitive Dust-Civil Subphase	-	-	-	-	1.1	.22
Phases 1-8 Fugitive Dust-Erection Subphase	-	-	-	-	.34	.1
Onsite Paved Road Fugitive Dust (1-8)	-	-	-	-	.01	.001
Onsite Unpaved Road Fugitive Dust (1-8)	-	-	-	-	.56	.06
Soil Storage Piles-Fugitive Dust (1-8)	-	-	-	-	.034	.014
Tons/year (normalized)						
All Onsite Categories (avg year)	22.1	24.3	3.32	.033	3.44	1.72
All Onsite Categories (max year)	33.7	39.2	5.25	.052	4.2	2.45
Notes: Each PV phase (1-8) = 12 months (civil portion=5 months, erection portion=7 months)						

Table 3 presents the estimates of GHGs for the construction phase (total of on- and offsite emissions).

Table 3 GHG Construction Emissions Estimates	
Total CO_2e, short tons/period	9578
Total CO_2e, metric tons/period	8707
Total CO_2e, normalized short tons/yr	1532.5
Total CO_2e, normalized metric tons/yr	1393

The project regional area is currently classified "unclassified/attainment" for all federal air quality standards, therefore a federal conformity determination for construction emissions is not required.

Analysis of Ambient Impacts from Facility Construction

Ambient air quality impacts from emissions during the construction of the Project were estimated using an air quality dispersion modeling analysis. The modeling analysis considers the construction site location, the surrounding topography, and the sources of emissions during construction, including vehicle and equipment exhaust emissions and fugitive dust.

Existing Ambient Levels

Table 4 presents the ambient monitoring data used to establish the background air quality values for the construction impact modeling analysis.

Table 4 Background Air Quality Data for Most Recent 3 Years							
Pollutant	Site	Averaging Time	2009	2010	2011	Background Value, ug/m3	Comments
Ozone, ppm	Blythe-Murphy	1 Hr State	.072	.072	.066	141 ug/m3	high value most recent 3 years
		8 Hr Fed	.064	.064	.062	124 ug/m3	4th highest averaged over 3 years
		8 Hr State	.066	.068	.062	133.5 ug/m3	high value most recent 3 years
PM10, ug/m3	Indio-Jackson	24 Hr State	131	108	324	324 ug/m3	high value most recent 3 years
		24 Hr Fed	79	60	96	96 ug/m3	high 2nd high most recent 3 years
		Annual AM State	31.8	29.7	35.4	35.4 ug/m3	high value most recent 3 years
PM2.5, ug/m3	Indio-Jackson	24 Hr Fed	17	14	13	14.7 ug/m3	98th percentiles averaged over 3 years
		Annual AM State	nd	6.6	6.7	6.7 ug/m3	high value most recent 3 years
		Annual AM Fed	7.8	6.9	6.8	7.8 ug/m3	high value most recent 3 years
CO, ppm	Palm Springs FS	8 Hr State	.67	.56	.64	768 ug/m3	high value most recent 3 years
		1 Hr State	1.7	1.6	3.0	3437 ug/m3	high value most recent 3 years
		8 Hr Fed	.6	.5	.4	687 ug/m3	high 2nd high most recent 3 years
		1 Hr Fed	2.3	1.6	1.1	2635 ug/m3	high 2nd high most recent 3 years
NO2, ppm	Palm Springs FS	1 Hr State	.048	.046	.045	90.2 ug/m3	high value most recent 3 years
		1 Hr Fed	.039	.039	.039	73.3 ug/m3	98th percentiles averaged over 3 years
		Annual AM	.008	.009	.008	16.9 ug/m3	high value most recent 3 years
SO2, ppm	Victorville	Annual AM Fed	.000	.000	.001	2.6 ug/m3	high value most recent 3 years
		24 Hr State	.005	.007	.007	18.4 ug/m3	high value most recent 3 years
		24 Hr Fed	.005	.007	.007	18.4 ug/m3	high 2nd high most recent 3 years
		1 Hr State	.008	.052	.013	136.3 ug/m3	high value most recent 3 years
		1 Hr Fed	.006	.011	.007	28.8 ug/m3	99th percentiles averaged over 3 years

AERMOD Model

The USEPA-approved AERMOD model was used to estimate ambient impacts from construction activities. A detailed discussion of the AERMOD dispersion model is included below.

The AERMOD dispersion model was used to quantify pollutant impacts on the surrounding environment based on the emission sources operating parameters and their locations. AERMOD is part of the USEPA AERMOD modeling system (version 12060). Receptors and meteorological data from the previous Blythe Solar Power Project (Blythe) construction analyses were used, so executions of the AERMOD associated programs (AERMAP, AERSURFACE, and AERMET) were not necessary. The construction impacts modeling analysis used the same receptors as used for previous construction modeling analyses of the Blythe project as the project fenceline will remain the same. Similarly, meteorological data from previous Blythe construction modeling analyses were used. Specifically, the Blythe Airport surface data were combined with upper air data from Desert Rock, Nevada, for the years of 2002-2004. The regulatory default option was used which includes calm and missing meteorological data processing as well as the use of elevated receptor heights (complex terrain) processing.

The emission sources for the construction site were grouped into two categories: exhaust emissions and dust emissions. Both exhaust and fugitive dust emissions were modeled as area sources with initial release heights of 3.7 and 2.0 meters, respectively, and initial sigma-z's of 6.88 and 2.13 meters, respectively, similar to previous construction modeling analyses of the Blythe project. The use of initial sigma-z's is to account for moving sources which can generate mechanical turbulence which initially disperses the plume. .

The modeled area sources covered the expected area of the worst-case construction phases for the applicable average time, namely 868 acres for annual impacts and 45 acres for short-term impacts (representing a single day of construction activities). The area sources were placed in Phase 8 area (i.e., 45 acres in the SW corner of Unit 8 closest to the property boundary for short-term impacts and 868 acres of Unit 8 and contiguous areas in Unit 6 (to make up the necessary acreage). In addition, average daily emissions were used for impact analysis, since the probability of maximum daily exhaust emissions from an erection phase overlapping a civil phase day was considered low.

To determine the construction impacts on short-term ambient standards (24 hours and less), the worst-case daily onsite construction emission levels shown in Table 2 were used, i.e., Phase 8. For pollutants with annual average ambient standards, the annual onsite emission levels shown in Table 2 were used based on the worst-case 12-month period (Phase 8).

Modeling Results

Based on the emission rates of NO_x, SO_2, CO, PM10, and PM2.5 and the meteorological data, the AERMOD model calculates hourly and annual ambient impacts for each pollutant. As mentioned above, the modeled 1-hour, 3-hour 8-hour, and 24-hour ambient impacts are based on the worst-case daily emission rates of NO_x, SO_2, CO, PM10, and PM2.5. The annual impacts of NO_x, PM10, and PM2.5 are based on the annual emission rates of these pollutants.

The one-hour and annual average concentrations of NO_2 were computed following USEPA and SDAPCD guidance for computing these concentrations. The annual average was calculated using the ambient ratio method (ARM) with the national default value of 0.75 for the annual average NO_2/NO_x ratio. The 1-hour NO_2 impacts for comparison to the CAAQS were calculated based on the maximum 1-hour impact using the ozone limiting method (OLM) with ozone data from the Blythe Murphy Street monitoring site for the same time period as the modeled meteorological data. The 1-hour NO2 impacts for comparison to the NAAQS were calculated based on the 3-year average of the eighth highest 1-hour daily maximum NO2 impact using OLM with the same Blythe ozone data.

The modeling analysis results are shown in Table 5. Also included in the table are the maximum background levels that have occurred in the last three years and the resulting total ambient impacts. As shown in Table 4, modeled construction impacts are expected to be below the most stringent state and national standards. Total (i.e., modeled plus background) impacts are greater than the state's PM10 standards because these standards are already exceeded by background ambient concentrations even in the absence of the construction emissions from the Project. Total (modeled+background) concentrations all also greater than the new 1-hour federal NO_2 standard.

Table 5 Modeled Maximum Impacts

Pollutant	Averaging Time	Maximum Impacts (ug/m^3)	Background (ug/m^3)	Total Impacts (ug/m^3)	State Standard (ug/m^3)	Federal Standard (ug/m^3)
NO_2	1 hour CAAQS 1-hour NAAQS Annual	185.9 173.3 0.44	90.2 73.3 16.9	276.1 246.6 17.35	339 - 57	- 188 100
CO	1 hour 8 hour	949 158	3437 768	4386 926	23000 10000	40000 10000
PM_{10}	24 hour CAAQS 24-hour NAAQS Annual	16.5 16.5 0.08	324 96 35.4	340.1 112.5 35.5	50 20	- 150 -
$PM_{2.5}$	24 hour Annual	7.4 0.04	14.7 7.8	22.1 7.84	- 12	35 15.0
SO_2	1 hour 3 hour 24 hour* Annual*	1.44 0.59 0.13 0.001	136.3 N/A 18.42.6	137.7 <136.9 18.53 2.6	655 105	196 1300 365 80
Ozone	1 hour 8 hour	Modeling not required.			180 137	- 147

Notes:

1. Background values are the limiting values, i.e., when used for both state (CAAQS) and federal (NAAQS) standards, the value that is the highest for each applicable averaging time from Table 4 is used.
2. CARB Ambient Air Quality Standards Table, 2-7-12.
3. *Federal SO_2 standards for 24 hour and annual apply only to certain areas (not applicable to this project).
4. Annual values are arithmetic means.
5. ARM applied for annual NO_2 average, using national default ratio of 0.75. Ozone Limiting Method (OLM) applied for 1-hour NO_2 average, calculated by AERMOD as described above.

The AERMOD model is expected over predict construction emission impacts due to the cold plume (i.e., ambient temperature) effect of dust emissions. Most of the plume dispersion characteristics in the AERMOD model are derived from observations of hot plumes associated with typical smoke stacks. The AERMOD model does compensate for plume temperature; however, for ambient temperature plumes the model assumes negligible

buoyancy and dispersion. Consequently, the ambient concentrations in cold plumes remain high even at significant distances from a source. Project construction site impacts are not unusual in comparison to most construction sites; construction sites that use good dust suppression techniques and low-emitting vehicles typically do not cause violations of air quality standards. The input and output modeling files are being provided electronically.

Construction Screening HRA

The screening risk calculation for construction impacts, i.e., diesel equipment particulate matter emissions and the inhalation pathway assumption is presented in Table 6. Consistent with the previous project analysis, no sensitive receptors were noted within a 3-mile radius of the plant site. The resulting impacts to public health are less than the applicable significance level of 1 in a million. Thus, during the construction phase of the project, no impacts to public health are expected to occur.

Table 6 Construction Risk Summary

Parameter	MIR Receptor #1	MIR Receptor #2
Receptor Location	Fence line	Nearest Residential
MIR Receptor Coordinates (UTM meters-NAD83)	705922, 3727306	710535, 3721040
Cancer Risk (per million-6.25 years)	0.69	0.01
Chronic HI	0.007	0.000

The maximum onsite diesel exhaust period emissions (normalized tons/year) were used for risk evaluation purposes.

Maximum annual PM10 combustion source impacts are 0.03605 ug/m^3 for the fenceline receptor, and 0.00070 ug/m^3 for the nearest residential receptor.

Tables and Figures included in this section are as follows:

Blythe PV Development Schedule

Table 7 Estimated Blythe PV Development Schedule

		Year 1												Year 2												Year 3												Year 4												Year 5												Year 6												Year 7		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Gentie Construction		x	x	x	x	x	x	x	x	x	x	x	x																																																															
Main Road Construction							x	x	x																																																																			
Unit 1 Construction										x	x	x	x	x	x	x	x	x	x	x	x																																																							
Unit 2 Construction																		x	x	x	x	x	x	x	x	x	x	x	x																																															
Unit 3 Construction																										x	x	x	x	x	x	x	x	x	x	x	x																																								
Unit 4 Construction																																		x	x	x	x	x	x	x	x	x	x	x	x																														
Unit 5 Construction																																									x	x	x	x	x	x	x	x	x	x	x	x																								
Unit 6 Construction																																																x	x	x	x	x	x	x	x	x	x	x	x																
Unit 7 Construction																																																									x	x	x	x	x	x	x	x	x	x	x	x								
Unit 8 Construction																																																																x	x	x	x	x	x	x	x	x	x	x	x
Civil Work																																																																													
Erection Work																																																																													

Total const period = 75 months, 6.25 years
Each PV Unit phase = 12 months, 1 year, 5 months civil, 7 months construction/erection
Total civil months = 55 months
Total PV unit const months = 56 months

Worst Case Periods:
1. offsite - 3 month overlap of gentie and road construction
2. onsite - 4 month overlap of next civil subphase with previous erection subphase
(Phase 8 civil and Phase 7 erection overlap = worst case phase period)

Table 8 Fleet Average Emission Factors (Diesel)

2013

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	LBS/HP-HR						
Equipment	MaxHP	ROG	CO	NOX	SOX	PM	CO2	CH4	ROG	CO	NOX	SOX	PM	CO2	CH4
Aerial Lifts	15	0.0101	0.0528	0.0637	0.0001	0.0027	8.7	0.0009	0.0007	0.0035	0.0042	0.000009	0.0002	0.5768	0.000061
	25	0.0166	0.0503	0.0937	0.0001	0.0051	11.0	0.0015	0.0007	0.0020	0.0037	0.000006	0.0002	0.4384	0.000060
	50	0.0592	0.1757	0.1840	0.0003	0.0156	19.6	0.0053	0.0012	0.0035	0.0037	0.000005	0.0003	0.3923	0.000107
	120	0.0558	0.2425	0.3758	0.0004	0.0299	38.1	0.0050	0.0005	0.0020	0.0031	0.000004	0.0002	0.3173	0.000042
	500	0.1191	0.4671	1.5310	0.0021	0.0448	213	0.0107	0.0002	0.0009	0.0031	0.000004	0.0001	0.4257	0.000021
	750	0.2221	0.8443	2.8534	0.0039	0.0825	385	0.0200	0.0003	0.0011	0.0038	0.000005	0.0001	0.5130	0.000027
Aerial Lifts Total		0.0529	0.1925	0.3059	0.0004	0.0202	34.7	0.0048							
Air Compressors	15	0.0122	0.0484	0.0732	0.0001	0.0048	7.2	0.0011	0.0008	0.0032	0.0049	0.000007	0.0003	0.4815	0.000073
	25	0.0266	0.0744	0.1306	0.0002	0.0081	14.4	0.0024	0.0011	0.0030	0.0052	0.000007	0.0003	0.5778	0.000096
	50	0.0921	0.2546	0.2221	0.0003	0.0220	22.3	0.0083	0.0018	0.0051	0.0044	0.000006	0.0004	0.4454	0.000166
	120	0.0825	0.3251	0.4991	0.0006	0.0456	47.0	0.0074	0.0007	0.0027	0.0042	0.000005	0.0004	0.3913	0.000062
	175	0.1059	0.5054	0.8385	0.0010	0.0472	88.5	0.0096	0.0006	0.0029	0.0048	0.000006	0.0003	0.5056	0.000055
	250	0.1007	0.2955	1.1320	0.0015	0.0347	131	0.0091	0.0004	0.0012	0.0045	0.000006	0.0001	0.5249	0.000036
	500	0.1626	0.5399	1.7639	0.0023	0.0570	232	0.0147	0.0003	0.0011	0.0035	0.000005	0.0001	0.4635	0.000029
	750	0.2547	0.8344	2.8139	0.0036	0.0898	358	0.0230	0.0003	0.0011	0.0038	0.000005	0.0001	0.4775	0.000031
	1000	0.4190	1.4213	5.0841	0.0049	0.1474	486	0.0378	0.0004	0.0014	0.0051	0.000005	0.0001	0.4864	0.000038
Air Compressors Total		0.0913	0.3376	0.6065	0.0007	0.0434	63.6	0.0082							
Bore/Drill Rigs	15	0.0120	0.0632	0.0754	0.0002	0.0029	10.3	0.0011	0.0008	0.0042	0.0050	0.000011	0.0002	0.6897	0.000072
	25	0.0193	0.0658	0.1226	0.0002	0.0049	16.0	0.0017	0.0008	0.0026	0.0049	0.000008	0.0002	0.6395	0.000070
	50	0.0289	0.2282	0.2568	0.0004	0.0120	31.0	0.0026	0.0006	0.0046	0.0051	0.000008	0.0002	0.6207	0.000052
	120	0.0447	0.4698	0.4583	0.0009	0.0257	77.1	0.0040	0.0004	0.0039	0.0038	0.000008	0.0002	0.6427	0.000034
	175	0.0704	0.7538	0.6931	0.0016	0.0302	141	0.0063	0.0004	0.0043	0.0040	0.000009	0.0002	0.8062	0.000036
	250	0.0795	0.3429	0.7632	0.0021	0.0221	188	0.0072	0.0003	0.0014	0.0031	0.000008	0.0001	0.7524	0.000029
	500	0.1295	0.5517	1.1717	0.0031	0.0361	311	0.0117	0.0003	0.0011	0.0023	0.000006	0.0001	0.6226	0.000023
	750	0.2565	1.0899	2.3376	0.0062	0.0715	615	0.0231	0.0003	0.0015	0.0031	0.000008	0.0001	0.8201	0.000031
	1000	0.4163	1.6675	5.9553	0.0093	0.1544	928	0.0376	0.0004	0.0017	0.0060	0.000009	0.0002	0.9283	0.000038
Bore/Drill Rigs Total		0.0786	0.5044	0.8125	0.0017	0.0302	165	0.0071							
Cement and Mortar	15	0.0074	0.0386	0.0470	0.0001	0.0021	6.3	0.0007	0.0005	0.0026	0.0031	0.000007	0.0001	0.4213	0.000045
	25	0.0270	0.0813	0.1510	0.0002	0.0083	17.6	0.0024	0.0011	0.0033	0.0060	0.000009	0.0003	0.7022	0.000098
Cement and Mortar Mixers Total		0.0091	0.0421	0.0556	0.0001	0.0026	7.2	0.0008							
Concrete/Industrial	25	0.0199	0.0678	0.1257	0.0002	0.0049	16.5	0.0018	0.0008	0.0027	0.0050	0.000008	0.0002	0.6591	0.000072
	50	0.0955	0.2918	0.2858	0.0004	0.0247	30.2	0.0086	0.0019	0.0058	0.0057	0.000008	0.0005	0.6042	0.000172
	120	0.1065	0.4836	0.7154	0.0009	0.0589	74.1	0.0096	0.0009	0.0040	0.0060	0.000007	0.0005	0.6179	0.000080
	175	0.1569	0.8701	1.3612	0.0018	0.0706	160	0.0142	0.0009	0.0050	0.0078	0.000010	0.0004	0.9154	0.000081
Concrete/Industrial Saws Total		0.1002	0.4088	0.5572	0.0007	0.0452	58.5	0.0090							
Cranes	50	0.1015	0.2892	0.2394	0.0003	0.0239	23.2	0.0092	0.0020	0.0058	0.0048	0.000006	0.0005	0.4637	0.000183
	120	0.0919	0.3618	0.5508	0.0006	0.0493	50.1	0.0083	0.0008	0.0030	0.0046	0.000005	0.0004	0.4179	0.000069
	175	0.1031	0.4821	0.7769	0.0009	0.0445	80.3	0.0093	0.0006	0.0028	0.0044	0.000005	0.0003	0.4591	0.000053
	250	0.1040	0.2948	0.9948	0.0013	0.0351	112	0.0094	0.0004	0.0012	0.0040	0.000005	0.0001	0.4486	0.000038
	500	0.1551	0.5292	1.4230	0.0018	0.0518	180	0.0140	0.0003	0.0011	0.0028	0.000004	0.0001	0.3602	0.000028
	750	0.2625	0.8887	2.4614	0.0030	0.0885	303	0.0237	0.0003	0.0012	0.0033	0.000004	0.0001	0.4041	0.000032
	9999	0.9491	3.3249	10.3665	0.0098	0.3189	971	0.0856							
Cranes Total		0.1348	0.4737	1.1934	0.0014	0.0508	129	0.0122							

