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Stormwater Pollution Prevention Plan

For:

Ivanpah Solar Electric Generating Facility
Docket No. 07-AFC-5

Prepared for:

California Energy Commission Compliance Project Manager
Bureau of Land Management Authorized Officer

Contractor:

Bechtel Power Corporation
5275 Westview Drive
Frederick, Maryland 21703-8306

Project Site Location/Address:

Southern California's Mojave Desert in San Bernardino County, California
100302 Yates Well Road
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Qualified SWPPP Developer (QSD):

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SWPPP Preparation Date:

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Estimated Project Dates:

Start of Construction: October 2010
Completion of Construction: Fourth Quarter 2013

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SWPPP Certification by Qualified SWPPP Developer

Project Name: Ivanpah SEGF

Project Number: Not applicable

"I certify under a penalty of law that I will have, upon receiving appropriate QSD certification training by 9/2/2011, appropriate QSD qualifications and that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that QSP and properly trained delegates gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Digitally signed by Kit Yin Ng
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Reason: I am approving this document
Date: 2010.09.16 10:40:47 -04'00'

_____ 9/14/2010
Qualified SWPPP Developer Signature Date

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QSD Name and Title Telephone Number

Section 1 SWPPP Requirements

1.1 Introduction

This Storm Water Pollution Prevention Plan (SWPPP) has been prepared for the proposed Ivanpah Solar Electric Generating Facility (ISEGF) to comply with the California's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Permit) and the State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ (see Appendix A). The ISEGF will be located in the eastern Mojave Desert, San Bernardino County, California as shown in Figure 1 (Appendix B). The ISEGF is being developed by Solar Partners I, LLC, Solar Partners II, LLC, and Solar Partners VIII (Owner). The engineering- procurement-construction contractor is Bechtel Power Corporation.

This SWPPP has been developed by a QSD (Dr. Kit Ng) and future amendments/revisions to this Plan will be by a QSD.

The SWPPP shall be designed to address the following objectives:

- All pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity are controlled;
- Where not otherwise required to be under a Regional Water Quality Control Board (RWQCB) permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated;
- Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the Best Available Technology/Best Control Technology (BAT/BCT) standard;
- Calculations and design details as well as BMP controls for site run-on are complete and correct, and,
- Stabilization BMPs installed to reduce or eliminate pollutants after construction are completed.
- Identify post-construction BMPs, which are those measures to be installed during construction that are intended to reduce or eliminate pollutants after construction is completed
- Identify and provide methods to implement BMP inspection, visual monitoring, and Construction Site Monitoring Program (CSMP) requirements to comply with the General Permit.

1.2 Permit Registration Documents

The Permit Registration Documents (PRDs) are limited to the copy of the Signed Certification Statement, Site Map, and Risk Assessment. In addition to these PRDs, the other associated Water Pollution Control Diagrams and associated Hydraulic Analysis are also included in Appendix B.

In recognition that the Ivanpah Solar Electric Generating Facility project is being reviewed under the CEQA, a separate Notice of Intent (NOI) electronic filing will not be made via the SMARTS system. The related annual fee also does not apply.

1.3 SWPPP Availability and Implementation

The General Permit (Section XIV.C) requires the SWPPP be available at the construction site during working hours while construction is occurring and shall be made available upon request by a State or Municipal inspector. When the original SWPPP is retained by a crewmember in a construction vehicle and is not currently at the construction site, current copies of the BMPs and map/drawing will be left with the field crew and the original SWPPP shall be made available via a request by radio/telephone. The SWPPP shall be implemented concurrently with the start of ground disturbing activities.

1.4 SWPPP Amendments

The General Permit requires that SWPPP be amended or revised by a QSD (Section XIV.A) and that the SWPPP include a listing of the date of initial preparation and the date of each amendment. Amendments must be signed by a QSD (Section VII.B.6). Amends will be dated, attached to the SWPPP and logged in the SWPPP (Appendix C).

1.5 Retention of Records

Records will be retained for a minimum of 3 years for the following items:

- Site inspections (including visual observations and non-stormwater inspections)
- Correction Actions
- Discharge reports (including field reports, laboratory analytical results)
- Annual Reports
- QA/QC records
- Approved SWPPP document and amendments

These records and any requested information to determine compliance with this General Permit will be maintained in the ES&H office onsite and shall be furnished to the CEC Compliance Project Manager, BLM Authorized Officer, Lahontan Water Quality Control Board, SWRCB, or US Environmental Protection Agency (EPA) within a reasonable time. This information will also be maintained in a project specific electronic document storage system

1.6 Required Non-compliance Reporting

If a discharge occurs or if the project receives a written notice of non-compliance, the QSP/Site Manager will immediately notify the Project Manager who will inform the Owner in writing within seven days of the event.

The Owner will subsequently file a written report to the CEC Compliance Project Manager, BLM Authorized Officer, Lahontan Water Quality Control Board within 30 days of identification of non-compliance and/or report the violation. Electric notification using the SMARTS systems may be used (if applicable).

Non-compliance issues could potentially include:

- Self-reporting of any other discharge violations or to comply with RWQCB enforcement actions; and
- Discharges which contain a hazardous substance in excess of reportable quantities established in 40 CFR §§ 117.3 and 302.4.

Corrective measures will be implemented immediately following the discharge, notice, or order. The results of noncompliance events will be maintained in Appendix D.

1.7 Annual Report

By September 1 of each year, the Solar Partners I, II, VIII LLC (Owner) shall submit an Annual Report which will highlight the site personnel awareness of the required data collection and reporting elements associated with the SWPPP.

The Report will include (per Section XVI of the General Permit) a summary of:

1) Corrective actions and compliance activities, including those not implemented;
2) Violations of the General Permit;
3) Date, time, place, and name(s) of the inspector(s) for all sampling, inspections, and field measurement activities;
4) Visual observation and sample collection exception records; and
5) Training documentation of all personnel responsible for General Permit compliance activities.

1.8 Changes to Permit Coverage

The General Permit (Section II.C) allows a permittee to reduce or increase the total acreage covered under the General Permit when a portion of the project is complete and/or conditions for termination of coverage have been met; when ownership of a portion of the project is sold to a different entity; or when new acreage is added to the project.

Should the ISEGF identify changes in site acreage (or project ownership) to be covered by the SWPPP, the Owner will submit appropriate modifications to the PRD documents (potentially electronically) in accordance with requirements of the General Permit within 30 days of a reduction or increase in total disturbed area. Updates to PRDs submitted are contained in SWPPP Appendix E. Documentation of the SWPPP revisions or amendments are contained in Appendix C.

1.9 Notice of Termination

In recognition that the Ivanpah Solar Electric Generating Facility project is being reviewed under the CEQA, a separate Notice of Intent electronic filing will not be made via the SMARTS system. Consequently, a Notice of Termination (NOT) electronic filing is not applicable in this situation.