Crawler Tractors	50	0.1176	0.3246	0.2627	0.0003	0.0270	24.9	0.0106	0.0024	0.0065	0.0053	0.000006	0.0005	0.4976	0.000212
	120	0.1293	0.4858	0.7686	0.0008	0.0677	65.8	0.0117	0.0011	0.0040	0.0064	0.000006	0.0006	0.5484	0.000097
	175	0.1674	0.7448	1.2529	0.0014	0.0713	121	0.0151	0.0010	0.0043	0.0072	0.000008	0.0004	0.6925	0.000086
	250	0.1764	0.5000	1.5945	0.0019	0.0613	166	0.0159	0.0007	0.0020	0.0064	0.000007	0.0002	0.6645	0.000064
	500	0.2542	0.9504	2.2389	0.0025	0.0868	259	0.0229	0.0005	0.0019	0.0045	0.000005	0.0002	0.5185	0.000046
	750	0.4574	1.6983	4.1042	0.0047	0.1573	465	0.0413	0.0006	0.0023	0.0055	0.000006	0.0002	0.6196	0.000055
	1000	0.6901	2.6950	7.3731	0.0066	0.2361	658	0.0623	0.0007	0.0027	0.0074	0.000007	0.0002	0.6581	0.000062
Crawler Tractors Total		0.1584	0.5900	1.1593	0.0013	0.0697	114	0.0143							
Crushing/Proc. Equ	50	0.1741	0.5009	0.4359	0.0006	0.0422	44.0	0.0157	0.0035	0.0100	0.0087	0.000011	0.0008	0.8803	0.000314
	120	0.1402	0.5764	0.8552	0.0010	0.0779	83.1	0.0127	0.0012	0.0048	0.0071	0.000008	0.0006	0.6928	0.000105
	175	0.1942	0.9615	1.5237	0.0019	0.0864	167	0.0175	0.0011	0.0055	0.0087	0.000011	0.0005	0.9558	0.000100
	250	0.1848	0.5425	2.0202	0.0028	0.0620	245	0.0167	0.0007	0.0022	0.0081	0.000011	0.0002	0.9781	0.000067
	500	0.2608	0.8480	2.7097	0.0037	0.0884	374	0.0235	0.0005	0.0017	0.0054	0.000007	0.0002	0.7473	0.000047
	750	0.4147	1.3191	4.4498	0.0059	0.1418	589	0.0374	0.0006	0.0018	0.0059	0.000008	0.0002	0.7851	0.000050
	9999	1.1270	3.6752	13.3218	0.0131	0.3880	1,308	0.1017							
Crushing/Proc. Equipment Total		0.1733	0.6773	1.1752	0.0015	0.0748	132	0.0156							
Dumpers/Tenders	25	0.0097	0.0320	0.0601	0.0001	0.0029	7.6	0.0009	0.0004	0.0013	0.0024	0.000004	0.0001	0.3050	0.000035
Dumpers/Tenders Total		0.0097	0.0320	0.0601	0.0001	0.0029	7.6	0.0009							
Excavators	25	0.0198	0.0677	0.1253	0.0002	0.0047	16.4	0.0018	0.0008	0.0027	0.0050	0.000008	0.0002	0.6576	0.000072
	50	0.0816	0.2841	0.2458	0.0003	0.0212	25.0	0.0074	0.0016	0.0057	0.0049	0.000006	0.0004	0.5004	0.000147
	120	0.1086	0.5177	0.6791	0.0009	0.0586	73.6	0.0098	0.0009	0.0043	0.0057	0.000007	0.0005	0.6135	0.000082
	175	0.1208	0.6668	0.8932	0.0013	0.0512	112	0.0109	0.0007	0.0038	0.0051	0.000007	0.0003	0.6413	0.000062
	250	0.1242	0.3541	1.1360	0.0018	0.0372	159	0.0112	0.0005	0.0014	0.0045	0.000007	0.0001	0.6347	0.000045
	500	0.1735	0.5271	1.4763	0.0023	0.0516	234	0.0157	0.0003	0.0011	0.0030	0.000005	0.0001	0.4675	0.000031
	750	0.2895	0.8731	2.5290	0.0039	0.0871	387	0.0261	0.0004	0.0012	0.0034	0.000005	0.0001	0.5166	0.000035
Excavators Total		0.1220	0.5338	0.9071	0.0013	0.0481	120	0.0110							
Forklifts	50	0.0445	0.1623	0.1431	0.0002	0.0121	14.7	0.0040	0.0009	0.0032	0.0029	0.000004	0.0002	0.2934	0.000080
	120	0.0438	0.2176	0.2788	0.0004	0.0241	31.2	0.0040	0.0004	0.0018	0.0023	0.000003	0.0002	0.2602	0.000033
	175	0.0572	0.3307	0.4261	0.0006	0.0246	56.1	0.0052	0.0003	0.0019	0.0024	0.000004	0.0001	0.3203	0.000030
	250	0.0570	0.1614	0.5281	0.0009	0.0168	77.1	0.0051	0.0002	0.0006	0.0021	0.000003	0.0001	0.3085	0.000021
	500	0.0781	0.2208	0.6592	0.0011	0.0228	111	0.0070	0.0002	0.0004	0.0013	0.000002	0.0000	0.2220	0.000014
Forklifts Total		0.0541	0.2235	0.3950	0.0006	0.0204	54.4	0.0049							
Generator Sets	15	0.0149	0.0684	0.1016	0.0002	0.0058	10.2	0.0013	0.0010	0.0046	0.0068	0.000011	0.0004	0.6805	0.000090
	25	0.0266	0.0908	0.1594	0.0002	0.0091	17.6	0.0024	0.0011	0.0036	0.0064	0.000009	0.0004	0.7053	0.000096
	50	0.0872	0.2639	0.2847	0.0004	0.0234	30.6	0.0079	0.0017	0.0053	0.0057	0.000008	0.0005	0.6125	0.000157
	120	0.1106	0.4905	0.7587	0.0009	0.0590	77.9	0.0100	0.0009	0.0041	0.0063	0.000008	0.0005	0.6496	0.000083
	175	0.1347	0.7388	1.2314	0.0016	0.0592	142	0.0122	0.0008	0.0042	0.0070	0.000009	0.0003	0.8113	0.000069
	250	0.1277	0.4365	1.6763	0.0024	0.0464	213	0.0115	0.0005	0.0017	0.0067	0.000010	0.0002	0.8500	0.000046
	500	0.1818	0.7230	2.3955	0.0033	0.0690	337	0.0164	0.0004	0.0014	0.0048	0.000007	0.0001	0.6737	0.000033
	750	0.3035	1.1671	3.9863	0.0055	0.1134	544	0.0274	0.0004	0.0016	0.0053	0.000007	0.0002	0.7251	0.000037
Generator Sets Total		0.0767	0.3045	0.5430	0.0007	0.0324	61.0	0.0069							
Graders	50	0.1080	0.3263	0.2772	0.0004	0.0262	27.5	0.0097	0.0022	0.0065	0.0055	0.000007	0.0005	0.5508	0.000195
	120	0.1254	0.5310	0.7729	0.0009	0.0676	75.0	0.0113	0.0010	0.0044	0.0064	0.000007	0.0006	0.6247	0.000094
	175	0.1467	0.7345	1.1193	0.0014	0.0631	124	0.0132	0.0008	0.0042	0.0064	0.000008	0.0004	0.7081	0.000076
	250	0.1492	0.4331	1.4184	0.0019	0.0494	172	0.0135	0.0006	0.0017	0.0057	0.000008	0.0002	0.6885	0.000054
	500	0.1855	0.6289	1.6842	0.0023	0.0608	229	0.0167	0.0004	0.0013	0.0034	0.000005	0.0001	0.4590	0.000033
	750	0.3952	1.3289	3.6674	0.0049	0.1306	486	0.0357	0.0005	0.0018	0.0049	0.000007	0.0002	0.6477	0.000048
Graders Total		0.1446	0.6053	1.1663	0.0015	0.0593	133	0.0130							
Off-Highway Tractc	120	0.2113	0.7191	1.2368	0.0011	0.1078	93.7	0.0191	0.0018	0.0060	0.0103	0.000009	0.0009	0.7811	0.000159
	175	0.2045	0.8335	1.5337	0.0015	0.0871	130	0.0185	0.0012	0.0048	0.0088	0.000008	0.0005	0.7452	0.000105
	250	0.1641	0.4691	1.4453	0.0015	0.0601	130	0.0148	0.0007	0.0019	0.0058	0.000006	0.0002	0.5217	0.000059
	750	0.6538	2.8815	5.8130	0.0057	0.2353	568	0.0590	0.0009	0.0038	0.0078	0.000008	0.0003	0.7575	0.000079

	1000	0.9818	4.4978	10.0554	0.0082	0.3436	814	0.0886	0.0010	0.0045	0.0101	0.000008	0.0003	0.8143	0.000089
Off-Highway Tractors Total		0.2077	0.7649	1.7062	0.0017	0.0818	151	0.0187							
Off-Highway Trucks	175	0.1441	0.7580	1.0305	0.0014	0.0602	125	0.0130	0.0008	0.0043	0.0059	0.000008	0.0003	0.7148	0.000074
	250	0.1400	0.3837	1.2373	0.0019	0.0412	167	0.0126	0.0006	0.0015	0.0049	0.000007	0.0002	0.6662	0.000051
	500	0.2170	0.6362	1.7865	0.0027	0.0634	272	0.0196	0.0004	0.0013	0.0036	0.000005	0.0001	0.5447	0.000039
	750	0.3542	1.0311	2.9938	0.0044	0.1046	442	0.0320	0.0005	0.0014	0.0040	0.000006	0.0001	0.5890	0.000043
	1000	0.5484	1.6691	5.9808	0.0063	0.1796	625	0.0495	0.0005	0.0017	0.0060	0.000006	0.0002	0.6247	0.000049
Off-Highway Trucks Total		0.2141	0.6361	1.8543	0.0027	0.0644	260	0.0193							
Other Construction	15	0.0118	0.0617	0.0737	0.0002	0.0029	10.1	0.0011	0.0008	0.0041	0.0049	0.000010	0.0002	0.6738	0.000071
	25	0.0160	0.0544	0.1013	0.0002	0.0041	13.2	0.0014	0.0006	0.0022	0.0041	0.000007	0.0002	0.5287	0.000058
	50	0.0753	0.2653	0.2585	0.0004	0.0205	28.0	0.0068	0.0015	0.0053	0.0052	0.000007	0.0004	0.5598	0.000136
	120	0.1006	0.5277	0.7025	0.0009	0.0567	80.9	0.0091	0.0008	0.0044	0.0059	0.000008	0.0005	0.6738	0.000076
	175	0.0935	0.5873	0.8011	0.0012	0.0420	107	0.0084	0.0005	0.0034	0.0046	0.000007	0.0002	0.6087	0.000048
	500	0.1452	0.5234	1.5187	0.0025	0.0491	254	0.0131	0.0003	0.0010	0.0030	0.000005	0.0001	0.5085	0.000026
Other Construction Equipment To		0.0872	0.3765	0.7938	0.0013	0.0330	123	0.0079							
Other General Indu	15	0.0066	0.0391	0.0466	0.0001	0.0018	6.4	0.0006	0.0004	0.0026	0.0031	0.000007	0.0001	0.4264	0.000040
	25	0.0185	0.0632	0.1170	0.0002	0.0044	15.3	0.0017	0.0007	0.0025	0.0047	0.000008	0.0002	0.6140	0.000067
	50	0.0980	0.2738	0.2243	0.0003	0.0232	21.7	0.0088	0.0020	0.0055	0.0045	0.000006	0.0005	0.4349	0.000177
	120	0.1177	0.4487	0.6789	0.0007	0.0644	62.0	0.0106	0.0010	0.0037	0.0057	0.000006	0.0005	0.5170	0.000089
	175	0.1261	0.5728	0.9333	0.0011	0.0549	95.9	0.0114	0.0007	0.0033	0.0053	0.000006	0.0003	0.5482	0.000065
	250	0.1174	0.3177	1.2013	0.0015	0.0380	136	0.0106	0.0005	0.0013	0.0048	0.000006	0.0002	0.5423	0.000042
	500	0.2135	0.6384	2.0642	0.0026	0.0693	265	0.0193	0.0004	0.0013	0.0041	0.000005	0.0001	0.5308	0.000039
	750	0.3546	1.0522	3.5146	0.0044	0.1165	437	0.0320	0.0005	0.0014	0.0047	0.000006	0.0002	0.5833	0.000043
	1000	0.5246	1.6793	6.0067	0.0056	0.1805	560	0.0473	0.0005	0.0017	0.0060	0.000006	0.0002	0.5596	0.000047
Other General Industrial Equipme		0.1542	0.5159	1.3484	0.0016	0.0580	152	0.0139							
Other Material Han	50	0.1361	0.3789	0.3119	0.0004	0.0323	30.3	0.0123	0.0027	0.0076	0.0062	0.000008	0.0006	0.6067	0.000246
	120	0.1144	0.4370	0.6628	0.0007	0.0628	60.7	0.0103	0.0010	0.0036	0.0055	0.000006	0.0005	0.5056	0.000086
	175	0.1591	0.7257	1.1860	0.0014	0.0696	122	0.0144	0.0009	0.0041	0.0068	0.000008	0.0004	0.6976	0.000082
	250	0.1241	0.3385	1.2829	0.0016	0.0405	145	0.0112	0.0005	0.0014	0.0051	0.000007	0.0002	0.5801	0.000045
	500	0.1521	0.4596	1.4883	0.0019	0.0498	192	0.0137	0.0003	0.0009	0.0030	0.000004	0.0001	0.3833	0.000027
Other Material Handling Equipme		0.1473	0.4951	1.3132	0.0015	0.0562	141	0.0133							
Pavers	25	0.0247	0.0799	0.1500	0.0002	0.0075	18.7	0.0022	0.0010	0.0032	0.0060	0.000009	0.0003	0.7464	0.000089
	50	0.1366	0.3592	0.2948	0.0004	0.0308	28.0	0.0123	0.0027	0.0072	0.0059	0.000007	0.0006	0.5598	0.000246
	120	0.1387	0.5057	0.8357	0.0008	0.0729	69.2	0.0125	0.0012	0.0042	0.0070	0.000007	0.0006	0.5766	0.000104
	175	0.1777	0.7784	1.3769	0.0014	0.0769	128	0.0160	0.0010	0.0044	0.0079	0.000008	0.0004	0.7331	0.000092
	250	0.2072	0.6081	1.9469	0.0022	0.0756	194	0.0187	0.0008	0.0024	0.0078	0.000009	0.0003	0.7775	0.000075
	500	0.2275	0.9254	2.1080	0.0023	0.0818	233	0.0205	0.0005	0.0019	0.0042	0.000005	0.0002	0.4665	0.000041
Pavers Total		0.1511	0.5357	0.8542	0.0009	0.0603	77.9	0.0136							
Paving Equipment	25	0.0153	0.0520	0.0968	0.0002	0.0039	12.6	0.0014	0.0006	0.0021	0.0039	0.000006	0.0002	0.5051	0.000055
	50	0.1166	0.3049	0.2514	0.0003	0.0263	23.9	0.0105	0.0023	0.0061	0.0050	0.000006	0.0005	0.4785	0.000210
	120	0.1087	0.3958	0.6561	0.0006	0.0574	54.5	0.0098	0.0009	0.0033	0.0055	0.000005	0.0005	0.4542	0.000082
	175	0.1387	0.6079	1.0816	0.0011	0.0602	101	0.0125	0.0008	0.0035	0.0062	0.000006	0.0003	0.5773	0.000072
	250	0.1277	0.3763	1.2206	0.0014	0.0467	122	0.0115	0.0005	0.0015	0.0049	0.000006	0.0002	0.4892	0.000046
Paving Equipment Total		0.1142	0.4316	0.7709	0.0008	0.0536	68.9	0.0103							
Plate Compactors	15	0.0050	0.0263	0.0314	0.0001	0.0012	4.3	0.0005	0.0003	0.0018	0.0021	0.000004	0.0001	0.2876	0.000030
Plate Compactors Total		0.0050	0.0263	0.0314	0.0001	0.0012	4.3	0.0005							
Pressure Washers	15	0.0071	0.0328	0.0487	0.0001	0.0028	4.9	0.0006	0.0005	0.0022	0.0032	0.000005	0.0002	0.3260	0.000043
	25	0.0108	0.0368	0.0646	0.0001	0.0037	7.1	0.0010	0.0004	0.0015	0.0026	0.000004	0.0001	0.2859	0.000039
	50	0.0315	0.1037	0.1284	0.0002	0.0094	14.3	0.0028	0.0006	0.0021	0.0026	0.000004	0.0002	0.2859	0.000057
	120	0.0302	0.1443	0.2235	0.0003	0.0157	24.1	0.0027	0.0003	0.0012	0.0019	0.000002	0.0001	0.2006	0.000023

Pressure Washers Total		0.0159	0.0619	0.0878	0.0001	0.0058	9.4	0.0014							
Pumps	15	0.0125	0.0497	0.0752	0.0001	0.0049	7.4	0.0011	0.0008	0.0033	0.0050	0.000008	0.0003	0.4949	0.000075
	25	0.0359	0.1004	0.1761	0.0002	0.0109	19.5	0.0032	0.0014	0.0040	0.0070	0.000010	0.0004	0.7795	0.000129
	50	0.1052	0.3116	0.3228	0.0004	0.0275	34.3	0.0095	0.0021	0.0062	0.0065	0.000009	0.0005	0.6867	0.000190
	120	0.1149	0.4984	0.7706	0.0009	0.0617	77.9	0.0104	0.0010	0.0042	0.0064	0.000008	0.0005	0.6496	0.000086
	175	0.1385	0.7405	1.2344	0.0016	0.0611	140	0.0125	0.0008	0.0042	0.0071	0.000009	0.0003	0.8007	0.000071
	250	0.1266	0.4210	1.6140	0.0023	0.0457	201	0.0114	0.0005	0.0017	0.0065	0.000009	0.0002	0.8055	0.000046
	500	0.1952	0.7595	2.4849	0.0034	0.0734	345	0.0176	0.0004	0.0015	0.0050	0.000007	0.0001	0.6904	0.000035
	750	0.3326	1.2556	4.2353	0.0057	0.1235	571	0.0300	0.0004	0.0017	0.0056	0.000008	0.0002	0.7609	0.000040
Pumps Total		0.0748	0.2926	0.4705	0.0006	0.0323	49.6	0.0067							
Rollers	15	0.0074	0.0386	0.0461	0.0001	0.0018	6.3	0.0007	0.0005	0.0026	0.0031	0.000007	0.0001	0.4213	0.000044
	25	0.0161	0.0549	0.1023	0.0002	0.0041	13.3	0.0015	0.0006	0.0022	0.0041	0.000007	0.0002	0.5337	0.000058
	50	0.1025	0.2911	0.2583	0.0003	0.0245	26.0	0.0092	0.0020	0.0058	0.0052	0.000007	0.0005	0.5197	0.000185
	120	0.0986	0.4063	0.6253	0.0007	0.0534	59.0	0.0089	0.0008	0.0034	0.0052	0.000006	0.0004	0.4916	0.000074
	175	0.1247	0.6199	1.0114	0.0012	0.0550	108	0.0113	0.0007	0.0035	0.0058	0.000007	0.0003	0.6180	0.000064
	250	0.1262	0.3887	1.3124	0.0017	0.0451	153	0.0114	0.0005	0.0016	0.0052	0.000007	0.0002	0.6124	0.000046
	500	0.1654	0.6313	1.6820	0.0022	0.0593	219	0.0149	0.0003	0.0013	0.0034	0.000004	0.0001	0.4382	0.000030
Rollers Total		0.0973	0.4060	0.6546	0.0008	0.0453	67.1	0.0088							
Rough Terrain Fork	50	0.1181	0.3778	0.3316	0.0004	0.0300	33.9	0.0107	0.0024	0.0076	0.0066	0.000009	0.0006	0.6772	0.000213
	120	0.0955	0.4327	0.5995	0.0007	0.0529	62.4	0.0086	0.0008	0.0036	0.0050	0.000006	0.0004	0.5204	0.000072
	175	0.1352	0.7256	1.0448	0.0014	0.0592	125	0.0122	0.0008	0.0041	0.0060	0.000008	0.0003	0.7137	0.000070
	250	0.1294	0.3798	1.2955	0.0019	0.0416	171	0.0117	0.0005	0.0015	0.0052	0.000008	0.0002	0.6832	0.000047
	500	0.1824	0.5717	1.7096	0.0025	0.0584	257	0.0165	0.0004	0.0011	0.0034	0.000005	0.0001	0.5131	0.000033
Rough Terrain Forklifts Total		0.1009	0.4642	0.6526	0.0008	0.0532	70.3	0.0091							
Rubber Tired Doze	175	0.2119	0.8457	1.5561	0.0015	0.0893	129	0.0191	0.0012	0.0048	0.0089	0.000008	0.0005	0.7399	0.000109
	250	0.2435	0.6833	2.0817	0.0021	0.0881	183	0.0220	0.0010	0.0027	0.0083	0.000008	0.0004	0.7339	0.000088
	500	0.3211	1.4228	2.7305	0.0026	0.1133	265	0.0290	0.0006	0.0028	0.0055	0.000005	0.0002	0.5297	0.000058
	750	0.4843	2.1329	4.1797	0.0040	0.1716	399	0.0437	0.0006	0.0028	0.0056	0.000005	0.0002	0.5317	0.000058
	1000	0.7496	3.4322	7.4509	0.0060	0.2591	592	0.0676	0.0007	0.0034	0.0075	0.000006	0.0003	0.5919	0.000068
Rubber Tired Dozers Total		0.2986	1.1749	2.5452	0.0025	0.1064	239	0.0269							
Rubber Tired Load	25	0.0204	0.0697	0.1292	0.0002	0.0050	16.9	0.0018	0.0008	0.0028	0.0052	0.000009	0.0002	0.6772	0.000074
	50	0.1200	0.3641	0.3118	0.0004	0.0292	31.1	0.0108	0.0024	0.0073	0.0062	0.000008	0.0006	0.6230	0.000216
	120	0.0971	0.4152	0.6015	0.0007	0.0525	58.9	0.0088	0.0008	0.0035	0.0050	0.000006	0.0004	0.4909	0.000073
	175	0.1238	0.6274	0.9501	0.0012	0.0535	106	0.0112	0.0007	0.0036	0.0054	0.000007	0.0003	0.6075	0.000064
	250	0.1259	0.3685	1.2125	0.0017	0.0417	149	0.0114	0.0005	0.0015	0.0048	0.000007	0.0002	0.5959	0.000045
	500	0.1867	0.6397	1.7158	0.0023	0.0613	237	0.0168	0.0004	0.0013	0.0034	0.000005	0.0001	0.4740	0.000034
	750	0.3850	1.3084	3.6184	0.0049	0.1276	486	0.0347	0.0005	0.0017	0.0048	0.000007	0.0002	0.6474	0.000046
	1000	0.5190	1.8389	5.9660	0.0060	0.1795	594	0.0468	0.0005	0.0018	0.0060	0.000006	0.0002	0.5939	0.000047
Rubber Tired Loaders Total		0.1195	0.4763	0.9346	0.0012	0.0508	109	0.0108							
Scrapers	120	0.1877	0.6943	1.1141	0.0011	0.0983	93.9	0.0169	0.0016	0.0058	0.0093	0.000009	0.0008	0.7825	0.000141
	175	0.2070	0.9107	1.5564	0.0017	0.0884	148	0.0187	0.0012	0.0052	0.0089	0.000010	0.0005	0.8461	0.000107
	250	0.2252	0.6408	2.0481	0.0024	0.0791	209	0.0203	0.0009	0.0026	0.0082	0.000009	0.0003	0.8379	0.000081
	500	0.3186	1.2113	2.8288	0.0032	0.1099	321	0.0287	0.0006	0.0024	0.0057	0.000006	0.0002	0.6429	0.000057
	750	0.5525	2.0861	4.9949	0.0056	0.1918	555	0.0499	0.0007	0.0028	0.0067	0.000007	0.0003	0.7404	0.000066
Scrapers Total		0.2783	1.0395	2.4118	0.0027	0.1005	262	0.0251							
Signal Boards	15	0.0072	0.0377	0.0450	0.0001	0.0018	6.2	0.0006	0.0005	0.0025	0.0030	0.000006	0.0001	0.4113	0.000043
	50	0.1151	0.3456	0.3415	0.0005	0.0296	36.2	0.0104	0.0023	0.0069	0.0068	0.000009	0.0006	0.7238	0.000208
	120	0.1176	0.5214	0.7807	0.0009	0.0644	80.2	0.0106	0.0010	0.0043	0.0065	0.000008	0.0005	0.6684	0.000088
	175	0.1535	0.8341	1.3333	0.0017	0.0685	155	0.0139	0.0009	0.0048	0.0076	0.000010	0.0004	0.8831	0.000079
	250	0.1632	0.5350	1.9963	0.0029	0.0580	255	0.0147	0.0007	0.0021	0.0080	0.000011	0.0002	1.0212	0.000059
Signal Boards Total		0.0192	0.0934	0.1399	0.0002	0.0077	16.7	0.0017							

Skid Steer Loaders	25	0.0202	0.0620	0.1166	0.0002	0.0063	13.8	0.0018	0.0008	0.0025	0.0047	0.000007	0.0003	0.5518	0.000073
	50	0.0517	0.2263	0.2279	0.0003	0.0157	25.5	0.0047	0.0010	0.0045	0.0046	0.000007	0.0003	0.5104	0.000093
	120	0.0429	0.2748	0.3267	0.0005	0.0245	42.8	0.0039	0.0004	0.0023	0.0027	0.000004	0.0002	0.3563	0.000032
Skid Steer Loaders Total		0.0468	0.2309	0.2522	0.0004	0.0179	30.3	0.0042							
Surfacing Equipme	50	0.0477	0.1403	0.1359	0.0002	0.0119	14.1	0.0043	0.0010	0.0028	0.0027	0.000004	0.0002	0.2822	0.000086
	120	0.0970	0.4215	0.6523	0.0007	0.0517	63.8	0.0088	0.0008	0.0035	0.0054	0.000006	0.0004	0.5314	0.000073
	175	0.0894	0.4730	0.7742	0.0010	0.0392	85.8	0.0081	0.0005	0.0027	0.0044	0.000006	0.0002	0.4901	0.000046
	250	0.1025	0.3374	1.1177	0.0015	0.0376	135	0.0092	0.0004	0.0013	0.0045	0.000006	0.0002	0.5395	0.000037
	500	0.1532	0.6418	1.6597	0.0022	0.0567	221	0.0138	0.0003	0.0013	0.0033	0.000004	0.0001	0.4424	0.000028
	750	0.2443	1.0046	2.6697	0.0035	0.0900	347	0.0220	0.0003	0.0013	0.0036	0.000005	0.0001	0.4627	0.000029
Surfacing Equipment Total		0.1277	0.5182	1.2760	0.0017	0.0468	166	0.0115							
Sweepers/Scrubbe	15	0.0124	0.0729	0.0870	0.0002	0.0034	11.9	0.0011	0.0008	0.0049	0.0058	0.000012	0.0002	0.7959	0.000074
	25	0.0237	0.0808	0.1496	0.0002	0.0058	19.6	0.0021	0.0009	0.0032	0.0060	0.000010	0.0002	0.7845	0.000085
	50	0.1048	0.3425	0.3055	0.0004	0.0271	31.6	0.0095	0.0021	0.0068	0.0061	0.000008	0.0005	0.6310	0.000189
	120	0.1107	0.5147	0.6989	0.0009	0.0622	75.0	0.0100	0.0009	0.0043	0.0058	0.000007	0.0005	0.6253	0.000083
	175	0.1439	0.7997	1.1204	0.0016	0.0637	139	0.0130	0.0008	0.0046	0.0064	0.000009	0.0004	0.7943	0.000074
	250	0.1146	0.3382	1.1784	0.0018	0.0362	162	0.0103	0.0005	0.0014	0.0047	0.000007	0.0001	0.6481	0.000041
Sweepers/Scrubbers Total		0.1148	0.5145	0.6862	0.0009	0.0510	78.5	0.0104							
Tractors/Loaders/B	25	0.0195	0.0657	0.1237	0.0002	0.0056	15.9	0.0018	0.0008	0.0026	0.0049	0.000008	0.0002	0.6345	0.000070
	50	0.0893	0.3199	0.2893	0.0004	0.0238	30.3	0.0081	0.0018	0.0064	0.0058	0.000008	0.0005	0.6069	0.000161
	120	0.0694	0.3529	0.4565	0.0006	0.0383	51.7	0.0063	0.0006	0.0029	0.0038	0.000005	0.0003	0.4311	0.000052
	175	0.0988	0.5861	0.7696	0.0011	0.0428	101	0.0089	0.0006	0.0033	0.0044	0.000007	0.0002	0.5794	0.000051
	250	0.1204	0.3666	1.1658	0.0019	0.0370	172	0.0109	0.0005	0.0015	0.0047	0.000008	0.0001	0.6869	0.000043
	500	0.2290	0.7443	2.0659	0.0039	0.0701	345	0.0207	0.0005	0.0015	0.0041	0.000008	0.0001	0.6897	0.000041
	750	0.3462	1.1159	3.2041	0.0058	0.1072	517	0.0312	0.0005	0.0015	0.0043	0.000008	0.0001	0.6897	0.000042
Tractors/Loaders/Backhoes Total		0.0792	0.3782	0.5392	0.0008	0.0387	66.8	0.0071							
Trenchers	15	0.0099	0.0517	0.0617	0.0001	0.0024	8.5	0.0009	0.0007	0.0034	0.0041	0.000009	0.0002	0.5643	0.000059
	25	0.0397	0.1355	0.2511	0.0004	0.0097	32.9	0.0036	0.0016	0.0054	0.0100	0.000017	0.0004	1.3167	0.000143
	50	0.1566	0.4082	0.3432	0.0004	0.0353	32.9	0.0141	0.0031	0.0082	0.0069	0.000009	0.0007	0.6584	0.000283
	120	0.1281	0.4684	0.7862	0.0008	0.0669	64.9	0.0116	0.0011	0.0039	0.0066	0.000006	0.0006	0.5408	0.000096
	175	0.1955	0.8632	1.5520	0.0016	0.0849	144	0.0176	0.0011	0.0049	0.0089	0.000009	0.0005	0.8223	0.000101
	250	0.2354	0.7089	2.2485	0.0025	0.0880	223	0.0212	0.0009	0.0028	0.0090	0.000010	0.0004	0.8916	0.000085
	500	0.2985	1.3011	2.8470	0.0031	0.1105	311	0.0269	0.0006	0.0026	0.0057	0.000006	0.0002	0.6226	0.000054
	750	0.5663	2.4440	5.4715	0.0059	0.2099	587	0.0511	0.0008	0.0033	0.0073	0.000008	0.0003	0.7825	0.000068
Trenchers Total		0.1427	0.4675	0.6684	0.0007	0.0549	58.7	0.0129							
Welders	15	0.0104	0.0416	0.0629	0.0001	0.0041	6.2	0.0009	0.0007	0.0028	0.0042	0.000006	0.0003	0.4138	0.000063
	25	0.0208	0.0581	0.1020	0.0001	0.0063	11.3	0.0019	0.0008	0.0023	0.0041	0.000006	0.0003	0.4514	0.000075
	50	0.0979	0.2753	0.2535	0.0003	0.0240	26.0	0.0088	0.0020	0.0055	0.0051	0.000007	0.0005	0.5192	0.000177
	120	0.0654	0.2659	0.4099	0.0005	0.0358	39.5	0.0059	0.0005	0.0022	0.0034	0.000004	0.0003	0.3292	0.000049
	175	0.1101	0.5455	0.9083	0.0011	0.0490	98.2	0.0099	0.0006	0.0031	0.0052	0.000006	0.0003	0.5611	0.000057
	250	0.0855	0.2618	1.0026	0.0013	0.0301	119	0.0077	0.0003	0.0010	0.0040	0.000005	0.0001	0.4763	0.000031
	500	0.1092	0.3838	1.2526	0.0016	0.0394	168	0.0098	0.0002	0.0008	0.0025	0.000003	0.0001	0.3352	0.000020
Welders Total		0.0646	0.2096	0.2564	0.0003	0.0225	25.6	0.0058							

Average Emissions Factors, lb/hr:	0.1105	0.4296	0.8339	0.0010	0.0441	94.4934	0.0100
All Equip, HP Categories	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
	ROG	CO	NOX	SOX	PM	CO2	CH4

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

TABLE 9 (64 pages)

Project: Blythe Solar Power **GenTie Line (Offsite Linear)**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of:

diesel	0.06	gal/hp-hr
gasoline	0.11	gal/hp-hr

Ref: EPA, NR-009b Publication, November 2002.
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:

10	hrs/day	Construction Totals:	260	hrs/month
6	days/week		3120	hrs/const period
26	days/month		312	days/const period
12	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	2	8	60	16	3344	960	200640
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	1	8	120	8	1552	960	186240
Crawler Tractors/Dozers	120	0	0	0	0	0	0	0
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	1	6	200	6	150	1200	30000
Excavators	152	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	120	2	6	260	12	1440	3120	374400
Generators/Compressors	50	0	0	0	0	0	0	0
Graders	157	1	6	120	6	942	720	113040
Off Hwy Tractors	120	0	0	0	0	0	0	0
Off Hwy Trucks (All Uses)	250	1	6	200	6	1500	1200	300000
Other Diesel-Cable/Pull Trucks	175	3	8	30	24	4200	720	126000
Pavers	99	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	91	0	0	0	0	0	0	0
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	1	6	90	6	594	540	53460
Rough Terrain Forklifts	120	1	6	120	6	720	720	86400
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	0	0	0	0	0	0	0
Scrapers	267	0	0	0	0	0	0	0
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	120	1	6	150	6	720	900	108000
Trenchers	120	0	0	0	0	0	0	0
Welders	50	3	8	100	24	1200	2400	120000
Other Const. Eq.- GASOLINE	175	2	6	120	12	2100	1440	252000

* the gentie line is an offsite linear project

** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	1698180	
Const Period Gasoline Hp-Hrs =	252000	
Const Period Diesel Fuel Use =	101891	gals
Const Period Gasoline Fuel Use =	27720	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

		2013 Equipment Emissions Factors							
Equip. Type	**HP**	**lbs/hp-hr CO**	**lbs/hp-hr VOC as ROG**	**lbs/hp-hr NOx**	**lbs/hp-hr SOx**	**lbs/hp-hr PM10**	**lbs/hp-hr CO2**	**lbs/hp-hr CH4**	**lbs/hp-hr N2O**
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	250	0.001530	0.000560	0.004950	0.000007	0.000165	0.666000	0.000051	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5721*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	863	81	795	2	35	161515	7	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	512	110	827	1	47	85484	10	0
Crawler Tractors/Dozers	0	0	0	0	0	0	0	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	38	12	72	0	3	9150	1	0
Excavators	0	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	753	170	1157	1	91	118685	15	0
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	474	95	723	1	41	79919	9	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	459	168	1485	2	50	199800	15	0
Other Const. Eq.-Diesel	422	68	577	1	30	76608	6	0
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	181	44	279	0	24	26249	4	0
Rough Terrain Forklifts	311	69	432	1	38	44928	6	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	318	63	411	1	35	46548	6	0
Trenchers	0	0	0	0	0	0	0	0
Welders	652	228	605	1	57	62280	21	0
Other Const. Eq.-Gasoline	4763	65	227	1	12	144648	4	13

Totals	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4	N2O
lbs per const. period	9744	1170	7589	12	462	457.91	1055814	103	13
tons per const. period	4.9	0.6	3.8	0.006	0.23	0.23	527.91	0.05	0.01
Estimated Maximum lbs/day =	31.2	3.8	24.3	0.038	1.48	1.47	3384.02	0.33	0.04
Average lbs/day =	*25.0*	*3.0*	*19.5*	*0.031*	*1.18*	*1.17*	*2707.2*	*0.3*	*0.0*
Average lbs/month =	812.0	97.5	632.4	0.99	38.51	38.16	87984.53	8.62	1.06

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Plant Access Road (Offsite Linear)**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	260	hrs/month
	6	days/week		780	hrs/const period
	26	days/month		78	days/const period
	3	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	0	0	0	0	0	0	0
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	1	8	60	8	960	480	57600
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump,Tender, Water Trucks	25	2	8	70	16	400	1120	28000
Excavators	152	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	120	0	0	0	0	0	0	0
Generators/Compressors	50	0	0	0	0	0	0	0
Graders	157	2	8	60	16	2512	960	150720
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	250	1	8	60	8	2000	480	120000
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	1	8	20	8	792	160	15840
Paving Eq./Surfacing Eq.	91	1	8	20	8	728	160	14560
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	2	8	60	16	1584	960	95040
Rough Terrain Forklifts	120	0	0	0	0	0	0	0
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	0	0	0	0	0	0	0
Scrapers	267	0	0	0	0	0	0	0
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	1	8	45	8	400	360	18000
Tractors/Loaders/Backhoes	120	0	0	0	0	0	0	0
Trenchers	120	0	0	0	0	0	0	0
Welders	50	0	0	0	0	0	0	0
Other Const. Eq.- GASOLINE	175	2	6	75	12	2100	900	157500

*includes equipment and use rates for proposed offsite linears.
** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	499760	
Const Period Gasoline Hp-Hrs =	157500	
Const Period Diesel Fuel Use =	29986	gals
Const Period Gasoline Fuel Use =	17325	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

		2013 Equipment Emissions Factors							
Equip. Type	**HP**	**lbs/hp-hr CO**	**lbs/hp-hr VOC** as ROG	**lbs/hp-hr NOx**	**lbs/hp-hr SOx**	**lbs/hp-hr PM10**	**lbs/hp-hr CO2**	**lbs/hp-hr CH4**	**lbs/hp-hr N2O**
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	250	0.001530	0.000560	0.004950	0.000007	0.000165	0.666000	0.000051	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5721*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	233	62	369	0	33	31565	6	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	36	11	67	0	3	8540	1	0
Excavators	0	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	0
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	632	127	965	1	55	106559	11	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	184	67	594	1	20	79920	6	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	67	18	110	0	10	9124	2	0
Paving Eq./Surfacing Eq.	51	12	79	0	6	7731	1	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	321	78	495	1	42	46665	7	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	82	19	82	0	6	9180	2	0
Tractors/Loaders/Backhoes	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	2977	40	142	1	7	90405	2	8

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
lbs per const. period	4582	434	2903	4	181	179.57	389689	38	8
tons per const. period	2.3	0.2	1.5	0.002	0.09	0.09	194.84	0.02	0.00
Estimated Maximum lbs/day =	58.7	5.6	37.2	0.056	2.32	2.30	4996.01	0.48	0.10
Average lbs/day =	*47.0*	*4.5*	*29.8*	*0.045*	*1.86*	*1.84*	*3996.8*	*0.4*	*0.1*
Average lbs/month =	1527.2	144.7	967.5	1.4	60.40	59.86	129896.23	12.60	2.66

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Each 125 MW Block, Phases 1-5**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	260	hrs/month
	6	days/week		1300	hrs/const period
	26	days/month		130	days/const period
	5	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	0	0	0	0	0	0	0
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	1	8	110	8	960	880	105600
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	5	8	100	40	1000	4000	100000
Excavators	152	1	8	100	8	1216	800	121600
Forklifts/Aerial Lifts/Booms	120	0	0	0	0	0	0	0
Generators/Compressors	50	0	0	0	0	0	0	0
Graders	157	4	8	110	32	5024	3520	552640
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	250	1	6	125	6	1500	750	187500
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	91	0	0	0	0	0	0	0
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	1	8	60	8	792	480	47520
Rough Terrain Forklifts	120	0	0	0	0	0	0	0
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	0	0	0	0	0	0	0
Scrapers	267	2	8	110	16	4272	1760	469920
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	3	8	90	24	1200	2160	108000
Tractors/Loaders/Backhoes	120	4	8	90	32	3840	2880	345600
Trenchers	120	2	8	90	16	1920	1440	172800
Welders	50	0	0	0	0	0	0	0
Other Const. Eq.- GASOLINE	175	2	8	125	16	2800	2000	350000

*includes equipment and use rates for proposed offsite linears.

** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	2211180	
Const Period Gasoline Hp-Hrs =	350000	
Const Period Diesel Fuel Use =	132671	gals
Const Period Gasoline Fuel Use =	38500	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

		2013 Equipment Emissions Factors							
Equip. Type	**HP**	**lbs/hp-hr CO**	**lbs/hp-hr VOC** as ROG	**lbs/hp-hr NOx**	**lbs/hp-hr SOx**	**lbs/hp-hr PM10**	**lbs/hp-hr CO2**	**lbs/hp-hr CH4**	**lbs/hp-hr N2O**
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	250	0.001530	0.000560	0.004950	0.000007	0.000165	0.666000	0.000051	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5721*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	428	114	676	1	60	57869	10	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	128	39	240	0	12	30500	3	0
Excavators	524	110	688	1	60	74541	10	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	0
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	2316	464	3537	4	200	390716	42	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	287	105	928	1	31	124875	9	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	161	39	248	0	21	23332	4	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	1203	423	3849	4	148	410240	38	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	489	112	491	1	34	55080	10	0
Tractors/Loaders/Backhoes	1016	200	1317	2	111	148954	18	0
Trenchers	674	185	1132	1	96	93312	17	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	6615	90	315	2	16	200900	5	18

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
lbs per const. period	13840	1881	13420	18	788	781.31	1610319	167	18
tons per const. period	6.9	0.9	6.7	0.009	0.39	0.39	805.16	0.08	0.01
Estimated Maximum lbs/day =	106.5	14.5	103.2	0.138	6.06	6.01	12387.07	1.28	0.14
Average lbs/day =	*85.2*	*11.6*	*82.6*	*0.111*	*4.85*	*4.81*	*9909.7*	*1.0*	*0.1*
Average lbs/month =	2768.0	376.3	2684.0	3.6	157.68	156.26	322063.83	33.33	3.55

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Since only approx. 20 workers will be onsite during the grading/prep phase, the avg daily emissions will be considerably less than the estimated maximum daily values noted above.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Each 125 MW Block, Phase 6**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	260	hrs/month
	6	days/week		1300	hrs/const period
	26	days/month		130	days/const period
	5	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	0	0	0	0	0	0	0
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	2	8	110	16	1920	1760	211200
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	5	8	100	40	1000	4000	100000
Excavators	152	1	8	100	8	1216	800	121600
Forklifts/Aerial Lifts/Booms	120	0	0	0	0	0	0	0
Generators/Compressors	50	0	0	0	0	0	0	0
Graders	157	4	8	110	32	5024	3520	552640
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	250	1	6	125	6	1500	750	187500
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	91	0	0	0	0	0	0	0
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	1	8	60	8	792	480	47520
Rough Terrain Forklifts	120	0	0	0	0	0	0	0
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	0	0	0	0	0	0	0
Scrapers	267	4	8	110	32	8544	3520	939840
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	3	8	90	24	1200	2160	108000
Tractors/Loaders/Backhoes	120	4	8	90	32	3840	2880	345600
Trenchers	120	2	8	90	16	1920	1440	172800
Welders	50	0	0	0	0	0	0	0
Other Const. Eq.- GASOLINE	175	2	8	125	16	2800	2000	350000

*includes equipment and use rates for proposed offsite linears.
** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	2786700	
Const Period Gasoline Hp-Hrs =	350000	
Const Period Diesel Fuel Use =	167202	gals
Const Period Gasoline Fuel Use =	38500	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

		2013 Equipment Emissions Factors							
Equip. Type	**HP**	**lbs/hp-hr CO**	**lbs/hp-hr VOC** as ROG	**lbs/hp-hr NOx**	**lbs/hp-hr SOx**	**lbs/hp-hr PM10**	**lbs/hp-hr CO2**	**lbs/hp-hr CH4**	**lbs/hp-hr N2O**
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	250	0.001530	0.000560	0.004950	0.000007	0.000165	0.666000	0.000051	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5721*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	855	228	1352	1	119	115738	21	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	128	39	240	0	12	30500	3	0
Excavators	524	110	688	1	60	74541	10	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	0
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	2316	464	3537	4	200	390716	42	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	287	105	928	1	31	124875	9	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	161	39	248	0	21	23332	4	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	2406	846	7697	9	297	820480	76	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	489	112	491	1	34	55080	10	0
Tractors/Loaders/Backhoes	1016	200	1317	2	111	148954	18	0
Trenchers	674	185	1132	1	96	93312	17	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	6615	90	315	2	16	200900	5	18

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
lbs per const. period	15471	2418	17944	23	997	987.59	2078428	215	18
tons per const. period	7.7	1.2	9.0	0.012	0.50	0.49	1039.21	0.11	0.01
Estimated Maximum lbs/day =	119.0	18.6	138.0	0.178	7.67	7.60	15987.91	1.65	0.14
Average lbs/day =	*95.2*	*14.9*	*110.4*	*0.142*	*6.13*	*6.08*	*12790.3*	*1.3*	*0.1*
Average lbs/month =	3094.1	483.7	3588.9	4.6	199.31	197.52	415685.62	43.02	3.55

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Since only approx. 20 workers will be onsite during the grading/prep phase, the avg daily emissions will be considerably less than the estimated maximum daily values noted above.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Each 125 MW Block, Phase 7**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	260	hrs/month
	6	days/week		1300	hrs/const period
	26	days/month		130	days/const period
	5	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	0	0	0	0	0	0	0
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	2	8	110	16	1920	1760	211200
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	5	8	100	40	1000	4000	100000
Excavators	152	1	8	100	8	1216	800	121600
Forklifts/Aerial Lifts/Booms	120	0	0	0	0	0	0	0
Generators/Compressors	50	0	0	0	0	0	0	0
Graders	157	5	8	110	40	6280	4400	690800
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	250	1	6	125	6	1500	750	187500
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	91	0	0	0	0	0	0	0
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	1	8	60	8	792	480	47520
Rough Terrain Forklifts	120	0	0	0	0	0	0	0
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	0	0	0	0	0	0	0
Scrapers	267	6	8	110	48	12816	5280	1409760
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	3	8	90	24	1200	2160	108000
Tractors/Loaders/Backhoes	120	4	8	90	32	3840	2880	345600
Trenchers	120	2	8	90	16	1920	1440	172800
Welders	50	0	0	0	0	0	0	0
Other Const. Eq.- GASOLINE	175	2	8	125	16	2800	2000	350000

*includes equipment and use rates for proposed offsite linears.
** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	3394780	
Const Period Gasoline Hp-Hrs =	350000	
Const Period Diesel Fuel Use =	203687	gals
Const Period Gasoline Fuel Use =	38500	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

		2013 Equipment Emissions Factors							
Equip. Type	**HP**	**lbs/hp-hr CO**	**lbs/hp-hr VOC** as ROG	**lbs/hp-hr NOx**	**lbs/hp-hr SOx**	**lbs/hp-hr PM10**	**lbs/hp-hr CO2**	**lbs/hp-hr CH4**	**lbs/hp-hr N2O**
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	250	0.001530	0.000560	0.004950	0.000007	0.000165	0.666000	0.000051	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5721*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	855	228	1352	1	119	115738	21	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	128	39	240	0	12	30500	3	0
Excavators	524	110	688	1	60	74541	10	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	0
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	2894	580	4421	5	250	488396	52	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	287	105	928	1	31	124875	9	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	161	39	248	0	21	23332	4	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	3609	1269	11546	13	445	1230720	114	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	489	112	491	1	34	55080	10	0
Tractors/Loaders/Backhoes	1016	200	1317	2	111	148954	18	0
Trenchers	674	185	1132	1	96	93312	17	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	6615	90	315	2	16	200900	5	18

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
lbs per const. period	17253	2957	22677	29	1195	1184.32	2586347	264	18
tons per const. period	8.6	1.5	11.3	0.014	0.60	0.59	1293.17	0.13	0.01
Estimated Maximum lbs/day =	132.7	22.7	174.4	0.220	9.19	9.11	19894.98	2.03	0.14
Average lbs/day =	*106.2*	*18.2*	*139.6*	*0.176*	*7.35*	*7.29*	*15916.0*	*1.6*	*0.1*
Average lbs/month =	3450.5	591.5	4535.5	5.7	239.01	236.86	517269.48	52.75	3.55