Section 2 Project Information

2.1 Project and Site Description

The project site will occupy lands on federal property managed by the U. S. Bureau of Land Management (BLM). The ISEGF consists of three individual power generating units; Ivanpah 1, Ivanpah 2 and Ivanpah 3, and a Common Area with shared facilities (also referred to as the Common Logistic Area). Facilities within the Common Area serve all three power units and include primarily the Administration Building, the Switchyard/Substation (to be operated by Southern California Edison (SCE), two groundwater production wells, a groundwater monitoring well, and a temporary Heliostat (assembly) Building. Each power generating unit will include a solar field occupied by heliostat arrays and a power block where the power tower, steam generation and electric conversion systems will be located.

ISEGF will consist of three independent solar thermal-electric power plant units that will be located approximately 1.6 mi west of the Ivanpah Dry Lake and 4.5 mi southwest of Primm, Nevada, in San Bernardino County, California. The project site will be located on federal property managed by the U.S. Bureau of Land Management. The three ISEGF power plants will have a combined net rating of approximately 370 megawatts. The ISEGF will be constructed in three phases: Ivanpah 1 (nominal 120 megawatts), Ivanpah 2 (nominal 125 megawatts), and Ivanpah 3 (nominal 125 megawatts).

Figure 1 shows the location of the project and the locations of existing and proposed pipelines and roads. Locations of watercourses and critical areas such as ephemeral washes are shown in Figures 17, 18, 18a, 18b and 19. A site plan is provided in Figures 2. All figures are included in Appendix B (Water Pollution Control Drawings or WPCDs).

Geotechnical field exploration (Converse, 2009) conducted for the project indicated the site consisted mostly of undeveloped land and was characterized by alluvial fan deposits and associated erosion features trending in an easterly direction. The subsurface native soils encountered at the site generally consist of silty sands with varying amounts of gravel, cobbles and boulders. The depth of groundwater is expected to be greater than 100 feet and is not anticipated to be a factor during construction. Construction dewatering is not considered necessary.

Land Occupancy

The ISEGF project (for all three units and the Common Areas) will occupy approximately 3,633 acres (Figures 3 through 7). Ivanpah 1 will require about 914 acres (1.43 mi^2) and Ivanpah 2 will require about 1,097 acres (1.71 mi^2), while Ivanpah 3 will require about 1, 227 acres (1.92 mi^2). The project boundary for Ivanpah 1, 2, and 3 will cover a total of 3,239 acres (5.06 mi^2). The Common Area, situated between Ivanpah 1 and 2 will occupy approximately 378 acres and will include the Southern California Edison substation, a nursery and rare plant storage area, and shared facilities (administration/ storage building, groundwater production wells). Portions of this construction logistics area will be used during construction for staging and temporary offices. The remaining 22 acres are land that will be disturbed for the construction of plant roads including the improvement of the Colosseum Road (from Primm Valley Golf Club to site), and construction of the gas line.

Heliostat Arrays

Each power plant will be surrounded by heliostat arrays. The 120-megawatt plant (Ivanpah 1) will have heliostat arrays consisting of up to 53,500 heliostats. The 125-megawatt plant (Ivanpah 2 and 3) will each have heliostat arrays consisting of up to 60,000 heliostats. The heliostat arrays will be arranged around a single centralized solar power tower. The heliostats will automatically track the sun throughout the day and reflect the solar energy to the boiler on top of the tower. Each heliostat mirror is 7.2 ft (2.2 m) wide by 10.5 ft (3.2 m) high, yielding a reflecting surface of 76 ft^2 (7 m^2). Each heliostat consists of two mirrors mounted on a single pylon, along with a computer-programmed aiming control system that directs the motion of the heliostat to track the movement of the sun. The pylons will be fabricated from 6-inch pipe, and they will be embedded in the ground so as to resist lateral forces due to wind or flood flows.

The methodology selected for field installation of pylons requires pre-augering a hole in the ground using drilling equipment mounted on an excavator (drill rig). The spoils will be knocked back to the hole to prepare for pylon insertion. Pylon insertion will be accomplished by an excavator equipped with specialized equipment that inserts the pylon. No construction water will be required or discharged with this insertion methodology. The drill rigs will be operated to minimize soil disturbance.

Power Blocks

Each power plant unit will have a solar power tower, steam-turbine generator, an air-cooled condenser and auxiliary systems, which collectively are referred to as the power block. The tower supports the receiving boiler and moves steam to the turbines near its base. The combined height of towers and boiler will be about 460 ft. For each power plant, the power-block lateral dimensions will be about 650 ft wide by about 450 ft long, which represents an area of about 6.7 acres. The power block for each unit will be graded with moderate slopes to direct runoff to swale/ditches and pass stormwater through the oil/water/grit separators of hydrodynamic separation principle or equivalent (also referred to as oil-water separators hereinafter) before releasing flow to outlet aprons, where placement of stone rip-rap will prevent local erosion and reinstate natural sheet flow conditions toward downstream. The treatment flow rates of the oil-water separators are sized based on the target BPM design flow requirements established in the San Bernardino County WQMP Guidance. The computation of the BMP design flow rates is documented in the calculation, Ivanpah 1 Power Block and Administration Building Drainage Sizing, contained in Appendix B. Each power block will be protected by a flood protection berm and associated diversion channel, which are designed for a 100-year storm event. The hydrologic and hydraulic calculations of the flood protection design are provided in Appendix B. For Ivanpah 1, details of the protection berm and diversion channel are shown in Figures 9 and 10.

Substation

Ivanpah 1, 2, and 3 will be connected to the nearby existing Southern California Edison nearby transmission line. A substation located in the Common Area between Ivanpah 1 and 2 will be constructed to connect the ISEGF to the transmission line. The substation dimensions will be about 870 ft wide by 900 ft long, which represents about an area of about 18 acres. As shown in Figures 11 and 14, the substation will be protected by a protection berm/diversion channel that also provides flood protection for the common administrative area from storm events up to a 100-year return period storm. Including the berm and channel, the substation will occupy about 41 acres.

Common Administrative Area

As shown in Figures 12 and 15, an administration, warehouse, and maintenance complex, also part of the common area, will be located between Colosseum Road and the entrance to the Ivanpah 1 power plant. The complex will require about 5.7 acres, but the building footprint and parking area will occupy about 3.2 acres. Next to the administrative area is a graded area housing a storage tank and two pumping (production) wells. A 12.3 acre nursery area will be established next to the common administration area to preserve the transplanted vegetations during project construction.

Access Roads and Service Paths

The ISEGF access will be from Colosseum Road to the project entrance road. Colosseum Road is an existing dirt road, which will be paved (24-foot wide, two lanes plus 3-foot wide shoulders) for a 1.9-mile length from the Primm Valley Golf Club to the project site. A portion of Colosseum Road will be rerouted around the southern end of the Ivanpah 2 plant site for a distance of 1.0 miles, which also will be a 24-foot paved, two-lane road with 3-foot shoulders, to connect to the point where the existing Colosseum dirt road would exit the Ivanpah 2 site boundary. Additionally, paved access roads of 20-foot width plus 3-foot shoulders will be constructed to access the power blocks of the three Ivanpah plants within the fenced solar sites. The paved roads will follow the existing terrain to the extent practicable but will potential become a barrier to the natural overland flow from the upslope areas especially during regular, less severe, storm events. Where necessary, drainage culverts will be installed to pass storm water flow at the ephemeral wash crossings to the downstream side of the roads. During heavy rainfall events, it is expected that the flood flow will overtop the road surfaces leading to potential washout.

Finally, 12-foot wide dirt roads would be installed surrounding and also diagonally through the heliostat fields to provide access to the heliostat maintenance paths. The total length of 24-foot paved roads is 16,465 feet, the total length of the 20-foot paved roads is 30,340 feet, and the total length of the 12-foot dirt roads is 39,857 ft (for 12-ft dirt road in Ivanpah 1 only). Within the heliostat fields, ungraded maintenance paths will be located concentrically around the power block to provide access to the heliostat mirrors for maintenance and cleaning. The maintenance paths will be provided for every 5^{th} row (nominal) of heliostats. The paths will follow the existing topography and will occupy about 8 percent of the solar field. The total pathway length is 253,559 ft for Ivanpah 1. Both the dirt roads and the heliostat maintenance paths will follow closely the existing topography to minimize land disturbance and to maintain the pre-development hydrologic condition to the maximum extent possible.

Precipitation

The project site is located in southern California's Mojave Desert in the Ivanpah Valley. Ivanpah Valley is a semi-arid, topographically closed basin. Average annual precipitation at the project site from 1971 to 2000 was 8.31 inches. Most of the precipitation in the project area falls during January through March and July through September. Based on the NOAA Atlas 14, the 24-hour precipitation in the site vicinity for the 100-year, 25-year and 10 year storm events is 3.33 inches, 2.48 inches, and 1.97 inches, respectively (NOAA, 2006). These rainfall depths are documented in the Appendix B calculation titled Ivanpah 1 Power Block and Administration Building Drainage Sizing**.**

Drainage

Stormwater runoff at the site is predominantly sheet flow from west to east, eventually discharging into Ivanpah Dry Lake.

With exception of the immediate areas near the power blocks, substation, and the common administrative area, the general pre-development drainage and flood flow patterns will be maintained. The flood protection berms and channels at the power block and Common Area will intercept and divert stormwater flow from the upstream areas for storm events up to a 100-year return period to downstream of the protected areas. Riprap aprons are provided at the downstream ends of the protection berms/channels to reduce the flood flow velocity and to restore the natural drainage patterns downstream. Away from the power block and the Common Area, some ephemeral washes will be disturbed as a result of providing the necessary crossings for the roads to allow for plant access. At grade crossings will be used wherever possible, otherwise drainage culverts may be provided at the wash crossings to facilitate the passage of storm water flow. As a result of the design concept to maintain the roads and paths at grade to minimize disturbance to the natural drainage to the extent practicable, all paved roads, dirt roads and maintenance paths on site will be subject to overtopping and potential washout during heavy storm events. Areas disturbed by the tracked vehicles for the installation of the heliostats and will not be graded for the permanent facilities will be restored to their natural grades immediately after construction.

Drainage and storm water management plans are provided Appendix B, with the supporting hydrologic and hydraulic analyses and calculations provided in this Appendix. As shown in Figures 20 to 22, stormwater will be diverted away from the power block, the substation and the common administrative area by berms/channels on the upslope sides of the areas to be protected. The protection berm, designed for a 100-year storm event, will have a maximum height of approximately 8 feet from the invert of the channel, which will be 2 feet deep and 40 feet wide at the bottom. The power block and the areas where the Administration Building and production wells are located will be graded with moderate slopes to direct runoff to drainage outlet aprons to reduce erosion and to promote a natural sheet flow condition in the downstream area. Runoff collected from areas with potential oil and grease contamination will pass through oil/water separator units sized in accordance with San Bernardino WQMP requirements before discharge. Because of the nature of flood flow on alluvial fans, parts of the access road that are at or near existing site grades and not elevated above the design flood level are expected to be flooded and overtopped during heavy storm events. The flood flow estimation using the HEC-1 model and alluvial fan methodology (documented in Technical Memorandum 16 - Stormwater Design Flows for Ivanpah 1 Power Block and Common Area Diversion Channels, dated May 10, 2010) and the detailed hydraulic analysis and sizing of the protection berm and diversion channel (documented in calculation titled Ivanpah 1 Power Block and Common Area Diversion Channels Hydraulic Design) are included in Appendix B. The HEC-1 model flood flow from the mountain block is based on the 1986 San Bernardino County Hydrology Manual and its March 2010 Addendum that allows the runoff curve numbers for the 100-year return period storm events to be corresponding to the Type I antecedent moisture condition (AMC I) for arid regions.

The substation area will also be graded and is expected to be covered with at least 4 inches of gravels. Final grading and design of drainage swales for runoff management will be performed by SCE.

The stormwater management practices described in this Plan follow the California Storm Water Quality Association (CASQA) California Storm Water BMP Handbook (2009), the Caltrans Construction Stormwater BMPs and Caltrans 2006 Standard Plans and Specifications (Caltrans, 2006a & 2006b), and comply with new

NPDES General Permit for Storm Water Discharges from Construction Activities No. CA000002 (CSWRCB, 2009). The Post-development Drainage Areas Map (Figures 20 to 22) in Appendix B depicts the site grading and stormwater drainage plan after construction.

Temporary construction laydown, temporary heliostat assembly building area, and parking areas are shown in Figures 2 through 6. A temporary drainage system will be installed to control of storm water in the heliostat assembly building area during construction. The temporary drainage plan and details for these areas are shown in Figures 13 and 16, and the hydraulic analysis and sizing are documented in Appendix B calculation titled Heliostat Assembly Building Area Drainage Sizing.

The hydraulic capacity of the road side channel and culvert crossings adjacent to the Colosseum Road downstream of the diversion channel in the Common Area is documented in Appendix B calculation titled Hydraulic Design of Access Road Culverts in Common Area.

Storm drainage details for the project are shown in Figure 49. Details at wash crossings and channel crossings for paved roads are shown in Figure 50.

Areas to be Cleared and Graded

The existing site has about a four (4) percent relatively uniform natural slope up from east to west, located on a relatively small drainage basin with the hydrologic characteristics of alluvial fans. Majority of the areas within the project property boundaries will be occupied by the heliostats. The erection and operation of the majority of the heliostat arrays requires only limited topsoil stripping and local leveling of significant changes in the terrain. Heliostats are relatively small (13 ft high each) and light (100 kilograms each) structures, contain no hazardous materials, and are not essential structures. More substantial grading will be limited to the power block areas, substation and common administration building, and the major access roads. During construction period, an area housing the heliostat assembly building that is within the common area will also be graded.

Within the heliostat arrays, a maintenance pathway will be established after every fifth row (nominal) while following the existing topography. The vegetation will be removed and the surface will be rolled to consolidate the soil to allow for the safe passage of the rubber tired heliostat transport carts and mirror washing vehicles and personnel. In areas of substantial grading (power block areas, substation, the common administrative building area, heliostat assembly building area, major access roads and in heliostat field areas requiring significant improvements to grade for access roads), topsoil will be stripped, in order to remove plants and roots to accommodate heliostat erection in the solar field, and as pre-excavation activity in the power block and solar tower areas. To the extent possible, stripped topsoil will be reused to form the final site grades. Succulent plant species would be salvaged prior to construction, transplanted into windrows, and maintained in the nursery area for later transplanting following decommissioning. Shrubs and other plant species would be re-vegetated using collected seeds, and re-seeding following decommissioning.