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Since only approx. 20 workers will be onsite during the grading/prep phase, the avg daily emissions will be considerably less than the estimated maximum daily values noted above.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Each 125 MW Block, Phase 8**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	260	hrs/month
	6	days/week		1300	hrs/const period
	26	days/month		130	days/const period
	5	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	0	0	0	0	0	0	0
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	2	8	110	16	1920	1760	211200
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	5	8	100	40	1000	4000	100000
Excavators	152	1	8	100	8	1216	800	121600
Forklifts/Aerial Lifts/Booms	120	0	0	0	0	0	0	0
Generators/Compressors	50	0	0	0	0	0	0	0
Graders	157	5	8	110	40	6280	4400	690800
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	250	1	6	125	6	1500	750	187500
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	91	0	0	0	0	0	0	0
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	1	8	60	8	792	480	47520
Rough Terrain Forklifts	120	0	0	0	0	0	0	0
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	0	0	0	0	0	0	0
Scrapers	267	7	8	110	56	14952	6160	1644720
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	3	8	90	24	1200	2160	108000
Tractors/Loaders/Backhoes	120	4	8	90	32	3840	2880	345600
Trenchers	120	2	8	90	16	1920	1440	172800
Welders	50	0	0	0	0	0	0	0
Other Const. Eq.- GASOLINE	175	2	8	125	16	2800	2000	350000

*includes equipment and use rates for proposed offsite linears.
** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	3629740	
Const Period Gasoline Hp-Hrs =	350000	
Const Period Diesel Fuel Use =	217784	gals
Const Period Gasoline Fuel Use =	38500	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

		2013 Equipment Emissions Factors							
Equip. Type	**HP**	**lbs/hp-hr CO**	**lbs/hp-hr VOC** as ROG	**lbs/hp-hr NOx**	**lbs/hp-hr SOx**	**lbs/hp-hr PM10**	**lbs/hp-hr CO2**	**lbs/hp-hr CH4**	**lbs/hp-hr N2O**
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	250	0.001530	0.000560	0.004950	0.000007	0.000165	0.666000	0.000051	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5721*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	0	0	0	0	0	0	0	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	855	228	1352	1	119	115738	21	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	128	39	240	0	12	30500	3	0
Excavators	524	110	688	1	60	74541	10	0
Forklifts/Aerial Lifts/Booms	0	0	0	0	0	0	0	0
Generators/Compressors	0	0	0	0	0	0	0	0
Graders	2894	580	4421	5	250	488396	52	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	287	105	928	1	31	124875	9	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0
Paving Eq./Surfacing Eq.	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	161	39	248	0	21	23332	4	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	0	0	0	0	0	0	0	0
Scrapers	4210	1480	13470	15	520	1435841	134	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	489	112	491	1	34	55080	10	0
Tractors/Loaders/Backhoes	1016	200	1317	2	111	148954	18	0
Trenchers	674	185	1132	1	96	93312	17	0
Welders	0	0	0	0	0	0	0	0
Other Const. Eq.-Gasoline	6615	90	315	2	16	200900	5	18

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
lbs per const. period	17854	3169	24602	31	1269	1257.89	2791467	283	18
tons per const. period	8.9	1.6	12.3	0.015	0.63	0.63	1395.73	0.14	0.01
Estimated Maximum lbs/day =	137.3	24.4	189.2	0.237	9.76	9.68	21472.83	2.18	0.14
Average lbs/day =	*109.9*	*19.5*	*151.4*	*0.190*	*7.81*	*7.74*	*17178.3*	*1.7*	*0.1*
Average lbs/month =	3570.8	633.8	4920.3	6.2	253.86	251.58	558293.50	56.56	3.55

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Since only approx. 20 workers will be onsite during the grading/prep phase, the avg daily emissions will be considerably less than the estimated maximum daily values noted above.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Each 125 MW Block-Avg Day-Erection Subphase**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	10	hrs/day	Construction Totals:	260	hrs/month
	6	days/week		1820	hrs/const period
	26	days/month		182	days/const period
	7	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	4	8	170	32	6688	5440	1136960
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	0	0	0	0	0	0	0
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	6	8	170	48	1200	8160	204000
Excavators	152	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	120	6	8	170	48	5760	8160	979200
Generators/Compressors	50	6	8	170	48	2400	8160	408000
Graders	157	0	0	0	0	0	0	0
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	489	1	8	160	8	3912	1280	625920
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	1	8	60	8	792	480	47520
Paving Eq./Surfacing Eq.	91	1	8	60	8	728	480	43680
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	0	0	0	0	0	0	0
Rough Terrain Forklifts	120	2	8	150	16	1920	2400	288000
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	2	6	120	12	2100	1440	252000
Scrapers	267	0	0	0	0	0	0	0
Signal Boards/Light Sets	15	0	0	0	0	0	0	0
Skid Steer Loaders	50	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	120	1	8	160	8	960	1280	153600
Trenchers	120	0	0	0	0	0	0	0
Welders	50	4	8	120	32	1600	3840	192000
Other Const. Eq.- GASOLINE	175	2	8	175	16	2800	2800	490000

*includes equipment and use rates for proposed offsite linears.
** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	4330880	
Const Period Gasoline Hp-Hrs =	490000	
Const Period Diesel Fuel Use =	259853	gals
Const Period Gasoline Fuel Use =	53900	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

2013 Equipment Emissions Factors

Equip. Type	HP	lbs/hp-hr CO	lbs/hp-hr VOC as ROG	lbs/hp-hr NOx	lbs/hp-hr SOx	lbs/hp-hr PM10	lbs/hp-hr CO2	lbs/hp-hr CH4	lbs/hp-hr N2O
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	489	0.001270	0.000434	0.003570	0.000005	0.000127	0.544000	0.000039	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5676*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC as ROG	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	4889	457	4502	10	196	915253	41	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	0	0	0	0	0	0	0	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	261	79	490	1	24	62220	7	0
Excavators	0	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	1968	444	3026	4	239	310406	40	0
Generators/Compressors	2126	690	2309	3	188	249696	62	0
Graders	0	0	0	0	0	0	0	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	795	272	2235	3	79	340500	24	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	200	55	331	0	29	27372	5	0
Paving Eq./Surfacing Eq.	153	35	238	0	19	23194	3	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	1037	230	1440	2	127	149760	21	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	902	178	1368	2	77	152964	16	0
Scrapers	0	0	0	0	0	0	0	0
Signal Boards/Light Sets	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	452	89	585	1	49	66202	8	0
Trenchers	0	0	0	0	0	0	0	0
Welders	1043	365	968	1	90	99648	33	0
Other Const. Eq.-Gasoline	9261	125	441	3	22	281260	7	25

Totals	CO	VOC	NOx	SOx	PM10	PM2.5	CO2	CH4	N2O
lbs per const. period	23086	3018	17932	30	1139	1129.17	2678475	268	25
tons per const. period	11.5	1.5	9.0	0.015	0.57	0.56	1339.24	0.13	0.01
Estimated Maximum lbs/day =	126.8	16.6	98.5	0.166	6.26	6.20	14716.89	1.47	0.14
Average lbs/day =	*101.5*	*13.3*	*78.8*	*0.133*	*5.01*	*4.96*	*11773.5*	*1.2*	*0.1*
Average lbs/month =	3298.0	431.2	2561.7	4.3	162.77	161.31	382639.27	38.33	3.55

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 8 hrs of activity in a 10 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime

CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

Project: Blythe Solar Power **Each 125 MW Block-Max Day-Erection Subphase**

Assumptions:

1. The average engines employed in construction equipment use consumes fuel at a rate of: diesel 0.06 gal/hp-hr
Ref: EPA, NR-009b Publication, November 2002. gasoline 0.11 gal/hp-hr
Ref: Sacramento County APCD Const. Program Data, V. 6.0.3, 3/2007.
Ref: EPA, NR-009c Publication, EPA 420-P-04-009, April 2004.
Ref: Niland Energy Project, IID, AFC Vol 2, App A.
Ref: South Coast AQMD PR XXI, Draft Staff Report, 3-15-95, and SCAQMD CEQA Manual, 11/03.
The above noted references present fuel consumption values which range from 0.050 to 0.064 gal/hp-hr for diesel engines used in construction related equipment. The value of 0.060 gal/hp-hr was chosen as a reasonable upper mid-range value for construction diesel emissions calculations.
For gasoline the mid-range value from SCAQMD of 0.11 gal/hp-hr was used.

2. Construction equipment exhaust emissions will be calculated on a period basis using the site specific equipment list, HP ratings, hours of use, days of use, etc. Period emissions will be apportioned to daily values based on the estimated construction period time on site.

3. The equipment list derived from the South Coast AQMD (12/2006) will be used to establish the various equipment categories. Data produced by the Sacramento APCD was used to establish the average HP ratings for each equipment category. HP rating data was supplemented by data from SCAQMD CEQA Handbook (Table A9-8-C) if not available from Sacramento APCD.

4. Construction Schedule:	20	hrs/day	Construction Totals:	520	hrs/month
	6	days/week		3640	hrs/const period
	26	days/month		182	days/const period
	7	months			

5. Anticipated Construction Start Year: 2013

6. Maximum anticipated equipment use month is: n/a

Equipment types and use rates supplied by the Applicant.

Equipment Category**	Avg HP	# of Units Used for Project	Max Use Rate Hrs/day	# of Days On Site (each)	Total Hrs/Day	Total Hp-Hrs per Day	Total Hrs per Const Period	Total Hp-Hrs per Const Period
Bore/Drill Rigs/Pile Drivers	209	4	16	170	64	13376	10880	2273920
Cement Mixers	25	0	0	0	0	0	0	0
Industrial/Concrete Saws	56	0	0	0	0	0	0	0
Cranes	194	0	0	0	0	0	0	0
Crawler Tractors/Dozers	120	0	0	0	0	0	0	0
Crushing/Processing Eq.	127	0	0	0	0	0	0	0
Dump and Tender Trucks	25	6	16	170	96	2400	16320	408000
Excavators	152	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	120	6	16	170	96	11520	16320	1958400
Generators/Compressors	50	6	16	170	96	4800	16320	816000
Graders	157	0	0	0	0	0	0	0
Off Highway Tractors	120	0	0	0	0	0	0	0
Off Highway Trucks	489	1	16	160	16	7824	2560	1251840
Other Const. Eq.-DIESEL	175	0	0	0	0	0	0	0
Pavers	99	1	16	60	16	1584	960	95040
Paving Eq./Surfacing Eq.	91	1	16	60	16	1456	960	87360
Plate Compactors	15	0	0	0	0	0	0	0
Rollers/Compactors	99	0	0	0	0	0	0	0
Rough Terrain Forklifts	120	2	16	150	32	3840	4800	576000
Rubber Tired Dozers	356	0	0	0	0	0	0	0
Rubber Tired Loaders	175	2	12	120	24	4200	2880	504000
Scrapers	267	0	0	0	0	0	0	0
Signal Boards/Light Sets	15	4	8	170	32	480	5440	81600
Skid Steer Loaders	50	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	120	1	16	160	16	1920	2560	307200
Trenchers	120	0	0	0	0	0	0	0
Welders	50	4	16	120	64	3200	7680	384000
Other Const. Eq.- GASOLINE	175	2	16	175	32	5600	5600	980000

*includes equipment and use rates for proposed offsite linears.
** diesel equipment unless otherwise specified.

Const Period Diesel Hp-Hrs =	8743360	
Const Period Gasoline Hp-Hrs =	980000	
Const Period Diesel Fuel Use =	524602	gals
Const Period Gasoline Fuel Use =	107800	gals

Emissions factors from SCAQMD Offroad database for 2013.
EFs are for the anticipated construction start year of 2013.

Emissions factors for each category of equipment were either HP class specific, or they represent the highest of the two bounding factors for the HP listing.

2013 Equipment Emissions Factors

Equip. Type	HP	lbs/hp-hr CO	lbs/hp-hr VOC as ROG	lbs/hp-hr NOx	lbs/hp-hr SOx	lbs/hp-hr PM10	lbs/hp-hr CO2	lbs/hp-hr CH4	lbs/hp-hr N2O
Bore/Drill Rigs/Pile Drivers	209	0.004300	0.000402	0.003960	0.000009	0.000172	0.805000	0.000036	0.000000
Cement Mixers	25	0.003250	0.001080	0.006040	0.000009	0.000332	0.702000	0.000098	0.000000
Industrial/Concrete Saws	56	0.005840	0.001910	0.005710	0.000008	0.000494	0.604000	0.000173	0.000000
Cranes	194	0.002750	0.000590	0.004440	0.000005	0.000255	0.459000	0.000053	0.000000
Crawler Tractors/Dozers	120	0.004050	0.001080	0.006400	0.000006	0.000565	0.548000	0.000097	0.000000
Crushing/Processing Eq.	127	0.004800	0.001170	0.007130	0.000008	0.000651	0.692000	0.000106	0.000000
Dump and Tender Trucks	25	0.001280	0.000386	0.002400	0.000004	0.000116	0.305000	0.000035	0.000000
Excavators	152	0.004310	0.000907	0.005660	0.000007	0.000490	0.613000	0.000082	0.000000
Forklifts/Aerial Lifts/Booms	120	0.002010	0.000453	0.003090	0.000004	0.000244	0.317000	0.000041	0.000000
Generators/Compressors	50	0.005210	0.001690	0.005660	0.000008	0.000460	0.612000	0.000153	0.000000
Graders	157	0.004190	0.000840	0.006400	0.000008	0.000362	0.707000	0.000076	0.000000
Off Highway Tractors	120	0.005990	0.001760	0.010300	0.000009	0.000899	0.780000	0.000159	0.000000
Off Highway Trucks	489	0.001270	0.000434	0.003570	0.000005	0.000127	0.544000	0.000039	0.000000
Other Const. Eq.-Diesel	175	0.003350	0.000536	0.004580	0.000007	0.000240	0.608000	0.000048	0.000000
Pavers	99	0.004210	0.001160	0.006960	0.000007	0.000608	0.576000	0.000104	0.000000
Paving Eq./Surfacing Eq.	91	0.003510	0.000809	0.005440	0.000006	0.000431	0.531000	0.000073	0.000000
Plate Compactors	15	0.001750	0.000334	0.002090	0.000004	0.000082	0.287000	0.000030	0.000000
Rollers/Compactors	99	0.003380	0.000823	0.005210	0.000006	0.000445	0.491000	0.000074	0.000000
Rough Terrain Forklifts	120	0.003600	0.000797	0.005000	0.000006	0.000442	0.520000	0.000072	0.000000
Rubber Tired Dozers	356	0.002730	0.000972	0.008320	0.000008	0.000351	0.733000	0.000088	0.000000
Rubber Tired Loaders	175	0.003580	0.000708	0.005430	0.000007	0.000306	0.607000	0.000064	0.000000
Scrapers	267	0.002560	0.000900	0.008190	0.000009	0.000316	0.873000	0.000081	0.000000
Signal Boards/Light Sets	15	0.002510	0.000478	0.003000	0.000006	0.000117	0.411000	0.000043	0.000000
Skid Steer Loaders	50	0.004530	0.001040	0.004550	0.000007	0.000314	0.510000	0.000094	0.000000
Tractors/Loaders/Backhoes	120	0.002940	0.000580	0.003810	0.000005	0.000320	0.431000	0.000052	0.000000
Trenchers	120	0.003900	0.001070	0.006550	0.000006	0.000558	0.540000	0.000096	0.000000
Welders	50	0.005430	0.001900	0.005040	0.000007	0.000471	0.519000	0.000172	0.000000
Other Const. Eq.-Gasoline	175	0.018900	0.000256	0.000899	0.000006	0.000046	0.574000	0.000015	0.000051
Avg Offroad Diesel EFs		*0.0036*	*0.0009*	*0.0054*	*0.000007*	*0.0004*	*0.5676*	*0.0001*	*0.0000*

Construction Period Emissions, lbs

Equip. Type	CO	VOC as ROG	NOx	SOx	PM10	CO2	CH4	N2O
Bore/Drill Rigs/Pile Drivers	9778	914	9005	21	391	1830506	82	0
Cement Mixers	0	0	0	0	0	0	0	0
Industrial/Concrete Saws	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0
Crawler Tractors/Dozers	0	0	0	0	0	0	0	0
Crushing/Processing Eq.	0	0	0	0	0	0	0	0
Dump and Tender Trucks	522	157	979	2	47	124440	14	0
Excavators	0	0	0	0	0	0	0	0
Forklifts/Aerial Lifts/Booms	3936	887	6051	7	478	620813	80	0
Generators/Compressors	4251	1379	4619	6	375	499392	125	0
Graders	0	0	0	0	0	0	0	0
Off Highway Tractors	0	0	0	0	0	0	0	0
Off Highway Trucks	1590	543	4469	7	159	681001	49	0
Other Const. Eq.-Diesel	0	0	0	0	0	0	0	0
Pavers	400	110	661	1	58	54743	10	0
Paving Eq./Surfacing Eq.	307	71	475	1	38	46388	6	0
Plate Compactors	0	0	0	0	0	0	0	0
Rollers/Compactors	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	2074	459	2880	4	255	299520	41	0
Rubber Tired Dozers	0	0	0	0	0	0	0	0
Rubber Tired Loaders	1804	357	2737	3	154	305928	32	0
Scrapers	0	0	0	0	0	0	0	0
Signal Boards/Light Sets	205	39	245	1	10	33538	4	0
Skid Steer Loaders	0	0	0	0	0	0	0	0
Tractors/Loaders/Backhoes	903	178	1170	2	98	132403	16	0
Trenchers	0	0	0	0	0	0	0	0
Welders	2085	730	1935	3	181	199296	66	0
Other Const. Eq.-Gasoline	18522	251	881	6	45	562520	14	50

Totals	**CO**	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CH4**	**N2O**
lbs per const. period	46377	6076	36108	61	2288	2267.79	5390487	540	50
tons per const. period	23.2	3.0	18.1	0.030	1.14	1.13	2695.24	0.27	0.02
Estimated Maximum lbs/day =	254.8	33.4	198.4	0.335	12.57	12.46	29618.06	2.97	0.27
Average lbs/day =	*203.9*	*26.7*	*158.7*	*0.268*	*10.06*	*9.97*	*23694.4*	*2.4*	*0.2*
Average lbs/month =	6625.4	867.9	5158.3	8.7	326.91	323.97	770069.62	77.17	7.10

CARB-CEIDARS, Updated Size Fractions for PM Profiles: PM2.5 = 0.991 of PM10 : Diesel Vehicle Exhaust
ROG reported as VOC.

Other Assumptions and References:

1. Trench construction times per: Southern Regional Water Pipeline Alliance, 3/08.
   Optimum trench construction progress rate is 80m (260ft) per day.
   Non-optimum trench construction progress rate is 30m (100 ft) per day.
   An average progress of 180 ft/day is used where applicable.
2. Paving speeds can range from 3 to 15 m/min depending on asphalt delivery rates and required compaction thickness.
   A minium paving speed of 3 m/min (10 ft/min or 600 ft/hr) was used where applicable.
   The minimum speed is based upon a 3" compacted layer, 12 ft lane width, with an asphalt delivery rate of ~ 140 tons/hr.
   Ref: Asphalt Paving Speed, Pavement Worktip No. 31, AAPA, 11/2001.
3. Estimation of maximum daily emissions is extremely variable. Some projects provide estimated manpower and equipment use schedules, but even this data usually leads to a wide range of assumptions being made in order to estimate equipment exhaust emissions for a maximum work day.
   Estimated maximum daily emissions assumes all listed equipment is on site and operating for the maximum stated hours.
   Average dialy emissions, per the Applicant, are expected to be approx. 80% of the max daily values.
4. Construction schedule note: most equipment use and emissions are based on 16 hrs of activity in a 20 hr workday.
   a. 1 hour for lunch break, plus two 15 minute periods of labor inactivity (one in morning and one in afternoon)
   b. a 30 minute period each day for each piece of equipment for re-fueling, maintenance, and normal downtime
   c. a and b apply to each of two shifts

CONSTRUCTION PHASE - GenTie Line

MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		12	pole sites and spur roads
Max Acres Subject to Construction Disturbance Activites on any day:		2	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	6	
	Days/Month:	26	
	Const Period, Months:	12	1.0 years
	Const Period, Days:	312	
Wet Season Adjustment:	(Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
	Mean # days/year with rain > = 0.01 inch:	20	
	Mean # months/yr with rain > = 0.01 inch:	0.67	
	Adjusted Const Period, Months:	11.33	
	Adjusted Const Period, Days:	292	
Controls for Fugitive Dust:			
	Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07

3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.

Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

	Calculated % control based on mitigations proposed:	81	% control
	Conservative control % used for emissions estimates:	80	% control
		0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.007	0.001
tons/period	0.077	0.016
Max lbs/day	0.5	0.110

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		0	Mean annual wind speed, mph:			7.8
Total tons of soil handled:		0	Avg. Soil moisture, %:			5
Total days soil handled:		292	Avg. Soil density, tons/cu.yd:			1.3
Tons soil/day:		0	k factor for PM10:			0.35
Control Eff, watering, %		70	Number of Drops per ton:			4
Release Fraction:		0.3	Calc 1	wind		1.783
			Calc 2	moisture		3.607
Emissions:	PM10	PM2.5	Calc 3	int		0.494
tons/period	0.00	0.00	Calc 4	PM10	lb/ton	0.0006
tons/month	0.00	0.00	PM2.5 fraction of PM10:			0.210
max lbs/day	0.00	0.00				

Emissions Totals:

	PM10	**PM2.5**
tons/period	**0.0771**	**0.0162**
tons/month	**0.0068**	**0.0014**
max lbs/day	**0.52**	**0.11**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.

(11) pole sites, total 87, each 30 x 30. spur roads each 100 by 20 ft ROW. Double acres to account for ROW overlap, etc.

CONSTRUCTION PHASE - Access Road Construction
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		10	1.5 mi length by 50 ft ROW
Max Acres Subject to Construction Disturbance Activites on any day:		2.5	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	6	
	Days/Month:	26	
	Const Period, Months:	3	0.3 years
	Const Period, Days:	78	
Wet Season Adjustment:	(Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
	Mean # days/year with rain > = 0.01 inch:	20	
	Mean # months/yr with rain > = 0.01 inch:	0.67	
	Adjusted Const Period, Months:	2.83	
	Adjusted Const Period, Days:	73	
Controls for Fugitive Dust:			
	Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.009	0.002
tons/period	0.024	0.005
Max lbs/day	0.7	0.137

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:	0		Mean annual wind speed, mph:		7.8
Total tons of soil handled:	0		Avg. Soil moisture, %:		5
Total days soil handled:	73		Avg. Soil density, tons/cu.yd:		1.3
Tons soil/day:	0		k factor for PM10:		0.35
Control Eff, watering, %	80		Number of Drops per ton:		4
Release Fraction:	0.2		Calc 1	wind	1.783
			Calc 2	moisture	3.607
Emissions: PM10 PM2.5			Calc 3	int	0.494
tons/period 0.00 0.00			Calc 4	PM10 lb/ton	0.0006
tons/month 0.00 0.00			PM2.5 fraction of PM10:		0.210
max lbs/day 0.00 0.00					

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**0.0241**	**0.0051**
tons/month	**0.0085**	**0.0018**
max lbs/day	**0.65**	**0.14**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.
(11) paved road will be 2-12 ft lanes, 24 ft wide with minimal shoulders in a 50 ft ROW

CONSTRUCTION PHASE - Site Prep Each 125 MW Block (Phases 1-5)
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		868	
Max Acres Subject to Construction Disturbance Activites on any day:		30	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	6	
	Days/Month:	26	
Const Period, Months:		5	0.4 years
Const Period, Days:		130	

Wet Season Adjustment: (Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)

Mean # days/year with rain > = 0.01 inch:	20	
Mean # months/yr with rain > = 0.01 inch:	0.67	
Adjusted Const Period, Months:	4.72	
Adjusted Const Period, Days:	122	

Controls for Fugitive Dust:

Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.102	0.021
tons/period	0.482	0.101
Max lbs/day	7.8	1.648

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		360000	Mean annual wind speed, mph:			7.8
Total tons of soil handled:		1861920	Avg. Soil moisture, %:			5
Total days soil handled:		122	Avg. Soil density, tons/cu.yd:			1.3
Tons soil/day:		15303	k factor for PM10:			0.35
Control Eff, watering, %		80	Number of Drops per ton:			4
Release Fraction:		0.2	Calc 1	wind		1.783
			Calc 2	moisture		3.607
Emissions:	PM10	PM2.5	Calc 3	int		0.494
tons/period	0.10	0.02	Calc 4	PM10	lb/ton	0.0006
tons/month	0.02	0.00	PM2.5 fraction of PM10:			0.210
max lbs/day	1.69	0.36				

Emissions Totals:

	PM10	**PM2.5**
tons/period	**0.5857**	**0.1230**
tons/month	**0.1240**	**0.0260**
max lbs/day	**9.54**	**2.00**

Methodology References:
(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.

CONSTRUCTION PHASE - Site Prep Each 125 MW Block (Phase 6)

MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		868	
Max Acres Subject to Construction Disturbance Activites on any day:		30	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	6	
	Days/Month:	26	
	Const Period, Months:	5	0.4 years
	Const Period, Days:	130	

Wet Season Adjustment (Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)

Mean # days/year with rain > = 0.01 inch:	20	
Mean # months/yr with rain > = 0.01 inch:	0.67	
Adjusted Const Period, Months:	4.72	
Adjusted Const Period, Days:	122	

Controls for Fugitive Dust:

Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07

3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.

Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.102	0.021
tons/period	0.482	0.101
Max lbs/day	7.8	1.648

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		900000	Mean annual wind speed, mph:			7.8
Total tons of soil handled:		4654800	Avg. Soil moisture, %:			5
Total days soil handled:		122	Avg. Soil density, tons/cu.yd:			1.3
Tons soil/day:		38259	k factor for PM10:			0.35
Control Eff, watering, %		80	Number of Drops per ton:			4
Release Fraction:		0.2	Calc 1	wind		1.783
			Calc 2	moisture		3.607
Emissions:	PM10	PM2.5	Calc 3	int		0.494
tons/period	0.26	0.05	Calc 4	PM10	lb/ton	0.0006
tons/month	0.06	0.01	PM2.5 fraction of PM10:			0.210
max lbs/day	4.24	0.89				

Emissions Totals:		**PM10**	**PM2.5**
	tons/period	**0.7417**	**0.1558**
	tons/month	**0.1571**	**0.0330**
	max lbs/day	**12.08**	**2.54**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.

CONSTRUCTION PHASE - Site Prep Each 125 MW Block (Phase 7)
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		868	
Max Acres Subject to Construction Disturbance Activites on any day:		30	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	6	
	Days/Month:	26	
	Const Period, Months:	5	0.4 years
	Const Period, Days:	130	
Wet Season Adjustment:	(Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
	Mean # days/year with rain > = 0.01 inch:	20	
	Mean # months/yr with rain > = 0.01 inch:	0.67	
	Adjusted Const Period, Months:	4.72	
	Adjusted Const Period, Days:	122	
Controls for Fugitive Dust:			
	Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.102	0.021
tons/period	0.482	0.101
Max lbs/day	7.8	1.648

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		1500000	Mean annual wind speed, mph:			7.8
Total tons of soil handled:		7758000	Avg. Soil moisture, %:			5
Total days soil handled:		122	Avg. Soil density, tons/cu.yd:			1.3
Tons soil/day:		63764	k factor for PM10:			0.35
Control Eff, watering, %		80	Number of Drops per ton:			4
Release Fraction:		0.2	Calc 1	wind		1.783
			Calc 2	moisture		3.607
Emissions: PM10	PM2.5		Calc 3	int		0.494
tons/period 0.43	0.09		Calc 4	PM10	lb/ton	0.0006
tons/month 0.09	0.02		PM2.5 fraction of PM10:			0.210
max lbs/day 7.06	1.48					

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**0.9150**	**0.1922**
tons/month	**0.1938**	**0.0407**
max lbs/day	**14.91**	**3.13**

Methodology References:
(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.

CONSTRUCTION PHASE - Site Prep Each 125 MW Block (Phase 8)
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		868	
Max Acres Subject to Construction Disturbance Activites on any day:		30	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	6	
	Days/Month:	26	
	Const Period, Months:	5	0.4 years
	Const Period, Days:	130	
Wet Season Adjustment:	(Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
	Mean # days/year with rain > = 0.01 inch:	20	
	Mean # months/yr with rain > = 0.01 inch:	0.67	
	Adjusted Const Period, Months:	4.72	
	Adjusted Const Period, Days:	122	
Controls for Fugitive Dust:			
	Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.102	0.021
tons/period	0.482	0.101
Max lbs/day	7.8	1.648

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		2000000	Mean annual wind speed, mph:			7.8
Total tons of soil handled:		10344000	Avg. Soil moisture, %:			5
Total days soil handled:		122	Avg. Soil density, tons/cu.yd:			1.3
Tons soil/day:		85019	k factor for PM10:			0.35
Control Eff, watering, %		80	Number of Drops per ton:			4
Release Fraction:		0.2	Calc 1	wind		1.783
			Calc 2	moisture		3.607
Emissions: PM10	PM2.5		Calc 3	int		0.494
tons/period 0.58	0.12		Calc 4	PM10	lb/ton	0.0006
tons/month 0.12	0.03		PM2.5 fraction of PM10:			0.210
max lbs/day 9.41	1.98					

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**1.0595**	**0.2225**
tons/month	**0.2244**	**0.0471**
max lbs/day	**17.26**	**3.62**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.

CONSTRUCTION PHASE- Each 125 MW Block (Phases 1-8 Erection Subphase)
MRI Level 2 Analysis (Refs 1, 3-7)

Acres Subject to Construction Disturbance Activites:		868	
Max Acres Subject to Construction Disturbance Activites on any day:		15	
Emissions Factor for PM10 Uncontrolled, tons/acre/month:		0.017	
PM2.5 fraction of PM10 (per CARB CEIDARS Profiles):		0.21	
Activity Levels:	Hrs/Day:	10	
	Days/Wk:	6	
	Days/Month:	26	
	Const Period, Months:	7	0.6 years
	Const Period, Days:	182	
Wet Season Adjustment:	(Per AP-42, Section 13.2.2, Figure 13.2.2-1, 12/03)		
	Mean # days/year with rain > = 0.01 inch:	20	
	Mean # months/yr with rain > = 0.01 inch:	0.67	
	Adjusted Const Period, Months:	6.61	
	Adjusted Const Period, Days:	170	
Controls for Fugitive Dust:			
	Proposed watering cycle:	3	times per construction shift

SCAQMD Mitigation Measures, Table XI-A, 4/07
3 watering cycles/10 hour construction shift yields a 61% reduction, 2 watering cycles/10 hour shift should yield a 40%+ reduction.
Speed control of onsite const traffic from 35 to 15 mph yields a 57% reduction (use 50% control as conservative in desert area).

Calculated % control based on mitigations proposed:	81	% control
Conservative control % used for emissions estimates:	80	% control
	0.2	release fraction

Emissions: Controlled	PM10	PM2.5
tons/month	0.051	0.011
tons/period	0.337	0.071
Max lbs/day	3.9	0.824

Soil Handling Emissions (Cut and Fill): (2)

Total cu.yds of soil handled:		0	Mean annual wind speed, mph:			7.8
Total tons of soil handled:		0	Avg. Soil moisture, %:			5
Total days soil handled:		170	Avg. Soil density, tons/cu.yd:			1.3
Tons soil/day:		0	k factor for PM10:			0.35
Control Eff, watering, %		80	Number of Drops per ton:			4
Release Fraction:		0.2	Calc 1	wind		1.783
			Calc 2	moisture		3.607
Emissions: PM10	PM2.5		Calc 3	int		0.494
tons/period 0.00	0.00		Calc 4	PM10	lb/ton	0.0006
tons/month 0.00	0.00		PM2.5 fraction of PM10:			0.210
max lbs/day 0.00	0.00					

Emissions Totals:	**PM10**	**PM2.5**
tons/period	**0.3372**	**0.0708**
tons/month	**0.0510**	**0.0107**
max lbs/day	**3.92**	**0.82**

Methodology References:

(1) MRI Report, South Coast AQMD Project No. 95040, March 1996, Level 2 Analysis Procedure.
MRI Report factor of 0.011 tons/acre/month is based on 168 hours per month of const activity.
For an activity rate of 260 hrs/month, the adjusted EF would be 0.017 tons/acre/month.
(2) Soil Handling (Cut and Fill), EPA, AP-42, Section 13.2.4., 11/06, and Appendix E-2, Palen Solar PP, 8/09.
(3) URBEMIS, Version 9.2.4, User's Manual Appendix A, page A-6.
(4) CARB Area Source Methodology, Section 7.7, 9/02.
(5) WRAP Fugitive Dust Handbook, 9/06.
(6) USEPA, AP-42, Section 13.2.3, 2/10.
(7) Estimating PM Emissions from Construction Operations, USEPA, MRI, 9/99.
(8) Wind speed data for Blythe AP, 2002-2004.
(9) Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
(10) Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.

OFFSITE PAVED ROAD FUGITIVE DUST EMISSIONS
(associated with construction traffic) **Each 125 MW Phase-Civil Work Period**

Average mileage for construction related vehicles:		22	miles, roundtrip distance***
Avg weight of vehicular equipment on road:		5.3	tons (range 2 - 42 tons)
Road surface silt loading factor:		0.03	g/m2 (range 0.03 - 400 g/m2)
			Limited Access Freeway > 10,000 ADT (I-10)
Particle size multiplier factors:	PM10	0.016	lb/VMT
	PM2.5	0.0024	lb/VMT
C factors (brake and tire wear):	PM10	0.00047	lb/VMT
	PM2.5	0.00036	lb/VMT
Avg vehicle speed on road:		55	mph
Number of vehicles per day:		46	
Number of work days per month:		26	
	Total vehicles per month:	1196	
Number of work months:		4.72	
	Total vehicles per const period:	5645.12	

	VMT/day:	1012
	VMT/month:	26312
	VMT/period:	124192.64

	PM10	
Calc 1	0.035	
Calc 2	1.577	
Calc 3	0.0004	lb/VMT

Emissions	PM10	PM2.5
lbs/day	0.41	0.07
lbs/month	10.69	1.81
lbs/period	50.48	8.53
tons/period	0.03	0.00

EPA, AP-42, Section 13.2.1, March 2006, updated 9/2008.
PM2.5 fraction of PM10 per CARB CEIDARs is 0.169
*** Note: avg roundtrip distance traveled by delivery or worker vehicles on limited access freeways (I-10)
Delivery Route: from Blythe urban area or Blythe ATSF railyard to site, inlcudes plant paved access road

OFFSITE PAVED ROAD FUGITIVE DUST EMISSIONS
(associated with construction traffic)

Each 125 MW Phase-Erection Period

Average mileage for construction related vehicles:		22	miles, roundtrip distance***
Avg weight of vehicular equipment on road:		14.2	tons (range 2 - 42 tons)
Road surface silt loading factor:		0.03	g/m2 (range 0.03 - 400 g/m2)
			Limited Access Freeway > 10,000 ADT
Particle size multiplier factors:	PM10	0.016	lb/VMT
	PM2.5	0.0024	lb/VMT
C factors (brake and tire wear):	PM10	0.00047	lb/VMT
	PM2.5	0.00036	lb/VMT
Avg vehicle speed on road:		55	mph (range 10-55 mph)
Number of vehicles per day:		330	
Number of work days per month:		26	
Total vehicles per month:		8580	
Number of work months:		6.61	
Total vehicles per const period:		56713.8	

	VMT/day:	7260
	VMT/month:	188760
	VMT/period:	1247703.6

	PM10	
Calc 1	0.035	
Calc 2	3.468	
Calc 3	0.0015	lb/VMT

Emissions	PM10	PM2.5
lbs/day	10.59	1.79
lbs/month	275.23	46.51
lbs/period	1819.26	307.46
tons/period	0.91	0.15

EPA, AP-42, Section 13.2.1, March 2006, updated 9/2008.
PM2.5 fraction of PM10 per CARB CEIDARs is 0.169
*** Note: avg roundtrip distance traveled by delivery or worker vehicles on limited access freeways.
Delivery Route: from Blythe urban area or Blythe ATSF railyard to site, inlcudes plant paved access road

ONSITE PAVED ROAD FUGITIVE DUST EMISSIONS

(associated with construction traffic) **Each 125 MW Phase-Erection Period**

Length of Paved Road used for/by Construction Access:		0.5	miles, roundtrip distance*
Avg weight of construction vehicular equipment on road:		14.2	tons (range 2 - 42 tons)
Road surface silt loading factor:		0.06	g/m2 (range 0.03 - 400 g/m2)
Particle size multiplier factors:	PM10	0.016	lb/VMT
	PM2.5	0.0024	lb/VMT
C factors (brake and tire wear):	PM10	0.00047	lb/VMT
	PM2.5	0.00036	lb/VMT
Avg construction vehicle speed on onsite road:		5	mph (range 10-55 mph)
Number of construction vehicles per day:		110	**
Number of construction work days per month:		26	
Total vehicles per month:		2860	
Number of construction work months:		6.61	
Total vehicles per const period:		18904.6	

	VMT/day:	55
	VMT/month:	1430
	VMT/period:	9452.3

	PM10	
Calc 1	0.060	
Calc 2	3.468	
Calc 3	0.0029	lb/VMT

Emissions	PM10	PM2.5
lbs/day	0.16	0.03
lbs/month	4.13	0.70
lbs/period	27.29	4.61
tons/period	0.01	0.00

*mileage for travel on site from entry point across site and back to exit point plus onsite const support equipment movements

** delivery vehicles plus onsite const support equipment, worker vehicles will not be traversing the site

EPA, AP-42, Section 13.2.1, March 2006, updated 9/2008.

PM2.5 fraction of PM10 per CARB CEIDARs is 0.169

Fugitive Dust from Wind Erosion of Soil Storage Piles

Phases 1-8 (Civil period only)

Avg acres of soil storage piles exposed per day:	2	*	
Soil silt content, %:	18.3		0.183
Number of days/year with precipitation > 0.01 inches:	20		
Annual % of time wind speed greater than 12 mph:	20.6		0.206
Watering control efficiency, %:	50		0.5
PM10 aerodynamic factor:	0.5		
PM2.5 aerodynamic factor:	0.2		
Total construction period exposure time, days:	130		

	lb/acre-day	lbs/day	lbs/period	tons/period
PM10	0.260	0.520	67.6	0.034
PM2.5	0.104	0.208	27.0	0.014

MDAQMD, Emissions Inventory Guidance, Mineral Handling and Processing Industries, April 2000.
USEPA, AP-42, Section 13.2.2, Unpaved Roads, Figure 13.2.2-1, Thornethwaite Precipitation Data.
*soil storage areas only, open cut and fill areas are not soil storage areas.

ONSITE UNPAVED ROAD FUGITIVE DUST

		Each 125 MW Phase (Civil and Erection)				
Length of Unpaved Road used for/by Construction Access:		0.5	miles* (roundtrip distance)			
Avg weight of construction vehicular equipment on road:		14.2	tons (range 2 - 42 tons)			
Road surface silt content:		8.5	% (range 1.8 - 35%)			
Road surface material moisture content:		5	% (range 0.03 - 13%)			
		k	a	c	d	
Particle size multiplier factors:	PM10	1.8	1	0.2	0.5	
	PM2.5	0.18	1	0.2	0.5	
C factors (brake and tire wear):	PM10	0.00047	lb/VMT			
	PM2.5	0.00036	lb/VMT			
Avg construction vehicle speed on road:		5	mph (range 10-55 mph)			
Number of construction vehicles per day:		110	**	VMT/day:	55	
				VMT/month:	1430	
Number of construction work days per month:		26		VMT/period:	17160	
Total vehicles per month:		2860				
Number of construction work months:		12				
Total vehicles per const period:		34320				
Control reduction due to watering, speed control, etc. =		80	(assumed same control as main site controls)			
		0.8				
Release Fraction =		0.2				

	PM10	PM2.5
Calc 1	0.708	0.708
Calc 2	0.408	0.408
Calc 3	1.585	1.585
Calc 4	0.328	0.033
Calc 5	0.328	0.032

Emissions	PM10	PM2.5
lbs/day	3.61	0.36
lbs/month	93.79	9.29
lbs/period	1125.54	111.48
tons/period	0.56	0.06

EPA, AP-42, Section 13.2.2, March 2006
Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.
Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg, for road sfc used 8.5% per EPA-AP42
*mileage for travel on site from entry point across site and back to exit point for deliveries and misc support traffic
** delivery vehicles plus onsite const support traffic (worker vehicles will not be traversing the site)

OFFSITE UNPAVED ROAD FUGITIVE DUST

Each 125 MW Phase-Civil Phase

Length of Unpaved Road used for/by Construction Access:		2.8	miles* (1.4 miles each way) Black Rock Rd from Mesa to plant access road			
Avg weight of construction vehicular equipment on road:		5.3	tons (range 2 - 42 tons)			
Road surface silt content:		2	% (range 1.8 - 35%), rolled gravel surface			
Road surface material moisture content:		5	% (range 0.03 - 13%)			
		k	a	c	d	
Particle size multiplier factors:	PM10	1.8	1	0.2	0.5	
	PM2.5	0.18	1	0.2	0.5	
C factors (brake and tire wear):	PM10	0.00047	lb/VMT			
	PM2.5	0.00036	lb/VMT			
Avg construction vehicle speed on road:		25	mph (range 10-55 mph)			
Number of construction vehicles per day:		46	**	VMT/day:	128.8	
				VMT/month:	3348.8	
Number of construction work days per month:		26		VMT/period:	15806.336	
Total vehicles per month:		1196				
Number of construction work months:		4.72				
Total vehicles per const period:		5645.12				
Control reduction due to watering, speed control, etc. =		80	(assumed same control as main site controls)			
		0.8				
Release Fraction =		0.2				

	PM10	PM2.5
Calc 1	0.167	0.167
Calc 2	0.913	0.913
Calc 3	1.585	1.585
Calc 4	0.173	0.017
Calc 5	0.172	0.017

Emissions	PM10	PM2.5
lbs/day	4.44	0.44
lbs/month	115.42	11.33
lbs/period	544.76	53.49
tons/period	0.27	0.03

EPA, AP-42, Section 13.2.2, March 2006
Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.
Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
Portion of Black Rock Rd unpaved from I-10 (Mesa Dr.) west to plant access connector.
** delivery and worker vehicles plus support staff

OFFSITE UNPAVED ROAD FUGITIVE DUST

Each 125 MW Phase-Erection subphase

Length of Unpaved Road used for/by Construction Access:		2.8	miles* (1.4 miles each way)			
			Black Rock Rd from Mesa to plant access road			
Avg weight of construction vehicular equipment on road:		14.2	tons (range 2 - 42 tons)			
Road surface silt content:		2	% (range 1.8 - 35%), rolled gravel surface			
Road surface material moisture content:		5	% (range 0.03 - 13%)			
		k	a	c	d	
Particle size multiplier factors:	PM10	1.8	1	0.2	0.5	
	PM2.5	0.18	1	0.2	0.5	
C factors (brake and tire wear):	PM10	0.00047	lb/VMT			
	PM2.5	0.00036	lb/VMT			
Avg construction vehicle speed on road:		25	mph (range 10-55 mph)			
Number of construction vehicles per day:		330	**	VMT/day:	924	
				VMT/month:	24024	
Number of construction work days per month:		26		VMT/period:	158798.64	
Total vehicles per month:		8580				
Number of construction work months:		6.61				
Total vehicles per const period:		56713.8				
Control reduction due to watering, speed control, etc. =		80	(assumed same control as main site controls)			
		0.8				
Release Fraction =		0.2				

	PM10	PM2.5
Calc 1	0.167	0.167
Calc 2	0.913	0.913
Calc 3	1.585	1.585
Calc 4	0.173	0.017
Calc 5	0.172	0.017

Emissions	PM10	PM2.5
lbs/day	31.85	3.13
lbs/month	827.99	81.29
lbs/period	5472.99	537.36
tons/period	2.74	0.27

EPA, AP-42, Section 13.2.2, March 2006
Soil Moisture; 5% avg, USGS, OFR-02-348, ADRS, 2002.
Soil data: AECOM BSPP, App E.2, 8/09. DR-Air-3, 1-6-10, Silt content-18% avg
Portion of Black Rock Rd unpaved from I-10 (Mesa Dr.) west to plant access connector.
** delivery and worker vehicles plus support staff

CONSTRUCTION PHASE - Truck Hauling/Delivery and Site Support Vehicle Emissions
Each 125 MW Phase - Erection Subphase

Delivery/Hauling Vehicle Use Rates

Delivery Roundtrip Distance:	22	miles
Const Days per Period:	208	
Avg Deliveries per Day:	100	
Fraction of Deliveries-Diesel:	0.85	HDDT
Fraction of Deliveries-Gas:	0.15	MDGT
Total Delivery VMT:	457600	
Total Daily VMT-Diesel	1870	
Total Daily VMT-Gasoline	330	
Total Period VMT-Diesel	388960	
Total Period VMT-Gasoline	68640	

Emissions Factors (lbs/vmt)

NOx	CO	VOC	SOx	PM10	CO2	
0.023285	0.007072	0.001653	0.000001	0.001079	4.0034	HDDT
0.001325	0.008662	0.000381	0.000016	0.000106	1.4894	MDGT

Daily Emissions (lbs)

NOx	CO	VOC	SOx	PM10	CO2	PM2.5	
43.543	**13.225**	**3.091**	**0.002**	**2.018**	**7486.358**	**2.000**	HDDT
0.437	2.858	0.126	0.005	0.035	491.502	0.035	MDGT

Tons per Const Period

4.528	1.375	0.321	0.000	0.210	778.6	0.208	HDDT
0.045	0.297	0.013	0.001	0.004	51.1	0.004	MDGT

Construction Site Support Vehicle Use Rates (LDTs)

Gasoline Vehicle VMT Period:	41600
Avg Daily Gasoline VMT:	200
Diesel Vehicle VMT Period:	20800
Avg Daily Diesel VMT:	100
Total Phase Const Days:	208

Daily Emissions, lbs

NOx	CO	VOC	SOx	PM10	CO2			PM2.5
0.000752	0.00734	0.000282	0.000011	0.000106	1.0869	lbs/vmt*	LDT gasoline	
0.000039	0.000014	0.000002	0.000001	0.000002	0.0086	lbs/vmt*	LDT diesel	
0.1504	**1.4680**	**0.0564**	**0.0022**	**0.0212**	**217.3800**	**lbs/day**	**gasoline**	**0.0212**
0.0039	**0.0014**	**0.0002**	**0.0001**	**0.0002**	**0.8600**	**lbs/day**	**diesel**	**0.0002**

Tons per Const Period

0.0156	0.1527	0.0059	0.0002	0.0022	22.6	**tons/period**	**gasoline**	0.0022
0.0004	0.0001	0.0000	0.0000	0.0000	0.1	**tons/period**	**diesel**	0.0000

Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
On-Road Heavy Duty Diesels (1969-2013)
On Road Medium Duty Gas (1969-2013)
LDTs (1969-2013)

Notes***

VMT for delivery/hauling for all vehicles includes: (1) materials deliveries to site, (2) materials removal from site, other VMT as specified below.
Support Vehicle VMT: (a) 2 gasoline LDTs at 100 miles/day each, (b) 1 diesel LDT at 100 miles/day, per Phase
Delivery Route: Blythe railyard area to site, 22 miles roundtrip.
CARB-CEIDARS, Updated Fractions for PM Profiles: PM2.5 = 0.991 of PM10 for Diesel Exhaust, and 0.998 for Gasoline Vehicles.
Construction deliveries for each Phase begin 1 month prior to erection and run through total erection, i.e, 8 months, 208 days, per Phase.