Natural grades and existing drainage patterns in the solar field will be maintained where practical.

All underground piping and wiring will be installed, followed by installation of the foundation for the new power blocks, solar towers and associated structures. For the construction of each power block, the parking areas for construction workers will be located off the access road just before the entrance to the power block. For the construction of facilities within the common area, parking areas for construction workers will be located off the access road to the substation and common administrative area, as well as off the access road to the heliostat

assembly building area. These temporary parking areas will be closed after the construction phase. No pavement will be applied and minimum clearance of the location will be used. The laydown areas for construction materials will be located within the common area.

Primary access to the site is via the Yates Well Road interchange on Interstate 15, and via the Colosseum Road to the west of the Primm Valley Golf Club. Colosseum Road will be rerouted between Ivanpah 1 and Ivanpah 2 and paved from its intersection with Yates Well Road to the project site. In addition, the access roads to individual plants will be paved from their point of connection to Colosseum Road. Access road beds will typically be 20 feet of asphalt with 3-foot-wide crushed rock shoulders. Stabilized entrances/exits and wheel wash facility will be provided prior to vehicle exiting the construction areas to minimize mud and sediment from being carried on to the public road.

All excavated soil will be used onsite for grading and leveling purposes and no soils will be disposed of offsite.

Existing and Proposed Topography

As shown in Figure 7, the existing site has about a four (4) percent relatively uniform natural slope up from east to west, which can be accommodated by the heliostat fields. The sites topography varies across each heliostat field requiring different levels of disturbance to obtain the final topography suitable for the erection and operation of the heliostats. Grade and topography are to be modified (if required) to ensure the minimum disturbance needed for the access of installation equipment and materials. In areas where the existing terrain will permit access, grading will be restricted and only vegetation is to be removed. In areas where the existing topography requires modification, access will be improved by leveling (cut and filling) or conventional grading (where required).

At completion of the project, onsite drainage will be accomplished through gravity flow. Stormwater will flow through the heliostat fields and diverted around the power blocks and switchyard on their north and south sides to channel storm runoff around each area before overflowing through rip-raps to reinstate the natural drainage conditions.

Appendix B contains drawings (Figures 7 through 19, and Figures 30 to 48) that show topography before and after construction.

Volumes of Cut and Fill

As described in previous sections, certain areas of the site will require grading to achieve their design elevations, which are selected with the objective of minimizing disturbances and impacts to the site. Preliminary cut and fill volumes for each project element are shown in Table 2-1. Trenches excavated for the underground utilities will be entirely refilled. The power block in each unit will require fill to elevate the foundation and to erect the berm. The fill material will use the cut material from the site as much as possible including the surplus cut volume from the heliostat field or roads. The cut volume from the diversion channel can provide sufficient fill volume for the berm. The surplus spoil will be stockpiled in the Common Logistic Area for later use.

Table 2-1 Estimated Cut and Fill Quantities

Project Phase	Excavated Cut, Cubic Yd		Fill Volume, Cubic Yd		Surplus Volume, Cubic Yd	Deficit Volume, Cubic Yd
	Temporary	Permanent	Temporary	Permanent		
Ivanpah 1 heliostat field	0	10,220	0	0	10,220	–
Ivanpah 1 power block	0	33,790	0	66,990	–	33,200
Switchyard	0	166,920	0	133,220	33,700	–
Well Area	0	4,420	0	3,750	670	–
Admin Building	0	15,750	0	18,290	–	2,540
Heliostat Assembly Building	102,290	0	20,050	0	82,240	–
Construction Facilities Area	25,270	0	10,220	0	15,050	–

Note: Cut and fill quantities, especially for the Construction Facilities Area, are best estimates and may subject to change per conditions encountered in the site during construction.

2.2 Stormwater Run-on From Off-Site Areas

With exception of the immediate areas near the power blocks, substation, and the common administrative area, the general pre-development drainage and flood flow patterns will be maintained. The flood protection berms and channels at the power block and Common Area will intercept and divert stormwater flow from the upstream areas for storm events up to a 100-year return period to downstream of the protected areas. Riprap aprons are provided at the downstream ends of the protection berms/channels to reduce the flood flow velocity and to restore the natural drainage patterns downstream.

There is potential for debris to accumulate along the permit fence during flood conditions. Regular maintenance will be performed along the permit fence to remove this debris.

Further details are provided in Section 2.1 and Appendix B, Hydraulic Analysis.

2.3 Findings of the Construction Site Sediment and Receiving Water Risk Determination

The risk of accelerated erosion and sedimentation from wind and water depends on a number of factors, including proximity to receiving water bodies, climate, topography, and soil type. Construction General Permit (2009) requires dischargers to assess the risk level of a site based on both sediment transport and receiving water risk. Risk levels are established by determining two factors: first, the site's sediment risk; and second, receiving water risk during periods of soil exposure (i.e., grading and site stabilization). Both factors are used to determine the combined site-specific Risk Level.

The site Sediment Risk factor was determined to be LOW, as the estimated soil loss is less than 15 tons per acre. The Receiving Water (RW) Risk Factor is determined as Low. With the assessment of low risk on both sediment transport and receiving water, the combined risk for the ISEGF project was determined to be Level 1.

The details of the risk level determination for the ISEGF project using the Risk Determination Worksheet from the General Permit (2009) are shown in Appendix B.

2.4 Construction Schedule

Construction would take place over approximately 38 months, from the fourth quarter of 2010 to end of 2013.

Significant grading commences in Fourth Quarter 2010. Commercial operations of the three plants are expected to commence in 2013. Additional schedule details are shown in Appendix F.

2.5 Potential Construction Site Pollutant Sources

The following is a list of construction materials that will be used and activities that will be performed that will have the potential to contribute pollutants, other than sediment:

- Vehicle fluids, including oil, grease, petroleum, and coolants
- Asphaltic emulsions associated with asphalt-concrete paving operations
- Cement materials associated with portland cement concrete (PCC)
- Base and sub base material
- Joint and curing compounds
- Concrete curing compounds
- Paints
- Solvents, thinners, acids
- BMP materials
- Treated lumber (materials and waste)
- PCC rubble
- General litter

Construction activities that have the potential to contribute sediment to stormwater discharges include:

- Clear and grub operations
- Grading operations
- Paving operations
- Boring operations
- Delivery/transportation operations
- Utility excavation operations
- Foundation/structure construction operations
- Vehicle and equipment cleaning, fueling, and maintenance

The deployment of BMPs regarding these pollutant sources and pathways are described in following section (Section 3).

Implementation and location of BMPs are shown on the water pollution control drawings in Appendix B. Appendix G includes copies of the fact sheets of all the BMPs selected for this project.

2.6 Identification of Non-Stormwater Discharges

There will be a variety of chemicals stored and used during the construction of Ivanpah SEGF. The quantities of hazardous materials that will be onsite during construction will generally be limited to gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. There are no feasible alternatives to vehicle fuels and oils for operating construction equipment. The types of paint required are dictated by the types of equipment and structures that must be coated and by the manufacturers' requirements for coating.