CONSTRUCTION PHASE - Truck Hauling/Delivery and Site Support Vehicle Emissions

Gentie Const Phase

Delivery/Hauling Vehicle Use Rates			Emissions Factors (lbs/vmt)							
Delivery Roundtrip Distance:	22	miles	NOx	CO	VOC	SOx	PM10	CO2		
Const Days per Period:	312		0.023285	0.007072	0.001653	0.000001	0.001079	4.0034	HDDT	
Avg Deliveries per Day:	2		0.001325	0.008662	0.000381	0.000016	0.000106	1.4894	MDGT	
Fraction of Deliveries-Diesel:	0.85	HDDT				Daily Emissions (lbs)				
Fraction of Deliveries-Gas:	0.15	MDGT	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**	
Total Delivery VMT:	13728		**0.871**	**0.264**	**0.062**	**0.000**	**0.040**	**149.727**	**0.040**	HDDT
Total Daily VMT-Diesel	37		0.009	0.057	0.003	0.000	0.001	9.830	0.001	MDGT
Total Daily VMT-Gasoline	7					Tons per Const Period				
Total Period VMT-Diesel	11668.8		0.136	0.041	0.010	0.000	0.006	23.4	0.006	HDDT
Total Period VMT-Gasoline	2059.2		0.001	0.009	0.000	0.000	0.000	1.5	0.000	MDGT

Construction Site Support Vehicle Use Rates (LDTs)		Daily Emissions, lbs								
Gasoline Vehicle VMT Period:	31200	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**			**PM2.5**
Avg Daily Gasoline VMT:	100	0.000752	0.00734	0.000282	0.000011	0.000106	1.0869	lbs/vmt*	LDT gasoline	
Diesel Vehicle VMT Period:	15600	0.000039	0.000014	0.000002	0.000001	0.000002	0.0086	lbs/vmt*	LDT diesel	
Avg Daily Diesel VMT:	50	**0.0752**	**0.7340**	**0.0282**	**0.0011**	**0.0106**	**108.6900**	**lbs/day**	**gasoline**	**0.0106**
Total Phase Const Days:	312	**0.0020**	**0.0007**	**0.0001**	**0.0001**	**0.0001**	**0.4300**	**lbs/day**	**diesel**	**0.0001**
					Tons per Const Period					
Ref: Riverside County, Emfac 2007, V2.3, Nov 2006		0.0117	0.1145	0.0044	0.0002	0.0017	17.0	**tons/period**	**gasoline**	0.0017
On-Road Heavy Duty Diesels (1969-2013)		0.0003	0.0001	0.0000	0.0000	0.0000	0.1	**tons/period**	**diesel**	0.0000
On Road Medium Duty Gas (1969-2013)										
LDTs (1969-2013)										

Notes***

VMT for delivery/hauling for all vehicles includes: (1) materials deliveries to site, (2) materials removal from site, other VMT as specified below.

Support Vehicle VMT: (a) 2 gasoline LDTs at 50 miles/day each, (b) 1 diesel LDT at 50 miles/day

Delivery Route: Blythe railyard area to site, 2 miles roundtrip.

CARB-CEIDARS, Updated Fractions for PM Profiles: PM2.5 = 0.991 of PM10 for Diesel Exhaust, and 0.998 for Gasoline Vehicles.

CONSTRUCTION PHASE - Truck Hauling/Delivery and Site Support Vehicle Emissions

Access Road Const Phase

Delivery/Hauling Vehicle Use Rates			Emissions Factors (lbs/vmt)							
Delivery Roundtrip Distance:	22	miles	NOx	CO	VOC	SOx	PM10	CO2		
Const Days per Period:	78		0.023285	0.007072	0.001653	0.000001	0.001079	4.0034	HDDT	
Avg Deliveries per Day:	10		0.001325	0.008662	0.000381	0.000016	0.000106	1.4894	MDGT	
Fraction of Deliveries-Diesel:	0.85	HDDT				Daily Emissions (lbs)				
Fraction of Deliveries-Gas:	0.15	MDGT	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**	
Total Delivery VMT:	17160		**4.354**	**1.322**	**0.309**	**0.000**	**0.202**	**748.636**	**0.200**	HDDT
Total Daily VMT-Diesel	187		0.044	0.286	0.013	0.001	0.003	49.150	0.003	MDGT
Total Daily VMT-Gasoline	33					Tons per Const Period				
Total Period VMT-Diesel	14586		0.170	0.052	0.012	0.000	0.008	29.2	0.008	HDDT
Total Period VMT-Gasoline	2574		0.002	0.011	0.000	0.000	0.000	1.9	0.000	MDGT

Construction Site Support Vehicle Use Rates (LDTs)			Daily Emissions, lbs								
Gasoline Vehicle VMT Period:	7800		**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**CO2**			**PM2.5**
Avg Daily Gasoline VMT:	100		0.000752	0.00734	0.000282	0.000011	0.000106	1.0869	lbs/vmt*	LDT gasoline	
Diesel Vehicle VMT Period:	3900		0.000039	0.000014	0.000002	0.000001	0.000002	0.0086	lbs/vmt*	LDT diesel	
Avg Daily Diesel VMT:	50		**0.0752**	**0.7340**	**0.0282**	**0.0011**	**0.0106**	**108.6900**	**lbs/day**	**gasoline**	**0.0106**
Total Phase Const Days:	78		**0.0020**	**0.0007**	**0.0001**	**0.0001**	**0.0001**	**0.4300**	**lbs/day**	**diesel**	**0.0001**
						Tons per Const Period					
Ref: Riverside County, Emfac 2007, V2.3, Nov 2006			0.0029	0.0286	0.0011	0.0000	0.0004	4.2	**tons/period**	**gasoline**	0.0004
On-Road Heavy Duty Diesels (1969-2013)			0.0001	0.0000	0.0000	0.0000	0.0000	0.0	**tons/period**	**diesel**	0.0000
On Road Medium Duty Gas (1969-2013)											
LDTs (1969-2013)											

Notes ***

VMT for delivery/hauling for all vehicles includes: (1) materials deliveries to site, (2) materials removal from site, other VMT as specified below.

Support Vehicle VMT: (a) 2 gasoline LDTs at 50 miles/day each, (b) 1 diesel LDT at 50 miles/day

Delivery Route: Blythe railyard area to site, 22 miles roundtrip.

CARB-CEIDARS, Updated Fractions for PM Profiles: PM2.5 = 0.991 of PM10 for Diesel Exhaust, and 0.998 for Gasoline Vehicles.

CONSTRUCTION PHASE - Worker Travel - Emissions
Each 125 MW Phase (Erection subphase)
Worker Travel to Site

Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
On Road Vehicles (1969-2013)
LDP/LDT Weighted Avg Efs

Avg Occupancy/Vehicle:	1	
Avg Roundtrip Distance, miles:	22	
Avg # of Workers at Site, per day:	220	*
Avg Daily Worker VMT:	4840	
Max # of Workers at Site, per day:	220	*
Max Daily Worker VMT:	4840	
Total Const Days:	183	
Total Const Period Worker VMT:	885720	

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.00054	0.00598	0.00023	0.00001	0.00009	0.95739

Daily Emissions (lbs)

	NOx	CO	VOC	SOx	PM10	CO2	PM2.5
Avg	2.61	28.94	1.11	0.05	0.44	4633.77	0.43
Max	2.61	28.94	1.11	0.05	0.44	4633.77	0.43

Tons per Const Period

Avg	0.239	2.648	0.102	0.004	0.040	424.0	0.040

Worker Travel by Busing from Staging Area

Total Bus VMT/Const Period:	0	Bus Round Trips/Day:	0	max
Avg Bus VMT/Const Day:	0	Bus Occupancy/Trip:	0	
Max Bus VMT/Const Day:	0			
Distance to site from Bus staging area:	0	miles (roundtrip)		
(AFC Traffic and Transportation Section)				

Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
On Road Vehicles (1969-2013)
Bus Carriers

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.019565	0.033478	0.003043	0.000043	0.000435	3.4783

Round trip distance: 22 miles from the Blythe urban area.
* estimated 200 workers plus support staff per day

Daily Emissions (lbs)

	NOx	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**
Avg	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tons per Const Period

Avg	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CONSTRUCTION PHASE - Worker Travel - Emissions
Each 125 MW Phase (Civil subphase)
Worker Travel to Site

Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
On Road Vehicles (1969-2013)
LDP/LDT Weighted Avg Efs

Avg Occupancy/Vehicle:	1	
Avg Roundtrip Distance, miles:	22	
Avg # of Workers at Site, per day:	30	*
Avg Daily Worker VMT:	660	
Max # of Workers at Site, per day:	30	*
Max Daily Worker VMT:	660	
Total Const Days:	130	
Total Const Period Worker VMT:	85800	

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.00054	0.00598	0.00023	0.00001	0.00009	0.95739

Daily Emissions (lbs)

	NOx	CO	VOC	SOx	PM10	CO2	PM2.5
Avg	0.36	3.95	0.15	0.01	0.06	631.88	0.06
Max	0.36	3.95	0.15	0.01	0.06	631.88	0.06

Tons per Const Period

Avg	0.023	0.257	0.010	0.000	0.004	41.1	0.004

Worker Travel by Busing from Staging Area

Total Bus VMT/Const Period:	0	Bus Round Trips/Day:	0	max
Avg Bus VMT/Const Day:	0	Bus Occupancy/Trip:	0	
Max Bus VMT/Const Day:	0			
Distance to site from Bus staging area:	0	miles (roundtrip)		

Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
On Road Vehicles (1969-2013)
Bus Carriers

(AFC Traffic and Transportation Section)

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.019565	0.033478	0.003043	0.000043	0.000435	3.4783

Round trip distance: 22 miles from the Blythe urban area.
* estimated 20 workers per day plus support staff, etc.

Daily Emissions (lbs)

	NOx	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**
Avg	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tons per Const Period

Avg	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CONSTRUCTION PHASE - Worker Travel - Emissions
Gentie Line Const
Worker Travel to Site

Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
On Road Vehicles (1969-2013)
LDP/LDT Weighted Avg Efs

Avg Occupancy/Vehicle:	1	
Avg Roundtrip Distance, miles:	22	
Avg # of Workers at Site, per day:	40	*
Avg Daily Worker VMT:	880	
Max # of Workers at Site, per day:	40	*
Max Daily Worker VMT:	880	
Total Const Days:	312	
Total Const Period Worker VMT:	274560	

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.00054	0.00598	0.00023	0.00001	0.00009	0.95739

Daily Emissions (lbs)

	NOx	CO	VOC	SOx	PM10	CO2	PM2.5
Avg	0.48	5.26	0.20	0.01	0.08	842.50	0.08
Max	0.48	5.26	0.20	0.01	0.08	842.50	0.08

Tons per Const Period

Avg	0.074	0.821	0.032	0.001	0.012	131.4	0.012

Worker Travel by Busing from Staging Area

Total Bus VMT/Const Period:	0	Bus Round Trips/Day:	0	max	Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
Avg Bus VMT/Const Day:	0	Bus Occupancy/Trip:	0		On Road Vehicles (1969-2013)
Max Bus VMT/Const Day:	0				Bus Carriers
Distance to site from Bus staging area:	0	miles (roundtrip)			

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.019565	0.033478	0.003043	0.000043	0.000435	3.4783

Round trip distance: 22 miles from the Blythe urban area.
* estimated 40 workers per day including support staff, etc.

Daily Emissions (lbs)

	NOx	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**
Avg	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tons per Const Period

Avg	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CONSTRUCTION PHASE - Worker Travel - Emissions
Access Road Const
Worker Travel to Site

Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
On Road Vehicles (1969-2013)
LDP/LDT Weighted Avg Efs

Avg Occupancy/Vehicle:	1	
Avg Roundtrip Distance, miles:	22	
Avg # of Workers at Site, per day:	30	*
Avg Daily Worker VMT:	660	
Max # of Workers at Site, per day:	30	*
Max Daily Worker VMT:	660	
Total Const Days:	78	
Total Const Period Worker VMT:	51480	

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.00054	0.00598	0.00023	0.00001	0.00009	0.95739

Daily Emissions (lbs)

	NOx	CO	VOC	SOx	PM10	CO2	PM2.5
Avg	0.36	3.95	0.15	0.01	0.06	631.88	0.06
Max	0.36	3.95	0.15	0.01	0.06	631.88	0.06

Tons per Const Period

Avg	0.014	0.154	0.006	0.000	0.002	24.6	0.002

Worker Travel by Busing from Staging Area

Total Bus VMT/Const Period:	0	Bus Round Trips/Day:	0	max
Avg Bus VMT/Const Day:	0	Bus Occupancy/Trip:	0	
Max Bus VMT/Const Day:	0			
Distance to site from Bus staging area:	0	miles (roundtrip)		

Ref: Riverside County, Emfac 2007, V2.3, Nov 2006
On Road Vehicles (1969-2013)
Bus Carriers

Emissions Factors (lbs/VMT)

NOx	CO	VOC	SOx	PM10	CO2
0.019565	0.033478	0.003043	0.000043	0.000435	3.4783

Round trip distance: 22 miles from the Blythe urban area.
* estimated 30 workers per day including support staff, etc.

Daily Emissions (lbs)

	NOx	**CO**	**VOC**	**SOx**	**PM10**	**CO2**	**PM2.5**
Avg	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tons per Const Period

Avg	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CONSTRUCTION PHASE - Trackout Emissions

		Each 125 MW Phase				
Paved Road Length (miles):	0.1	estimated roundtrip trackout distance				
Daily # of Vehicles:	120					
Avg Vehicle Weight (tons):	14.2			**PM10**	**PM2.5***	
Total Unadjusted VMT/day	12.0			0.361		
Particle Size Multipliers	PM10			3.468		
lb/VMT	0.023			0.006	0.0010	lb/VMT
C factor, lb/VMT	0.00047			0.476	0.0805	**lbs/day**
Road Sfc Silt Loading (g/m^2):	0.56	local X 2		0.006	0.0010	**tons/month**
# of Active Trackout Points:	1	**		0.07	0.0119	**tons/period**
Added Trackout Miles:	PM10					
Trackout VMT/day:	72		*Default Silt Load Values for Paved Road Types*			
Final Adjusted VMT/day	84			Freeway	0.02 g/m2	
Final Adjusted VMT/month	2184			Arterial	0.036 g/m2	
Final Adjusted VMT/period	24745			Collector	0.036 g/m2	
Construction days/month:	26			Local	0.28 g/m2	
Adj. Construction months/period:	11.33			Rural	1.6 g/m2	
Control Applied to Trackout:	Sweeping and Cleaning (water washing)					
Control Efficiency, %	80	0.8	Release Factor =	0.2		

* PM2.5 fraction of PM10 assumed to be 0.169 (CARB CEIDARS updated fraction values) for paved roads.

** 1 controlled ingress/egress point is planned for site construction

EPA, AP-42, Section 13.2.1, Proposed revisions dated 9/2008.

Use silt loading factor from default values for road type if no site specific data is available.

Trackout effects approximately 0.05 mi. of roadway arriving and departing from the site access point.

Plant access road will be paved prior to main site construction period.

Vehicle count = delivery plus 20 misc support vehicles

Worker vehciles not counted for trackout, as they do not access main site.

CO2e Emissions Estimates

	Total All Construction Phases	
For CO2 Estimated Emissions Only	1551	
Total CO2 emisisons from diesel combustion:	1163.25	tons/period
(approx 75% of total)		
Total CO2 emissions from gasoline combustion:	387.75	tons/period
(approx 25% of total)		
Approximate methane fraction of CO2 for diesel combustion:		0.000051
Approximate N2O fraction of CO2 for diesel combustion:		0.000032
Approximate methane fraction of CO2 for gasoline combustion:		0.000213
Approximate N2O fraction of CO2 for gasoline combustion:		0.000113

Estimated methane from diesel combustion:	0.05932575	tons/period
Estimated N2O from diesel combustion:	0.037224	tons/period
Estimated methane from gasoline combustion:	0.08259075	tons/period
Estimated N2O from diesel combustion:	0.04381575	tons/period

Estimated methane CO2e from diesel combustion:	1.24584075	tons/period
Estimated N2O CO2e from diesel combustion:	11.53944	tons/period
Estimated methane CO2e from gasoline combustion:	1.73440575	tons/period
Estimated N2O CO2e from gasoline combustion:	13.5828825	tons/period

Partial CO2e emissions from construction: 1579 tons/period

For GHG Where All Species are Estimated

CO2	7951.3	tons/period
CH4	0.8	tons/period
N2O	0.1	tons/period

Adjusted GWP Rates

CO2	7951.3	tons/period
CH4	16.8	tons/period
N2O	31	tons/period
CO2e	7999.1	tons/period

Total CO2e emissions from construction: 9578 tons/period

8707 metric tons/period

CCAR General Protocol, January 2009, Version 3.1.
IPCC SAR values for methane and N2O.

Average Vehicle Weight Estimate for Construction Period-Civil Work Period

Vehicle Type	Weight tons	# Vehicles per day	Frac. of total vehicles	
Passenger LDP/LDT	2.5	30	0.714	Worker and support travel vehicles
HDD Loaded	20	2	0.048	Equipment service trucks, fuel,
HDD Unloaded	10	2	0.048	maintenance, etc., and minor
MDGT Loaded	15	4	0.095	deliveries during site prep phases.
MDGT Unloaded	7	4	0.095	
		42	1.000	
Vehicle Total		36		

Weighted Avg Vehicle Weight, tons: 5.3

Average Vehicle Weight Estimate for Construction Period-Erection Work Period

Vehicle Type	Weight tons	# Vehicles per day	Frac. of total vehicles	
Passenger LDP/LDT	2.5	220	0.524	Worker and support travel vehicles
HDD Loaded	40	85	0.202	Equipment service trucks, fuel,
HDD Unloaded	20	85	0.202	maintenance, etc., and major
MDGT Loaded	15	15	0.036	deliveries during site building phases.
MDGT Unloaded	7	15	0.036	
		420	1.000	
Vehicle Total		320		

Weighted Avg Vehicle Weight, tons: 14.2

Ref: AP-42, Section 13.2.2, 11/06, mean vehicle weight guidance, p.13.2.2-6.