There will also be a variety of waste products that could be precursor to non-stormwater discharges. These wastes are categorized below:

Nonhazardous Solid Waste

Listed below are nonhazardous waste streams that could potentially be generated from construction activities.

Paper, Wood, Glass, and Plastics**.** Paper, wood, glass, and plastics will be generated from packing materials, waste lumber, insulation, and empty nonhazardous chemical containers during project construction. These wastes will be recycled where practical. Waste that cannot be recycled will be disposed of weekly in a Class III landfill. Onsite, the waste will be placed in dumpsters.

Concrete. Waste concrete will be disposed of in a Class III landfill or at clean fill sites, if available or will be recycled and disposed of at a construction and demolition site. During construction of the foundations, a concrete washout area will be required. The concrete washout areas will be located near the main entrance to the site. Dumping of excess concrete and washing out of delivery vehicles will be prohibited at other locations onsite. Notices will be posted to inform all drivers.

Metal. Waste metal, including steel from welding/cutting operations, packing materials, and empty nonhazardous chemical containers, and aluminum waste from packing materials and electrical wiring will be recycled where practical and nonrecyclable waste will be deposited in a Class III landfill.

Wastewater. Wastewater generated during construction will include stormwater runoff, pressure testing water, sanitary wastes (portable toilets) and equipment washdown water. Depending on the chemical quality of these wastewaters, they could be classified as hazardous or nonhazardous. The waste waters would be sampled and if they are hazardous would be disposed of in accordance with applicable regulations.

Stainless steel piping will be tested with demineralized water, while carbon steel piping will be pressure tested using either demineralized water or potable water. Demineralized water would be trucked in. After hydrostatic testing, the test water will be chemically analyzed for contaminants and discharged to the concrete holding basins located at the power block, unless the analysis shows that the water is contaminated, in which case the water would be trucked to an appropriate disposal facility.

Hazardous Waste

Most of the hazardous waste generated during construction will consist of liquid waste, such as water from flushing and cleaning fluids, passivating fluid (to prepare pipes for use), and solvents. Some hazardous solid waste, such as welding materials, batteries, and dried paint, may also be generated.

Flushing and cleaning waste liquid will be generated as pipes are cleaned and flushed. The volume of flushing and cleaning liquid waste generated is estimated to be one to two times the internal volume of the pipes cleaned. The quantity of welding, solvent, batteries, and paint waste is expected to be minimal. Wastewaters generated during construction could also be considered hazardous, if demonstrated so by sampling.

The construction contractor will be considered the generator of hazardous construction waste and will be responsible for proper handling of hazardous waste in compliance with all applicable federal, state, and local laws and regulations. The Construction Waste Management Plan (2010) and Hazardous Waste Management Plan (2010) have been developed to manage hazardous waste and material management. This responsibility will include licensing, personnel training, accumulation limits and times, and reporting and recordkeeping.

The hazardous waste will be collected in satellite accumulation containers near the points of generation. It will be moved daily to the contractor's 90-day hazardous waste storage area located at the site construction laydown area. The waste will be removed from the site by a certified hazardous waste collection company and delivered to an authorized hazardous waste management facility, before expiration of the 90-day storage limit.

Potential Contaminated Soil

It is unlikely that contaminated soil will be encountered during construction. However, operators and construction personnel will be asked to report unusual conditions to the appropriate personnel and the area and/or material will be properly contained during investigative actions. If soils require temporary stockpiling, piles will be placed on and covered with plastic sheeting or tarps that are secured safely with sand bags and bermed with fiber rolls or silt fencing to prevent runoff from leaving the area. If required, samples will be collected and sent to a certified analytical laboratory for characterization. If contamination is detected, the waste will be handled and properly disposed of in an authorized waste management facility. Any contaminated

soils resulting from spills will be dug up as quickly as possible, and then removed from the site for proper disposal.

Section 3 Best Management Practices

3.1 Schedule for BMP Implementation

BMPs for erosion and sediment control will be early features of the site development process recognizing their importance during initial grading operations. As evidenced in the construction schedule details listed in Appendix F perimeter, silt fence activities are combined with perimeter security/tortoise fencing activities as one of the earliest activities – well before any significant site clearing or grading activities. Soon thereafter, the construction site entrance is stabilized and road stabilization and paving commences of the main access road. Vehicle fuel and equipment storage are added in parallel with development of construction support facilities. Concrete washout facilities are developed prior to concrete deliveries.

3.2 Erosion and Sediment Control

Erosion Control

Erosion control, also referred to as soil stabilization, is a source control measure that is designed to prevent soil particles from detaching and becoming transported in stormwater runoff. Erosion control BMPs protect the soil surface by covering or binding soil particles. The project will incorporate erosion control measures required by regulatory agency permits, contract documents, and other measures selected by the Contractor.

To reduce erosion, project construction will minimize land disturbance by limiting construction activities only to areas that are essential to the installation and operation of the project. Grading is not intended to level the site, but rather to prepare the site for installation and future maintenance of the heliostats. Vegetation will only be cleared in areas where the existing terrain will not permit access of installation equipment and materials during construction. Vegetation will be cut at a height (12 – 18 inches) that allows clearance for heliostat function and leaves the root structures intact to anchor the soil, reducing the potential for erosion.

Cleared vegetation will be stockpiled for onsite or offsite disposal. Prior to grading work, sensitive plants and selected succulents will be salvaged, relocated or surrounded by a visible barrier. This work will be conducted in accordance with the ISEGF Special-Status Plant Avoidance and Protection Plan (2010).

Clearing and grubbing (roots to be removed) and extensive site grading will be limited to the power block areas, receiving towers, major access roads, possibly the rerouted trails, the substation, and in common areas where the existing topography requires modification in order to provide access for installation equipment and materials during construction. Disking and light grading may be used prior to compaction by rolling. Disturbed soils that are permanently covered by project facilities will be compacted to reduce the rainfall absorptive capacity and vegetative productivity of the soils.

It will be necessary to segregate and stockpile surface soils and organic matter during construction and excavation. In areas of substantial grading, native vegetation may be harvested for possible reuse to obtain-long term soil stabilization. All excavated soils are to be reused during construction at the site to prevent

subsequent erosion and sedimentation issues. Materials suitable for backfill will be stored in stockpiles at designated locations using proper erosion and sediment control methods.

BMPs will be implemented to follow the progress of grading and construction. As the locations of soil disturbances change, erosion and sedimentation controls will be adjusted accordingly to control stormwater runoff at the downgrade perimeter. BMPs will be in place throughout the entire construction period.

Non-active areas will be stabilized as soon as feasible after construction is complete and no later than 14 days after construction in that portion of the site has temporarily or permanently ceased.

Sufficient erosion control materials will be maintained onsite to allow implementation in conformance with Permit requirements and described in this SWPPP. This includes implementation requirements for active areas and non-active areas that require deployment before the onset of rain.

Maintenance of BMPs will be according to measures outlined in the applicable CASQA Handbook BMP (2003) factsheets.