Table 10

EMFAC Composite Emissions Factor Conversion — EMFAC 2007, V2.3, Nov 2006

County: Riverside
Year: 2013
Model Years: 1969-2013

EMFAC Burden Output

		LDP(gas)	LDP(diesel)	LDT(gas)	LDT(diesel)	MDT(gas)	MDT(diesel)	HDT(gas)	HDT(diesel)	Buses	Motorcycles
Daily VMT/1000		29689	30	20886	248	8876	500	440	4706	46	703
Daily VMT		29689000	30000	20886000	248000	8876000	500000	440000	4706000	46000	703000
ROG, tpd		2.94	0.01	2.94	0.02	1.69	0.06	0.54	3.89	0.07	2.68
CO, tpd		74.61	0.02	76.65	0.15	38.44	0.39	10.17	16.64	0.77	27.13
NOx, tpd		5.86	0.05	7.85	0.41	5.88	2.41	1.63	54.79	0.45	0.96
CO2, tpd	(x 1000) >	12860	10	11350	90	6610	260	320	9420	80	130
PM10, tpd		1.11	0.01	1.11	0.02	0.47	0.03	0.02	2.54	0.01	0.03
SOx, tpd		0.12	0.001	0.11	0.001	0.07	0.001	0.09	0.001	0.001	0.001

Composite Efs

	LDP(gas) g/VMT	LDP(diesel) g/VMT	LDT(gas) g/VMT	LDT(diesel) g/VMT	MDT(gas) g/VMT	MDT(diesel) g/VMT	HDT(gas) g/VMT	HDT(diesel) g/VMT	Buses g/VMT	Motorcycles g/VMT
ROG	0.0898	0.0003	0.1277	0.0009	0.1727	0.0018	1.1134	0.7499	1.3805	3.4584
CO	2.2798	0.0006	3.3293	0.0065	3.9288	0.0119	20.9682	3.2077	15.1854	35.0097
NOx	0.1791	0.0015	0.3410	0.0178	0.6010	0.0736	3.3607	10.5619	8.8746	1.2388
CO2	393.0	0.3	493.0	3.9	675.6	7.9	659.8	1815.9	1577.7	167.8
PM10	0.0339	0.0003	0.0482	0.0009	0.0480	0.0009	0.0412	0.4896	0.1972	0.0387
SOx	0.0037	0.0000	0.0048	0.0000	0.0072	0.0000	0.1856	0.0002	0.0197	0.0013

Composite Efs

	LDP(gas) lb/VMT	LDP(diesel) lb/VMT	LDT(gas) lb/VMT	LDT(diesel) lb/VMT	MDT(gas) lb/VMT	MDT(diesel) lb/VMT	HDT(gas) lb/VMT	HDT(diesel) lb/VMT	Buses lb/VMT	Motorcycles lb/VMT
ROG	0.000198	0.000001	0.000282	0.000002	0.000381	0.000004	0.002455	0.001653	0.003043	0.007624
CO	0.005026	0.000001	0.007340	0.000014	0.008662	0.000026	0.046227	0.007072	0.033478	0.077183
NOx	0.000395	0.000003	0.000752	0.000039	0.001325	0.000162	0.007409	0.023285	0.019565	0.002731
CO2	0.8663	0.0007	1.0869	0.0086	1.4894	0.0175	1.4545	4.0034	3.4783	0.3698
PM10	0.000075	0.000001	0.000106	0.000002	0.000106	0.000002	0.000091	0.001079	0.000435	0.000085
SOx	0.000008	0.000000	0.000011	0.000000	0.000016	0.000000	0.000409	0.000000	0.000043	0.000003

Weighted Avg LDP/LDT Gasoline

	g/VMT	lb/VMT	Calc 1	0.413
ROG	0.105	0.00023	Calc 2	0.587
CO	2.713	0.00598		
NOx	0.246	0.00054		
CO2	434.3	0.95739		
PM10	0.040	0.00009		
SOx	0.004	0.00001		

	LDP(gas)	LDP(diesel)	LDT(gas)	LDT(diesel)	MDT(gas)	MDT(diesel)	HDT(gas)	HDT(diesel)	Buses	Motorcycles
Annual VMT	1.08E+10	1.10E+07	7.62E+09	9.05E+07	3.24E+09	1.83E+08	1.61E+08	1.72E+09	1.68E+07	2.57E+08
Daily Fuel Use, 10^3 gal	1329.69	1.08	1175.37	8.51	682.84	25.59	34.1	847.43	7.25	18.35
Daily Fuel Use, gals	1329690	1080	1175370	8510	682840	25590	34100	847430	7250	18350
Annual Fuel Use, gals	485336850	394200	429010050	3106150	249236600	9340350	12446500	309311950	2646250	6697750
Average Miles/gallon	22.3	27.8	17.8	29.1	13.0	19.5	12.9	5.6	6.3	38.3

Table 11 EMFAC Burden Output for 2013 **5 Pages**

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2012/05/23 15:43:02

Scen Year: 2013 -- All model years in the range 1969 to 2013 selected

Season : Annual

Area : Riverside County Average

I/M Stat : Enhanced Interim (2005) -- Using I/M schedule for area 61 Riverside (SC)

Emissions: Tons Per Day

****

	LDA-NCAT	LDA-CAT	LDA-DSL	LDA-TOT	LDT1-NCAT	LDT1-CAT	LDT1-DSL	LDT1-TOT	LDT2-NCAT	LDT2-CAT	LDT2-DSL
Vehicles	3106	743936	1244	748287	1682	146667	6597	154946	1226	336672	488
VMT/1000	49	29640	30	29719	37	6314	232	6583	27	14508	16
Trips	12052	4690170	6666	4708890	6559	921334	40020	967913	4808	2117340	2785
Reactive Organic Gas Emissions											
Run Exh	0.34	1.06	0	1.4	0.27	0.3	0.02	0.59	0.2	0.89	0
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.07	1.47	0	1.53	0.04	0.3	0	0.34	0.03	0.91	0
Total Ex	0.41	2.53	0	2.94	0.31	0.6	0.02	0.93	0.23	1.8	0
Diurnal	0.03	0.5	0	0.53	0.01	0.1	0	0.12	0.01	0.26	0
Hot Soak	0.04	0.72	0	0.76	0.02	0.15	0	0.17	0.02	0.36	0
Running	0.22	1.74	0	1.96	0.07	0.6	0	0.66	0.05	1.51	0
Resting	0.02	0.33	0	0.34	0.01	0.07	0	0.08	0.01	0.18	0
Total	0.72	5.81	0	6.54	0.43	1.52	0.02	1.96	0.31	4.11	0
Carbon Monoxide Emissions											
Run Exh	4.09	51.26	0.02	55.37	3.14	14.76	0.14	18.05	2.27	39.35	0.01
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.41	18.85	0	19.26	0.23	4.48	0	4.71	0.16	12.25	0
Total Ex	4.49	70.11	0.02	74.63	3.37	19.24	0.14	22.76	2.43	51.6	0.01
Oxides of Nitrogen Emissions											
Run Exh	0.24	4.26	0.05	4.55	0.18	1.23	0.39	1.8	0.13	4.79	0.03
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	1.34	0	1.36	0.01	0.29	0	0.3	0.01	1.2	0
Total Ex	0.26	5.61	0.05	5.91	0.19	1.52	0.39	2.1	0.14	6	0.03
Carbon Dioxide Emissions (000)											
Run Exh	0.03	12.46	0.01	12.5	0.02	3.34	0.09	3.45	0.02	7.67	0.01
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0	0.37	0	0.37	0	0.09	0	0.09	0	0.21	0
Total Ex	0.03	12.83	0.01	12.87	0.02	3.43	0.09	3.54	0.02	7.88	0.01
PM10 Emissions											
Run Exh	0	0.4	0	0.4	0	0.1	0.01	0.11	0	0.48	0
Idle Exh	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0	0.04	0	0.04	0	0.01	0	0.01	0	0.04	0
Total Ex	0	0.44	0	0.44	0	0.11	0.01	0.12	0	0.52	0
TireWear	0	0.26	0	0.26	0	0.06	0	0.06	0	0.13	0
BrakeWr	0	0.41	0	0.41	0	0.09	0	0.09	0	0.2	0
Total	0	1.11	0	1.12	0	0.25	0.02	0.27	0	0.85	0
Lead	0	0	0	0	0	0	0	0	0	0	0
SOx	0	0.12	0	0.12	0	0.03	0	0.03	0	0.08	0
Fuel Consumption (000 gallons)											
Gasoline	3.94	1325.75	0	1329.69	2.93	354.63	0	357.56	2.14	815.67	0
Diesel	0	0	1.08	1.08	0	0	7.97	7.97	0	0	0.54

****

LDT2-TOT	MDV-NCAT	MDV-CAT	MDV-DSL	MDV-TOT	.HDT1-NCA	LHDT1-CAT	LHDT1-DSL	LHDT1-TOT	LHDT2-NCA	LHDT2-CAT	LHDT2-DSL	LHDT2-TOT
338387	865	186160	695	187720	58	23121	6648	29827	16	4673	4608	9297
14551	20	7634	24	7678	1	1026	293	1320	0	195	183	378
2124930	3572	1175560	4276	1183410	1925	764544	83619	850088	535	154532	57961	213028
1.09	0.18	0.58	0	0.76	0	0.08	0.03	0.12	0	0.01	0.03	0.04
0	0	0	0	0	0	0.03	0	0.03	0	0.01	0	0.01
0.94	0.02	0.65	0	0.68	0.01	0.26	0	0.28	0	0.06	0	0.06
---	---	---	---	---	---	---	---	---	---	---	---	---
2.03	0.2	1.24	0	1.44	0.02	0.38	0.03	0.43	0	0.08	0.03	0.11
0.27	0	0.13	0	0.13	0	0	0	0	0	0	0	0
0.37	0	0.18	0	0.19	0	0.03	0	0.03	0	0.01	0	0.01
1.56	0.01	0.75	0	0.76	0.01	0.34	0	0.35	0	0.09	0	0.09
0.18	0	0.09	0	0.09	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
4.42	0.22	2.39	0	2.61	0.03	0.75	0.03	0.8	0.01	0.17	0.03	0.21
41.63	2.8	21.62	0.01	24.43	0.13	1.43	0.21	1.77	0.03	0.24	0.15	0.43
0	0	0	0	0	0	0.19	0.01	0.2	0	0.04	0	0.04
12.41	0.22	7.48	0	7.71	0.09	3.47	0	3.55	0.02	0.68	0	0.71
---	---	---	---	---	---	---	---	---	---	---	---	---
54.04	3.02	29.1	0.01	32.14	0.21	5.09	0.22	5.52	0.06	0.96	0.16	1.18
4.95	0.15	2.93	0.04	3.12	0	0.4	1.28	1.69	0	0.08	1.05	1.14
0	0	0	0	0	0	0	0.02	0.02	0	0	0.01	0.01
1.21	0.01	0.77	0	0.78	0	1.27	0	1.27	0	0.27	0	0.27
---	---	---	---	---	---	---	---	---	---	---	---	---
6.16	0.16	3.7	0.04	3.9	0	1.67	1.3	2.98	0	0.35	1.07	1.42
7.69	0.01	5.51	0.01	5.53	0	0.73	0.17	0.9	0	0.14	0.11	0.24
0	0	0	0	0	0	0.01	0	0.01	0	0	0	0
0.21	0	0.16	0	0.16	0	0.04	0	0.04	0	0.01	0	0.01
---	---	---	---	---	---	---	---	---	---	---	---	---
7.9	0.01	5.67	0.01	5.69	0	0.77	0.17	0.94	0	0.15	0.11	0.25
0.49	0	0.23	0	0.24	0	0.01	0.01	0.01	0	0	0.01	0.01
0	0	0	0	0	0	0	0	0	0	0	0	0
0.04	0	0.02	0	0.02	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0.53	0	0.26	0	0.26	0	0.01	0.01	0.02	0	0	0.01	0.01
0.13	0	0.07	0	0.07	0	0.01	0	0.02	0	0	0	0
0.2	0	0.11	0	0.11	0	0.01	0	0.02	0	0	0	0.01
---	---	---	---	---	---	---	---	---	---	---	---	---
0.86	0	0.43	0	0.43	0	0.03	0.02	0.05	0	0.01	0.01	0.02
0	0	0	0	0	0	0	0	0	0	0	0	0
0.08	0	0.05	0	0.06	0	0.01	0	0.01	0	0	0	0
817.81	2.06	585.54	0	587.59	0.18	79.78	0	79.96	0.05	15.24	0	15.29
0.54	0	0	0.83	0.83	0	0	15.19	15.19	0	0	9.56	9.56

MHDT-NCA	MHDT-CAT	MHDT-DSL	MHDT-TOT	HHDT-NCAT	HHDT-CAT	HHDT-DSL	HHDT-TOT	OBUS-NCAT	OBUS-CAT	OBUS-DSL	OBUS-TOT	SBUS-NCAT
146	2240	9391	11777	26	529	23173	23727	13	530	326	869	15
1	119	608	728	0	59	3984	4044	0	23	18	41	1
6659	102301	263334	372295	1166	24149	117265	142581	593	24214	9129	33936	60
0.01	0.03	0.09	0.13	0	0.11	3.3	3.42	0	0.01	0	0.01	0.01
0	0	0	0.01	0	0	0.46	0.46	0	0	0	0	0
0.06	0.1	0	0.17	0.02	0.08	0	0.1	0.01	0.04	0	0.04	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0.07	0.13	0.1	0.3	0.03	0.19	3.76	3.98	0.01	0.05	0	0.06	0.01
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0.01	0	0	0	0	0	0	0	0	0
0.03	0.04	0	0.07	0.01	0.01	0	0.02	0	0.01	0	0.01	0
0	0	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0.1	0.18	0.1	0.38	0.03	0.21	3.76	4.01	0.01	0.06	0	0.07	0.01
0.18	0.57	1.02	1.77	0.21	2.43	13.36	16	0.02	0.27	0.03	0.31	0.11
0	0.03	0.03	0.06	0	0	1.98	1.98	0	0.01	0	0.01	0
0.44	1.73	0	2.17	0.35	1.35	0	1.69	0.04	0.63	0	0.66	0.01
---	---	---	---	---	---	---	---	---	---	---	---	---
0.62	2.34	1.05	4.01	0.56	3.78	15.34	19.67	0.05	0.9	0.03	0.99	0.12
0	0.19	4.37	4.56	0.01	0.56	44.29	44.85	0	0.1	0.14	0.23	0
0	0	0.08	0.08	0	0	4.96	4.96	0	0	0	0	0
0.01	0.23	0	0.23	0.01	0.17	0	0.18	0	0.09	0	0.09	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0.01	0.41	4.45	4.87	0.01	0.73	49.24	49.99	0	0.19	0.14	0.33	0
0	0.08	1.01	1.09	0	0.04	7.93	7.97	0	0.02	0.03	0.05	0
0	0	0	0.01	0	0	0.29	0.29	0	0	0	0	0
0	0	0	0.01	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.09	1.01	1.1	0	0.04	8.21	8.25	0	0.02	0.03	0.05	0
0	0	0.11	0.12	0	0	2.03	2.03	0	0	0	0	0
0	0	0	0	0	0	0.05	0.05	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0.12	0.12	0	0	2.08	2.09	0	0	0	0	0
0	0	0.01	0.01	0	0	0.16	0.16	0	0	0	0	0
0	0	0.01	0.01	0	0	0.12	0.13	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0	0	0.13	0.14	0	0	2.37	2.37	0	0	0	0.01	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0.01	0.01	0	0	0.08	0.08	0	0	0	0	0
0.37	9.38	0	9.75	0.15	4.97	0	5.12	0.03	1.91	0	1.94	0.08
0	0	91.11	91.11	0	0	739.02	739.02	0	0	2.75	2.75	0

SBUS-CAT	SBUS-DSL	SBUS-TOT	UB-NCAT	UB-CAT	UB-DSL	UB-TOT	MH-NCAT	MH-CAT	MH-DSL	MH-TOT	MCY-NCAT	MCY-CAT
165	1463	1644	5	211	142	357	270	19196	2770	22236	37956	31653
7	63	71	1	27	18	46	2	228	32	263	345	358
661	5854	6574	19	843	567	1430	27	1920	277	2224	75904	63300
0.01	0.02	0.03	0.01	0.05	0.01	0.07	0.01	0.04	0	0.05	1.53	0.82
0	0	0.01	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0.19	0.14
---	---	---	---	---	---	---	---	---	---	---	---	---
0.01	0.02	0.04	0.01	0.06	0.01	0.07	0.01	0.04	0	0.05	1.72	0.96
0	0	0	0	0	0	0	0	0	0	0	0.01	0.16
0	0	0	0	0	0	0	0	0	0	0	0.01	0.04
0	0	0	0	0	0	0	0	0	0	0	0.04	0.17
0	0	0	0	0	0	0	0	0	0	0	0.01	0.08
---	---	---	---	---	---	---	---	---	---	---	---	---
0.01	0.02	0.04	0.01	0.06	0.01	0.08	0.01	0.05	0	0.06	1.79	1.4
0.08	0.18	0.37	0.13	0.5	0.07	0.7	0.34	1.32	0.03	1.68	20.89	4.75
0.01	0.02	0.04	0	0	0	0	0	0	0	0	0	0
0.02	0	0.03	0	0.06	0	0.06	0	0.02	0	0.03	0.65	0.84
---	---	---	---	---	---	---	---	---	---	---	---	---
0.11	0.2	0.43	0.14	0.56	0.07	0.77	0.34	1.34	0.03	1.71	21.54	5.59
0.01	0.6	0.61	0	0.14	0.31	0.45	0.01	0.24	0.3	0.55	0.51	0.41
0	0.06	0.06	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0.01	0	0.01	0	0	0	0	0.03	0.02
---	---	---	---	---	---	---	---	---	---	---	---	---
0.02	0.66	0.68	0	0.14	0.31	0.45	0.01	0.24	0.3	0.55	0.54	0.43
0.01	0.1	0.11	0	0.02	0.05	0.08	0	0.16	0.05	0.21	0.04	0.08
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0.01	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0.01	0.11	0.11	0	0.02	0.05	0.08	0	0.16	0.05	0.21	0.05	0.08
0	0.03	0.03	0	0	0.01	0.01	0	0	0	0.01	0.02	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.03	0.03	0	0	0.01	0.01	0	0	0	0.01	0.02	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---
0	0.03	0.03	0	0	0.01	0.01	0	0.01	0.01	0.01	0.03	0.01
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0.67	0	0.75	0.08	2.38	0	2.46	0.23	16.31	0	16.54	9.17	9.18
0	9.72	9.72	0	0	4.79	4.79	0	0	4.83	4.83	0	0

MCY-DSL	MCY-TOT	ALL-TOT
0	69609	1598680
0	703	66125
0	139204	10746500
0	2.35	10.06
0	0	0.52
0	0.33	4.48
---	---	---
0	2.68	15.06
0	0.17	1.23
0	0.05	1.59
0	0.21	5.7
0	0.08	0.79
---	---	---
0	3.19	24.37
0	25.64	188.16
0	0	2.32
0	1.49	54.49
---	---	---
0	27.13	244.97
0	0.91	69.41
0	0	5.14
0	0.05	5.75
---	---	---
0	0.96	80.3
0	0.12	39.94
0	0	0.3
0	0.01	0.9
---	---	---
0	0.13	41.14
0	0.02	3.47
0	0	0.06
0	0	0.11
---	---	---
0	0.02	3.64
0	0	0.72
0	0	0.98
---	---	---
0	0.03	5.33
0	0	0
0	0	0.4
0	18.35	3242.81
0	0	887.4

Table 12

Modeling Inputs/Results for Blythe Solar Construction Impacts (Combustion+Fugitive Sources as Area Source) - Previous Project Receptor Grids

Short Term Impacts (24 hrs and less)						Long Term Impacts (annual)					
	NOx	CO	SOx	PM10	PM2.5		NOx	CO	SOx	PM10	PM2.5
Combustion (lbs/day)	287.7	264.1	0.4	16.02	15.88	Combustion (tons/year)	33.7	39.2	0.052	2.05	2.03
						Combustion (days/year)**	312	312	312	312	312
Combustion (hrs/day)	10	10	10	10	10	Combustion (hrs/day)	10	10	10	10	10
Combustion (lbs/hr)	28.77	26.41	0.04	1.60	1.59	Combustion (lbs/hr)**	18.47	21.48	0.03	1.12	1.11
Combustion (g/sec)	3.63E+00	3.33E+00	5.04E-03	2.02E-01	2.00E-01	Combustion (g/sec)	2.33E+00	2.71E+00	3.59E-03	1.42E-01	1.40E-01
Construction Dust (lbs/day)				25.47	5.04	Construction Dust (tons/year)				2.15	0.42
						Construction Dust (days/year)				312	312
Construction Dust (hrs/day)				10	10	Construction Dust (hrs/day)				10	10
Construction Dust (lbs/hr)				2.55	0.50	Construction Dust (lbs/hr)**				1.178	0.230
Construction Dust (g/sec)	45 acres			3.21E-01	6.35E-02	Construction Dust (g/sec)	868 acres			1.48E-01	2.90E-02
AERMOD Inputs	**182,109 m^2**		**182,109 m^2**				**3,512,671 m^2**		**3,512,671 m^2**		
Combustion ($g/s/m^2$)	1.991E-05	1.827E-05	2.768E-08	1.108E-06	1.099E-06	Combustion ($g/s/m^2$)	6.624E-07	7.705E-07	1.022E-09	4.029E-08	3.990E-08
Construction Dust ($g/s/m^2$)				1.762E-06	3.487E-07	Construction Dust ($g/s/m^2$)				4.226E-08	8.255E-09
AERMOD Results (ug/m^3)											
Combustion Only						Combustion Only					
1-hour Max	1033.413	948.642	1.437	57.54354							
3-hour Max			0.594	23.77537							
8-hour Max		158.107		9.59059							
24-hour Max			0.131	5.23741	5.19164	Annual	0.593		0.001	0.03605	0.03570
All Particulate Sources						All Particulate Sources					
24-hour Max				16.50908	7.42553	Annual				0.07719	0.04373
1-hour NO2 w/ OLM	238.832	based on O3 (ppm) of:		0.072		Annual NO2 w/ ARM	0.444	based on ARM Ratio of:		75%	
Background (ug/m^3)						Background (ug/m^3)					
1-hour Max	90.2	3437	136.3								
3-hour Max			N/A								
8-hour Max		768									
24-hour Max			18.4	96	14.7	Annual	16.9		2.6	35.4	7.8
Total + Background (ug/m^3)						Total + Background (ug/m^3)					
1-hour Max	329.0	4386	137.7								
8-hour Max		926									
24-hour Max			18.53	112.5	22.1	Annual	17.3		2.6	35.5	7.8

**Even for construction projects taking less than 12-months or 7 days/wk, the hourly emissions for modeling are still based on total tons (projects<12 months) or tons/year (projects>12months) divided by 365 days since all days in the met dataset (i.e., all 12 months and all 365 days - i.e., 7 days/week) are modeled.

Table 13 Construction Screening Diesel PM Risk Calculations

Project ID:	Blythe Solar		
Phase:	Construction		
Current DPM URF:	0.0003	ug/m3^-1	Cancer
Current DPM REL:	5	ug/m3^-1	Chronic

Receptor Data:

Receptor ID		1	2	*Construction Period Exposure Values*	
Exposure Scenario		MIR	MIR	hrs/day	20
Receptor Type		Fenceline	Residential	days/week	6
UTM E, meters		705922	710535	weeks/yr	52
UTM N, meters		3727306	3721040	years	6.25
Elevation, meters-AMSL		na	119		
Annual Conc (ug/m3):		0.03605	0.00070		
Exposure Adjustment Factor:		0.0638	0.0638		

Predicted Risk Data for the Construction Period

Cancer Risk per million	*0.69*	*0.01*
Chronic HI	*0.007*	*0.000*
Acute HI	*n/a*	*n/a*

Receptor 1 - The risks presented are for MIR-1, which is the maximum impacted location for a non-habitable receptor (fenceline).
Receptor 2 - The risks presented are for MIR -2 at the ***nearest residence*** *, which are more representative of offsite population risks.*

Ref: Health Risk Assessment Guidance for Analyzing Cancer Risks
from Mobile Source Diesel Emissions, SCAQMD, 8/03.
Ref: HARP Users Manual, Version 1.4f, Appendix K, 12/2003.
Ref: OEHHA, Air Toxics Hot Spots Program Risk Assessment Guidelines, 8/03, 8.2.2, p. 8-4.
Ref: CARB/OEHHA Consolidated Risk Value Table, 2/2011.