Site-specific BMPs and associated figures are shown in the Water Pollution Control Drawings in Appendix B. Appendix G contains BMP fact-sheets with applicable detailed descriptions of suitability, implementation, and inspection and maintenance measures. The following general erosion control measures may be used during various phases of the project:

- Proper scheduling and sequencing of activities (EC-1)
- Preservation of existing vegetation (EC-2)
- Placement of geotextiles, plastic covers, and erosion control blankets/mats (EC-7)
- Earth dikes and drainage swales (EC-9)
- Velocity dissipation devices (EC-10)

Sediment Control

Sediment controls are intended to complement and enhance the selected erosion control measures and reduce sediment discharges from active construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water. The project will incorporate sediment control measures required by regulatory agency permits, contract documents, and other appropriate measures selected.

Stone filters and check dams will be strategically placed throughout the project site to provide areas for sediment deposition and to promote the sheet flow of stormwater. Where available, native materials (rock and gravel) will be used to construct the stone filter and check dams. In addition, diversion berms are to be used to redirect stormwater, as required.

Groundwater will be applied to disturbed soil areas of the project site to control dust and maintain optimum moisture levels for compaction as needed.

The existing Colosseum Road will be upgraded to an asphalt-paved road between the project site and the existing asphalt-paved road near the Primm Valley Golf Club. All public roadways (Yeats Well Road and

Colosseum Road) will be maintained free from dust, dirt and debris caused by construction activities. These streets will be swept at the end of the day if visible soil materials are carried onto them.

Stockpiles will be covered prior to forecasted storm events and during windy conditions.

BMPs will be deployed in a sequence to follow the progress of grading and construction. As the locations of soil disturbance change, sedimentation controls will be adjusted accordingly to control stormwater runoff at the downgrade perimeter.

Sufficient quantities of temporary sediment control materials will be maintained onsite throughout the duration of the project, to allow implementation of temporary sediment controls in the event of predicted rain, and for rapid response to failures or emergencies, in conformance with other Permit requirements and as described in this SWPPP. This includes implementation requirements for active areas and non-active areas before the onset of rain.

Maintenance of BMPs will be according to measures outlined in the applicable CASQA Handbook BMP factsheets (2003).

Site-specific BMPs and associated figures are listed in shown in the Water Pollution Control Drawings in Appendix B. Appendix G contains BMP fact-sheets with applicable detailed descriptions of suitability, implementation, and inspection and maintenance measures. The following general sediment control measures may be used during various phases of the project:

- Silt fences (SE-1)
- Fiber Rolls (SE-5)
- Wind Erosion Control (WE-1)
- Stockpile management (WM-3)

Tracking Control

A stabilized entrance/exit and tire washing stations will be in place to minimize or eliminate soils from being tracked off the project site from vehicles. Primary access to the site is via the Yates Well Road interchange on I-15, and Colosseum Road to the west of the Primm Valley Golf Club. A part of Colosseum Road will be re-routed between Ivanpah 1 and Ivanpah 2 and paved from the Primm Valley Golf Club to the project site. In addition, the access roads to individual plants will be paved from their point of connection with Colosseum Road to the power block.

The construction parking and laydown areas will be stabilized with coarse gravel. The gravel for these areas will have been harvested onsite. If insufficient material is available, gravel from outside sources would be utilized. All offsite gravel utilized onsite will be removed and transported offsite at completion of construction activities. All surfaces will be regularly watered to reduce generation of dust, but will not be excessively watered so as to generate runoff. As shown in Figure 23, silt fencing or fiber rolls may be used at edges of these areas, as necessary, to minimize sediment discharging into swales or ditches. All public roadways (Yeats Well Road and Colosseum Road) will be maintained free from dust, dirt and debris caused by construction activities. These streets will be swept at the end of the day if visible soil materials are carried onto them.

Site-specific BMPs and associated figures are included in the Water Pollution Control Drawings in Appendix B. Appendix G contains BMP fact-sheets with applicable detailed descriptions of suitability, implementation, and inspection and maintenance measures. The following control methods will be considered for offsite vehicle tracking, as necessary:

- Stabilized construction entrance/exit (TC-1)
- Stabilized construction roadway (TC-2)
- Tire wash (TC-3)
- Street sweeping and vacuuming (SE-7)

Wind Erosion Control

During construction of the project and the related linear facilities, dust erosion control measures would be implemented to minimize the wind-blown loss of soil from the site. Groundwater will be applied to disturbed soil areas of the project site to control dust and maintain optimum moisture levels for compaction as needed, but will not be excessively watered so as to generate runoff. Alternative dust suppressants such as Soil Sement may be employed to supplement watering.

Site-specific BMPs and associated figures are included in Water Pollution Control Drawings in Appendix B. Appendix G contains BMP fact-sheets with applicable detailed descriptions of suitability, implementation, and inspection and maintenance measures. The following control method will be considered for dust suppression, as necessary:

- Wind erosion control (WE-1)
- Stockpile management (WM-3)
- Water conservation practices (NS-1)

Additional details regarding dust control and air quality construction management issues are addressed in the Air Quality Construction Mitigation Plan (2010).

3.3 Non-Stormwater Control and Material Management

Non-Stormwater Control

Ivanpah SEGF will use hazardous materials during construction (see Section 2.3.5) , such as vehicle fluids, including oil, grease, petroleum, and coolants, paints, solvents and curing compounds. The project will comply with good engineering practices, applicable laws and regulations for the storage and use of these materials to minimize the potential for a release of hazardous materials, and will conduct emergency response planning to address public health concerns regarding hazardous materials use and storage.

A dedicated fueling area will be protected with berms and/or dikes to prevent runon, runoff, and to contain spills. Self-propelled vehicles will be fueled offsite or at the on-site fueling area. Fuel trucks will be used for onsite fueling for mobile fueling elsewhere on the site. Drip pans will be used for mobile fueling. Each fuel truck will be equipped with absorbent spill cleanup materials and a spill containment boom at all times.

Drip pans or absorbent pads will be used for vehicle and equipment maintenance activities that involve grease, oil, solvents, or other vehicle fluids.

Vehicles and equipment will be inspected daily and before coming onsite for signs of leaks and be on a regular maintenance schedule.

Drip pans or absorbent materials will be placed under paving equipment when not in use; paving equipment will be parked over plastic to prevent soil contamination. If during dewatering activities any contamination is detected via odors or visible sheens, the collected stormwater will be handled and properly disposed of in a manner consistent with federal, state, and local regulations.

Site-specific BMPs and associated figures are included in the Water Pollution Control Drawings in Appendix B (see truck wash in Figure 51). Appendix G contains BMP fact-sheets with applicable detailed descriptions of suitability, implementation, and inspection and maintenance measures. The following control methods will be considered for non-stormwater controls, as necessary:

- Water Conservation Practices (NS-1)
- Paving and Grinding Operations (NS-3)
- Vehicle and equipment cleaning (NS-8)
- Vehicle and equipment refueling (NS-9)
- Vehicle and equipment maintenance (NS-10)
- Concrete Curing (NS-12)

Materials Management

There will be a variety of chemicals stored and used and wastes generated during the construction of Ivanpah SEGF (See Section 2.3.6). Management of these materials is addressed by a number of plans.

A Hazardous Materials Business Plan will be prepared during the course of project development which will address operational materials. In accordance with these regulations, the Hazardous Materials Business Plan would include an inventory and location map of hazardous materials onsite and an emergency response plan for hazardous materials incidents.