Air Quality Modeling Files (CD-ROM)

Provided Separately

APPENDIX E

USACOE JURISDICTIONAL DETERMINATION

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
PRADO DAM FIELD OFFICE
2493 POMONA-RINCON ROAD
CORONA, CALIFORNIA 92880

August 2, 2010

REPLY TO
ATTENTION OF
Office of the Chief
Regulatory Division

EDAW, Inc.
Attn: Joshua Zinn
1420 Kettner Blvd., Suite 500
San Diego , CA 92101

Solar Millennium LLC
Attn: Elizabeth Ingram
1111 Broadway, 5th Floor
Oakland, CA 94607

SUBJECT: Approved Jurisdictional Determination regarding presence/absence of geographic jurisdiction for the Blythe Solar Power Project, Riverside County, California

Dear Mr. Zinn:

Reference is made to your request (File No. SPL-2010-00098-JEM) dated October 23, 2009, for an approved Department of the Army jurisdictional determination (JD) for the Blythe Solar Power Project (Solar Millennium LLC, Chevron Energy Solutions), near Blythe, centered approximately at Latitude 33.64263 Longitude -114.76868, in Riverside County, California.

As you may know, the Corps' evaluation process for determining whether or not a Department of the Army permit is needed involves two tests. If both tests are met, then a permit is required. The first test determines whether or not the proposed project is located in a water of the United States (i.e., it is within the Corps' geographic jurisdiction). The second test determines whether or not the proposed project is a regulated activity under Section 10 of the River and Harbor Act or Section 404 of the Clean Water Act. As part of the evaluation process, pertaining to the first test only, we have made the jurisdictional determination below.

Based on available information, we have determined there are no waters of the United States on the project site. The aquatic resources identified are intrastate isolated waters with no apparent interstate or foreign commerce connection. As such, these waters are not currently regulated by the Corps of Engineers. This disclaimer of jurisdiction is only for Section 404 of the Clean Water Act. Other Federal, State, and local laws may apply to your activities. In particular, you may need authorization from the California State Water Resources Control Board and/or the U.S. Fish and Wildlife Service.

This letter contains an approved jurisdictional determination for the Blythe Solar Power Project project site. If you object to this decision, you may request an administrative appeal

under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet (Appendix A) and Request for Appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the Corps South Pacific Division Office at the following address:

Tom Cavanaugh
Administrative Appeal Review Officer,
U.S. Army Corps of Engineers
South Pacific Division, CESPD-PDS-O, 2042B
1455 Market Street, San Francisco, California 94103-1399

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 C.F.R. Part 331.5, and that it has been received by the Division Office within 60 days of the date on the NAP. Should you decide to submit an RFA form, it must be received at the above address by October 2, 2010. It is not necessary to submit an RFA form to the Division office if you do not object to the decision in this letter.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. If you wish to submit new information regarding the approved jurisdictional determination for this site, please submit this information to James Mace at the letterhead address by October 2, 2010. The Corps will consider any new information so submitted and respond within 60 days by either revising the prior determination, if appropriate, or reissuing the prior determination. A revised or reissued jurisdictional determination can be appealed as described above.

This determination has been conducted to identify the extent of the Corps' Clean Water Act jurisdiction on the particular Project site identified in your request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

If you have any questions, please me at 951.898.6163 or via e-mail at James.E.Mace@usace.army.mil. Please be advised that you can now comment on your experience with Regulatory Division by accessing the Corps web-based customer survey form at: http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

James E. Mace
Senior Project Manager
South Coast Branch
Regulatory Division

APPENDIX F

LEGAL DESCRIPTION OF ROW

BSPP Right of Way

PARCEL “A”

LOT 3 THROUGH LOT 9, INCLUSIVE, SW¼ NE¼, W½ SE¼, S½ NW¼, SW¼ SECTION 4; LOT 1, LOT 2, S½ NE¼, SE¼ SECTION 5; N½ NE¼ SECTION 8; LOT 1 THROUGH LOT 4, INCLUSIVE, W½ NE¼, N½ NW¼, SE¼ NW¼, W½ SE¼ SECTION 9; LOT 1, LOT 2, SW¼, W½ SE¼ SECTION 15; TRACT 37 THROUGH TRACT 47, INCLUSIVE; TRACT 49 THROUGH 56, INCLUSIVE; TRACT 58, ALL LYING WITHIN TOWNSHIP 6 SOUTH, RANGE 21 EAST, SBM, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

LOT 2 THROUGH LOT 7, INCLUSIVE, SE¼ NW¼, SW¼ NE¼, W½ SE¼, E½ SW¼ SECTION 6; LOT 1 THROUGH LOT 4, INCLUSIVE, E½ NW¼, E½ SW¼, W½ NE¼, W½ SE¼ SECTION 7; LOT 2 THROUGH LOT 5, INCLUSIVE, SECTION 18, ALL LYING WITHIN TOWNSHIP 6 SOUTH, RANGE 22 EAST, SBM, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.
DESCRIBED PARCEL “A” CONTAINS 6831.20 ACRES, MORE OR LESS.

PARCEL “B”
S½ SE¼ SECTION 7; LOT 1, LOT 6 SECTION 8; LOT 1, LOT 2 SECTION 18, ALL LYING WITHIN TOWNSHIP 6 SOUTH, RANGE 22 EAST, SBM, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.
DESCRIBED PARCEL “B” CONTAINS 3.67 ACRES, MORE OR LESS.

Gen-Tie and Overhead Fiber Optic Line

PARCEL “A”
LOT 5, LOT 6 AND SW¼ SW¼ SECTIONS 23; TRACT 56; TRACT 59; TRACT 71; TRACT 78A; TRACT 78B; TRACT 79, ALL LYING WITHIN TOWNSHIP 6 SOUTH, RANGE 21 EAST, SBM, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.
DESCRIBED PARCEL “A” CONTAINS 57.14 ACRES, MORE OR LESS.

PARCEL “B”
TRACTS 78B AND 80, TOWNSHIP 6 SOUTH, RANGE 21 EAST, SBM, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

LOT 4, LOT 5, SW¼ NE¼, E½ SW¼ AND NW¼ SE¼ SECTION 2; S½ S½ SECTION 3; S½ S½ SECTION 4; S½ S½ SECTION 5; SE1/4 SE¼ SECTION 6; E1/2 NE1/4 SECTION 7; NE¼ NE¼ SECTIONS 10; N½ NW¼ SECTION 11, ALL LYING WITHIN TOWNSHIP 7 SOUTH, RANGE 21 EAST, SBM, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.
DESCRIBED PARCEL “B” CONTAINS 70.27 ACRES, MORE OR LESS.

Redundant Fiber Optic Line

PARCEL “A”
LOT 1 SECTIONS 26; TRACT 56; TRACT 59; TRACT 69; TRACT 78B, ALL LYING WITHIN TOWNSHIP 6 SOUTH, RANGE 21 EAST, SBM, COUNTY OF RIVERSIDE, SATE OF CALIFORNIA.
DESCRIBED PARCEL “A” CONTAINS 46.11 ACRES, MORE OR LESS.

PARCEL “B”
TRACTS 78B AND 80, TOWNSHIP 6 SOUTH, RANGE 21 EAST, SBM, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

LOT 4, LOT 5, SW¼ NE¼, E½ SW¼ AND NW¼ SE¼ SECTION 2; S½ S½ SECTION 3; S½ S½ SECTION 4; S½ S½ SECTION 5; SE1/4 SE¼ SECTION 6; E1/2 NE1/4 SECTION 7; NE¼ NE¼ SECTIONS 10; N½ NW¼ SECTION 11, ALL LYING WITHIN TOWNSHIP 7 SOUTH, RANGE 21 EAST, SBM, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.
DESCRIBED PARCEL "B" CONTAINS 70.27 ACRES, MORE OR LESS.

Access Road

PARCEL "C"
LOT 1 SECTIONS 26; TRACT 56; TRACT 59; TRACT 69; TRACT 78B, ALL LYING WITHIN TOWNSHIP 6 SOUTH, RANGE 21 EAST, SBM, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.
DESCRIBED PARCEL "A" CONTAINS 46.11 ACRES, MORE OR LESS.

Additional Private Parcels Included for Project Site not on BLM Land:

APN# 818-160-015 (20.04 acres)
The South ½ of the Southeast ¼ of Tract 48, Section 11, Township 6 South, Range 21 East, San Bernardino Base Meridian, in the County of Riverside, Sate of California, as shown on a Survey and Independent Resurvey approved by the United Surveyor General of California, on April 1, 1918.

APN# 818-160-014 (140 acres)
Tract 48 in Section 11, Township 6 South, Range 21 East, San Bernardino Meridian, in the County of Riverside, Sate of California, as shown on a Survey and Independent Resurvey approved by the United Surveyor General of California, on April 1, 1918.

Excepting therefrom the South ½ of the Southeast ¼ of Tract 48.

APN# 818-180-001 (160.54 Acres)
Township 6 South, Range 21 East, Tract 57, San Bernardino Meridian, County of Riverside, State of California, all the area described contains 160.54 acres according to the official plat of the survey of the said land in the Bureau of Land Management , Patent #1132396, January 21, 1954, Instrument No. 3381.

PALM SPRINGS—SOUTH COAST FIELD OFFICE
RIVERSIDE COUNTY

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

MT PLAT

INDEX TO SEGREGATED TRACTS

DESCRIPTION	ORIGINAL SURVEY			
TRACT NO.	T.	N.	W.M.	SUBDIVISION

14

23

26

35

36

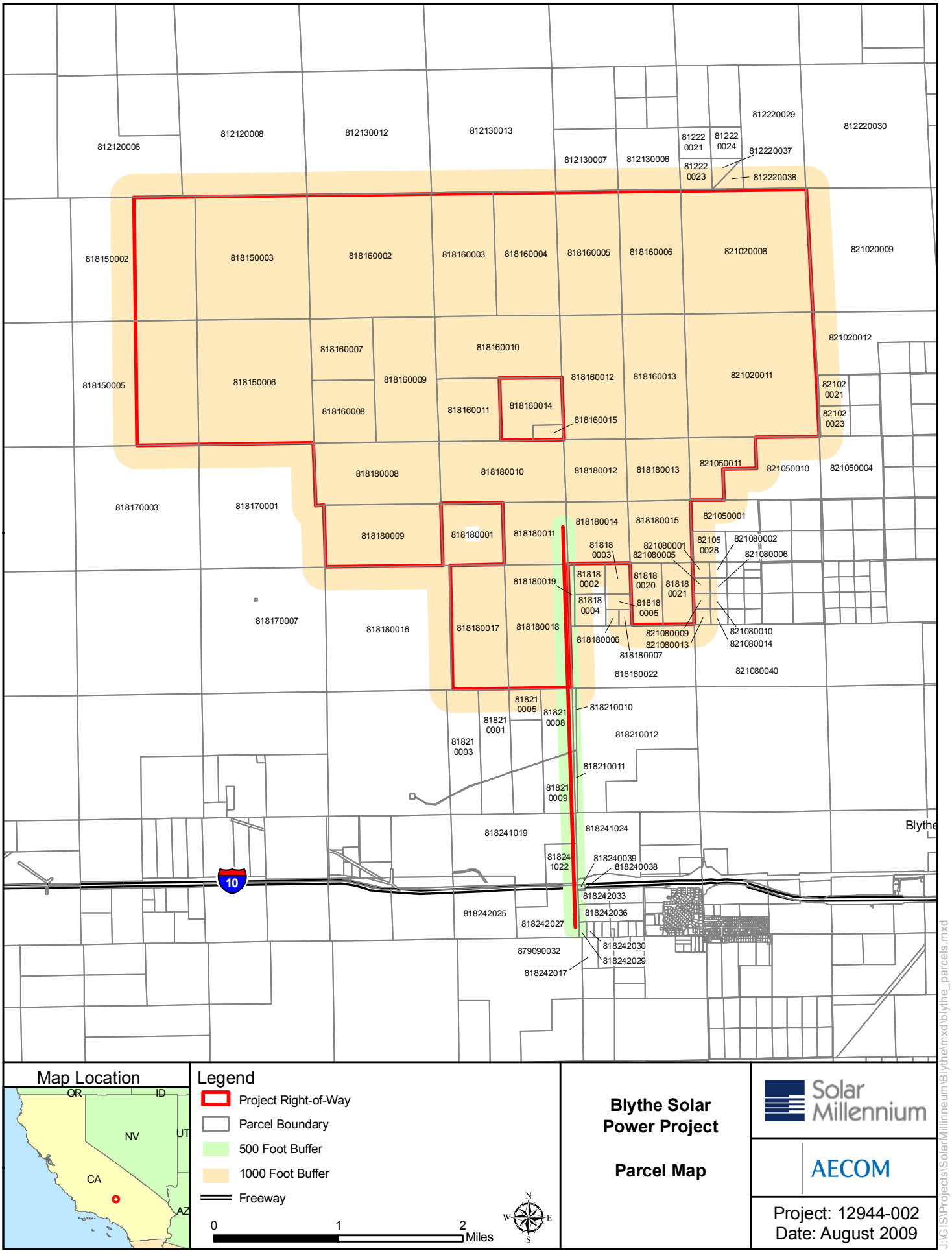
FOR ORDERS AFFECTING DISPOSAL OR USE OF UNSURVEYED LANDS REFER TO INDEX OF MISCELLANEOUS DOCUMENTS

CURRENT TO

T. 6 S.
R. 21 E.

APPENDIX G

LIST OF PROPERTY OWNERS


812120006
812120008
812130012
812130013
812130007
812130006
812220029
812220030
812220037
812220038
818150002
818150003
818160002
818160003
818160004
818160005
818160006
821020008
821020009
818150005
818150006
818160007
818160008
818160009
818160010
818160011
818160012
818160013
821020011
821020012
818160014
818160015
818180008
818180010
818180012
818180013
821050011
821050010
821050004
818170003
818170001
818180009
818180001
818180011
818180014
818180015
821050001
821080001
821080005
821080002
821080006
818180019
818170007
818180016
818180017
818180018
818180006
818180007
821080009
821080013
821080010
821080014
818180022
821080040
818210010
818210012
818210011
818241019
818241024
818240039
818240038
818242033
818242036
818242025
818242027
818242030
818242029
879090032
818242017
Blythe
10
Map Location
OR
ID
NV
UT
CA
AZ
Legend
Project Right-of-Way
Parcel Boundary
500 Foot Buffer
1000 Foot Buffer
Freeway
0
1
2
Miles
N
W
E
S
Blythe Solar Power Project
Parcel Map
Solar Millennium
AECOM
Project: 12944-002
Date: August 2009
J:\GIS\Projects\SolarMillinneum\Blythe\mxd\blythe_parcels.mxd

	APN	First	Middle	Last	mail to street	mail to city	zip code
APN #	818180006	KAREN	MARIE	LOWE	1051 SUNBURST DR	BEAUMONT CA	92223
APN #	821080007	BEVERLY	M	SCHNESE	1125 KITTIWAKE DR	VENICE FL	34292
APN #	821080008	GREGORIO	F	GAJE	1264 OAKHURST CT	BEAUMONT CA	92223
APN #	812130001	DONALD	E	FINNELL	13420 PANTERA RD	SAN DIEGO CA	92130
APN #	821060001			FARMLAND RESERVE	139 E SOUTH TEMPLE STE 600	SALT LAKE CITY UT	84111
APN #	812220023	WILLIAM	L	REID	1402 SHADY GLEN RD	GLENDALE CA	91208
APN #	818180003			ROMAN CATHOLIC ARCHBISHOP O	1531 W NINTH ST	LOS ANGELES CA	90015
APN #	818170001	SCOTT	M	COOLEY	15900 KENNEDY RD	LOS GATOS CA	95052
APN #	821020007			SUN WORLD INTERNATIONAL	16350 DRIVER RD	BAKERSFIELD CA	93308
APN #	821050010			SOARING VISTA PROP INC	1800 BERING DR STE 100	HOUSTON TX	77057
APN #	818160002			STATE SCHOOL LANDS	1807 13TH ST	SACRAMENTO CA	95814
APN #	812220021	STANLEY	O	RUZICKA	1820 IDLEWOOD RD	GLENDALE CA	91202
APN #	821080020	FRED	W	STERLING	219 N SUNKIST ST	ANAHEIM CA	92806
APN #	821080012			JORDAN DESERT PROP	235 E COLORADO BLV NO 5	PASADENA CA	91101
APN #	812220017	DORIS	E	HUBBARD	252 W KENNETH RD	GLENDALE CA	91202
APN #	821080009	MARJORIE		RIPPENKROEGER	2629 AVE J	FT MADISON IA	52627
APN #	821080001	ALLAN	D	BICKFORD	2675 MISHLER RD	MIO MI	48647
APN #	812130002	WALTER	E	DENEWILER	27098 WENTWORTH DR	SUN CITY CA	92586
APN #	821080002	MARIE	M F	BIRD	290 N WATEKA ST	SAN JACINTO CA	92583
APN #	821080016	LISA	M	CASAVANT	29865 WHISPERING PALMS TR	CATHEDRAL CY CA	92234
APN #	818180005	MARY	LOUISE	CASHIN	3008 THE STRAND	MANHATTAN BEACH CA	90266
APN #	821080011	DARLENE		LUCKETT	301 S 4TH ST APT 3	FARMINGTON IA	52626
APN #	821080013	JERRY	D	FINE	3023 260TH AVE	MONTROSE IA	52639
APN #	818210014			COUNTY OF RIVERSIDE	3133 7TH ST	RIVERSIDE CA	92501
APN #	812220038			COUNTY OF RIVERSIDE	3133 MISSION INN AVE	RIVERSIDE CA	92507
APN #	821080010	DONALD	J	PETERSCHMIDT	3172 223RD AVE	MONTROSE IA	52639
APN #	821080040			COUNTY OF RIVERSIDE	3525 14TH ST	RIVERSIDE CA	92501
APN #	818210002	JOHN	P	ASHTON	36 S STATE ST STE 1900	SALT LAKE CITY UT	84111
APN #	821080038	ALICA	E	THOMAS	3801 STANDARD ST	BAKERSFIELD CA	93308
APN #	812130007	DALE	RYDER	WILLIAMSON	4185 VIA SOLANO	PALOS VERDES CA	90274
APN #	821080014	LOIS	J	HOLLAND	4204 W ELY RD	HANNIBAL MO	63401
APN #	818180001	LIN	B	PORTER	4330 WISE RD NO 12	BULLHEAD CITY AZ	86426
APN #	818160015	WILLIAM	Y	MURPHEY	434 E LARKSPUR LN	TEMPO AZ	85281
APN #	812220018	SIMA		BABIN	45156 VANDERBILT CT	INDIO CA	92201
APN #	818180007	DOYLE	R	THOMPSON	48970 SOURDOUGH RD	EHRENBERG AZ	85334
APN #	821080006	VERLAMAE		RIGBY	5610 PIONEERS BLV 283	LINCOLN NE	68506
APN #	821050001	MARTIN	L	MANUEL	630 TALBOT AVE	ALBANY CA	94706
APN #	812220024	WILLIAM		BECKMANN	690 CHANDLER #404	GURNEE IL	60031
APN #	812130008	LYNDA	M	STEWART	7922 LA CAPELA LN	CARLSBAD CA	92009
APN #	821020017	RICHARD	E	RIDDLE	P O BOX 1915	BLYTHE CA	92226
APN #	821080003			N R L L INC	P O BOX 2209	NEWPORT BEACH CA	92659
APN #	821080021	RON		LACY	P O BOX 2233	BLYTHE CA	92226
APN #	818160014	JOHN		STRAIT	P O BOX 2341	BLYTHE CA	92226
APN #	812130003	RICHARD	W	DICKERHOFF	P O BOX 403	CHENEY KS	67025
APN #	821080015	MICHAEL	J	MADDOX	P O BOX 476	WALLACE CA	95254
APN #	812220037	JOHN	P	SMITH	P O BOX 850	JULIAN CA	92036
APN #	818180004	ESPERANZA		LEON	P O BOX 867	EHRENBERG AZ	85334
APN #	821080005	EVELYN	M	JOHNSON	RR 1 BOX 1E	BARING MO	63531

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 *BLYTHE SOLAR POWER PLANT PROJECT*

Docket No. 09-AFC-6

PROOF OF SERVICE
(Revised 8/27/10)

APPLICANT
Alice Harron
Senior Director of Project Development
*1111 Broadway, 5th Floor
Oakland, CA 94607
harron@solarmillennium.com

Elizabeth Ingram, Associate Developer, Solar Millennium, LLC
*1111 Broadway, 5th Floor
Oakland, CA 94607
ingram@solarmillennium.com

Carl Lindner
AECOM Project Manager
1220 Avenida Acaso
Camarillo, CA 93012
carl.lindner@aecom.com

Ram Ambatipudi
Chevron Energy Solutions
150 E. Colorado Blvd., Ste. 360
Pasadena, CA 91105
rambatipudi@chevron.com

Co-COUNSEL
Scott Galati, Esq.
Marie Mills
Galati/Blek, LLP
455 Capitol Mall, Suite 350
Sacramento, CA 95814
sgalati@gb-llp.com
mmills@gb-llp.com

Co-COUNSEL
Peter Weiner
Matthew Sanders
Paul, Hastings, Janofsky & Walker LLP
55 2nd Street, Suite 2400-3441
San Francisco, CA 94105
peterweiner@paulhastings.com
matthewsanders@paulhastings.com

INTERESTED AGENCIES
Calfornia ISO
e-recipient@caiso.com

Holly L. Roberts, Project Manager
Bureau of Land Management
Palm Springs-South Coast Field Office
1201 Bird Center Drive
Palm Springs, CA 92262 Office
CAPSSolarBlythe@blm.gov

INTERVENORS
California Unions for Reliable Energy (CURE)
c/o: Tany A. Gulesserian,
Elizabeth Klebaner
Marc D. Joseph
Adams Broadwell Joseph & Cardozo
601 Gate Way Boulevard,
Suite 1000
South San Francisco, CA 94080
tgulesserian@adamsbroadwell.com
eklebaner@adamsbroadwell.com

ENERGY COMMISSION
KAREN DOUGLAS
Chairman and Presiding Member
kldougla@energy.state.ca.us

ROBERT WEISENMILLER
Commissioner and Associate Member
rweisenm@energy.state.ca.us

Raoul Renaud
Hearing Officer
rrenaud@energy.state.ca.us

Alan Solomon
Siting Project Manager
asolomon@energy.state.ca.us

Lisa DeCarlo
Staff Counsel
ldecarlo@energy.state.ca.us

Jennifer Jennings
Public Adviser's Office
e-mail service preferred
publicadviser@energy.state.ca.us

*indicates change

DECLARATION OF SERVICE

I, Marie Fleming, declare that on June 28, 2012, I served and filed copies of the attached **PALO VERDE SOLAR I, LLC'S PETITION FOR AMENDMENT**, dated June 28, 2012. 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/solar_millennium_blythe]

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:

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

_X__ 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, via personal delivery, 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-6
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.

Marie Fleming