The Construction Waste Management Plan (2010) and the Hazardous Material Management Plan (2010) are the primary management documents for the construction phase of work. The quantities of hazardous materials that will be onsite during construction will generally be limited to gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. There are no feasible alternatives to vehicle fuels and oils for operating construction equipment. The types of paint required are dictated by the types of equipment and structures that must be coated and by the manufacturers' requirements for coating.

The Contractor will implement BMP WM-9, Sanitary and Septic Waste Management, and portable toilets will be located and maintained for the duration of the project. Weekly maintenance will be provided and wastes will be disposed of offsite. The toilets will be located away from concentrated flow paths and traffic flow.

Site-specific BMPs and associated figures are included in the Water Pollution Control Drawings in Appendix B (See concrete washout in Figure 51). Appendix G contains BMP fact-sheets with applicable detailed

descriptions of suitability, implementation, and inspection and maintenance measures. The following BMPs will be considered for waste management and materials pollution control:

- Material delivery and storage (WM-1)
- Material use (WM-2)
- Stockpile management (WM-3)
- Spill prevention and control (WM-4)
- Solid waste management (WM-5)
- Hazardous waste management (WM-6)
- Concrete Waste Management (WM-8)
- Sanitary/Septic Waste Management (WM-9)
- Liquid waste management (WM-10)

3.4 Post-Construction Stormwater Management Measures

Overall the project is being designed to maintain, to the extent possible, the existing sheet flow patterns on the site.

As construction nears completion, areas used for parking, storage and laydown will be cleared and stabilized. Site areas disturbed during construction may be permanently stabilized by aggregate paving, bituminous paving, hydromulch, or approved soil binders.

At completion of the project, onsite drainage will be accomplished through gravity flow. Stormwater will flow through the heliostat fields and be diverted around structures such as the power blocks on their north and south sides in drainage channels, to channel storm runoff around each area before overflowing through native stone rip-rap to reinstate natural sheet flow conditions. Stormwater within the power block areas will pass through an oil/water/sand separator prior to discharge.

Within the heliostat array fields, the cut vegetation will have the root structures intact to anchor the soil, reducing the potential for erosion.

Heliostats are relatively small (about 13 feet high), contain no hazardous materials, and are not essential structures. While their potential structural failures in flood conditions do not pose a risk to personnel, the heliostats supports will be driven into the ground at depth which is designed to prevent scour failure during a 100-year storm event. Onsite water consumption will be minimal—mainly to replace boiler feedwater blowdown and provide deionized water for washing heliostat mirrors. The latter is required in a washing cycle of 2 weeks, during which all heliostats are washed, to maintain them at full performance.

At grade crossings are used wherever possible, otherwise drainage culverts are provided at the wash crossings to facilitate the passage of storm water flow. The paved roads follow the existing terrain to the extent practicable. Where necessary, drainage culverts are used to pass storm water flow at the ephemeral wash crossings to the downstream side of the roads.

Routine vehicle traffic during project operation would be largely confined to existing roads, most of which will be paved or covered with gravel. Mirror washing will be performed once every 2 weeks by the machine

modified to have a reach to clean approximately eight mirrors before needing to move; thereby, allowing the machine to drive on every other maintenance path instead of every path every 2 weeks. Standard operating activities would not involve the disruption of soil. When linear facilities need to be inspected or maintained, vehicle traffic near these areas would be minimal.

The post-construction BMPs described above will be funded and maintained by the Owner

Section 4 BMP Inspection, Maintenance and Rain Event Action Plans

4.1 BMP Inspection and Maintenance

The Qualified SWPPP Practitioner (QSP) or designated representative will inspect the site prior to a forecast storm, after a rain event that cause runoff from the construction site, at 24-hour intervals during extended rain events, and as specified in the contract documents. Appendix D (non-compliance mitigation measures) and Appendix E (SWPPP revisions) may require daily monitoring (at times). SWPPP inspections may be conducted in conjunction with other facility inspections.

The goals of these inspections are:

1) to identify areas contributing to a stormwater discharge;
2) to evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate, properly installed and functioning in accordance with the terms of the General Permit; and
3) to determine whether additional control practices or corrective maintenance activities are needed.

The results of inspections and assessments will be documented. Copies of the completed inspection checklists will be maintained with the SWPPP; a copy will be provided to the Project Manager within 24 hours of the inspection. Site inspections conducted for monitoring purposes will be performed using the inspection checklist shown in Appendix H. BMP fact-sheets in Appendix G will be referenced for inspection and maintenance measures for each selected BMP. Necessary corrective actions will begin to be implemented within 72 hours of their discovery.

4.2 Risk Event Action Plans

The ISEGF site was determined to be a Risk Level 1 discharger (Section 2.3 and Appendix B), consequently Rain Event Action Plans (REAP) do not need to be developed.

Section 5 Training

As required by the General Permit (Section VII) all elements of the SWPPP have been developed by a Qualified SWPPP Developer (QSD) and will be implemented by a Qualified SWPPP Practitioner (QSP). The QSP may delegate BMP installation, inspection, maintenance and repair, recordkeeping activities to trained personnel who are provided adequate supervision and oversight.

Prior to project startup, all designated onsite representatives will participate in a pre-project stormwater training workshop. The workshop will cover basic stormwater information, the requirements of the General Permit, and the SWPPP. Specifically, the workshop will focus on implementation, inspection, and maintenance of stormwater controls.

- Contractors are responsible for familiarizing their personnel with the information contained in the SWPPP. Contractors will be informed of this obligation.
- All new employees will be trained by staff familiar with these topics.
- Contractors are responsible for familiarizing subcontractors with information contained in the SWPPP.

Ongoing, formal training sessions will be selected from one of the following organizations:

- California Regional Water Quality Control Board
- International Erosion Control Association
- U.S. Environmental Protection Agency (EPA)
- Recognized municipal stakeholder organizations throughout California
- Professional organizations and societies in building and construction

Informal training will include tailgate site briefings to be conducted bi-weekly and will address proper installation methods and maintenance for the following topics:

- Erosion control BMPs
- Sediment control BMPs
- Tracking control BMPs
- Wind erosion control BMPs
- Non-stormwater BMPs
- Waste management and materials pollution control BMPs
- Emergency procedures specific to the construction site stormwater management

The training log showing formal and informal training of various Contractor personnel is shown in Appendix I. Training documentation will be made part of the Annual Report.

This SWPPP was prepared by Bechtel under the direction of the QSD, Dr. Kit Ng.

Section 6 Responsible Parties and Operators

6.1 Responsible Parties

Table 6-1 lists the individuals responsible for stormwater pollution prevention. Additional details are shown in Appendix J.

TABLE 6-1 List of Responsible Individuals

Name/Company	Responsibility	Phone Number	Address
Terry Copeland/Bechtel	Site Manager	301-228-7255 512-608-1494 (cell)	5275 Westview Drive Frederick, MD 21703
Dr. Kit Ng	Qualified SWPPP Developer (QSD)	301-228-7652	5275 Westview Drive Frederick, MD 21703
Lorie Palkow	Qualified SWPPP Practitioner (QSP)	TBD	TBD
John Cassidy/Bechtel	Project Field Engineer	301-228-6537 240-344-7804	5275 Westview Drive Frederick, MD 21703
Peter Carr/Bechtel	Project Environmental Lead	301-349-2040 240-344-0897	5275 Westview Drive Frederick, MD 21703

6.2 Subcontractor List

Subcontractor stormwater management measures will be directed by the QSP during the course of the project. If subcontractors change during the project, the associated list will be updated accordingly. The subcontractor log is included in Appendix K.

Section 7 Construction Site Monitoring Program

7.1 Purpose

The purpose of this section is to provide an annotated summary of the Construction Site Monitoring Plan (see Appendix L for complete plan) to meet the General Permit Risk Level 1 requirements (visual observations and non-visible pollutants).

7.2 Applicability of Permit Requirements

The specific monitoring required for each construction site depends upon the project risk level, project size, BMPs implemented and effluent quality. Given the ISEGF Risk Level 1 status and the lack of sediment basins the California Handbook (2009) Tables D-2 for Risk Level 1 Monitoring generate the following applicable monitoring requirements (Table 7-1).

Table 7-1 Monitoring Requirements

Type of Monitoring		When
Sampling & Analysis	Non-visible pollutants: spill/BMP failure based on pollutant source assessment	Within first two hours of discharge from site. Collect samples of runoff affected by the spilled or released material(s) and runoff that is unaffected by the spilled or released material(s).
Visual Inspections	Non-stormwater inspection	Quarterly for each drainage area.
	Qualifying rain event: Pre-rain inspection	All drainage areas, BMPs, and stormwater containments within two business days of each qualifying rain event.
	Qualifying rain event: Post-rain inspection	All discharge locations within two business days after each qualifying rain event. Visually observe discharge of contained stormwater when discharged.
	During rain inspection	See BMP inspection below.
	BMP	Weekly and every 24 hours during extended storm events.

7.3 Monitoring Locations

Monitoring and sampling locations will be based on proximity to planned non-visible pollutant storage, occurrence, or use; accessibility for sampling; personnel safety; and other factors in accordance with the applicable requirements in the General Permit.

- Sampling locations have been identified for the collection of runoff samples from material storage areas with spill potential.
- Power block drainage outlets – downstream of the oil water separators

- A location has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. This location was selected such that the sample will not have come in contact with operational or storage areas associated with the materials, wastes, and activities identified or disturbed soils areas.

If an operational activity or stormwater inspection conducted 48 hours prior to or during a rain event identifies the presence of a material storage, waste storage, or operations area with spills or the potential for the discharge of non-visible pollutants to surface waters that was an unplanned location and has not been identified on the WPCDs in Appendix B, sampling locations will be selected using the same rationale as that used to identify planned locations.

7.4 Safety

The primary safety concerns are with related to lightning from the thunderstorms (a primary source of rainfall) and from the potentially significant storm water flowing through existing ephemeral drainage pathways during rain events. Stormwater runoff at the site is predominantly sheet flow from west to east, eventually discharging into Ivanpah Dry Lake. With exception of the immediate areas near the power blocks, substation, and the common administrative area, the general pre-development drainage and flood flow patterns will be maintained – much of this flow follows ephemeral washes. Water levels can rise quickly in these step-sided washes, presenting risks to sampling activities conducted in these areas during storm events.

7.5 Visual Monitoring

Risk Level 1 sites are required to conduct visual monitoring (inspections). Visual monitoring includes inspections of BMPs, inspections before and after qualifying rain events, and inspection for non-stormwater discharges. Visual inspections are required for the duration of the project with the goal of confirming that appropriately selected BMPs have been implemented, are being maintained, and are effective in preventing potential pollutants from coming in contact with stormwater.

<u>BMP Inspections</u>

The General Permit requires that BMPs be inspected weekly and once each 24-hour period during extended storm events. The purpose of these inspections is to identify BMPs that:

- Need maintenance to operate effectively;
- Failed; or
- Could fail to operate as intended.

If deficiencies are identified during BMP inspections, repairs or design changes to BMPs will be initiated within 72 hours of identification and completed as soon as possible.

All BMP inspections will be documented on an inspection checklist. The checklist includes:

- Inspection date and date the inspection report was written;

- Weather information, including presence or absence of precipitation, estimate of the beginning of qualifying storm event, duration of event, time elapsed since last storm, and approximate amount of rainfall in inches;
- Site information, including stage of construction, activities completed, and approximate area of the site exposed;
- A description of the BMPs evaluated and any deficiencies noted;
- If the construction site is safely accessible during inclement weather, list the observations of all BMPs: erosion controls, sediment controls, chemical and waste controls, and non-stormwater controls. Otherwise, list the results of visual inspections at all relevant outfalls, discharge points, downstream locations, and identify any projected maintenance activities;
- Report the presence of noticeable odors or any visible sheen on the surface of any dischargers;
- Any corrective actions required, including any necessary changes to the SWPPP and the associated implementation dates;
- Photographs taken during the inspection, if any; and
- Inspector's name, title, and signature.

Qualifying Rain Event Inspections

The construction site be inspected within two days prior to a predicted qualifying rain event (50% probability National Weather Service forecast) and inspected within two days after a qualifying rain event (1/2 inch or more of precipitation within a greater than 48 hour period between events). These inspections will be performed during normal business hours of the construction site.

The pre-rain event inspection addresses:

- All stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources;
- All BMPs to identify whether they have been properly implemented per the SWPPP;
- Stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard; and
- The presence or absence of floating and suspended materials, a sheen on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants within stored stormwater.

The post-rain event inspection addresses:

- All stormwater discharge locations;
- The discharge of stored or contained stormwater that is derived from and discharged subsequent to a qualifying rain event; and
- All BMPs to determine if they were adequately designed, implemented, and effective.

Inspection records will document:

- Personnel performing the observations;
- Observation dates (time and date);
- Weather conditions (including the rain gauge reading for the qualifying rain event);
- Locations observed; and
- Corrective actions taken in response to observations.

The Visual Inspection Field Log Sheet is included in Appendix L.

Non-Stormwater Inspections

The Ivanpah site will be inspected quarterly for the presence of non-stormwater discharges. These inspections focus on identifying unauthorized non-stormwater discharges and observing authorized non-stormwater discharges.

The quarterly inspections will address the each drainage area of the project and document:

- Presence or indications of unauthorized and authorized non-stormwater discharges and their sources;
- Pollutant characteristics of the non-stormwater discharge (floating and suspended material, sheen, discoloration, turbidity, odor, etc;
- Personnel performing the observations;
- Dates and approximate time each drainage area and non-stormwater discharge was observed; and
- Response taken to observations.

The Visual Inspection Field Log Sheet is included in Appendix L.

7.6 Water Quality Sampling and Analysis

The sampling and analysis activities described herein are designed to determine whether the Ivanpah BMPs are effective in controlling potential construction site pollutants. The following sections addresses the potential pollutant sources, the Risk Level 1 sampling strategy and constituents, sampling locations and handling and the associated analytical methods and laboratories.

Pollutant Sources

Per the General Permit, the Risk Level 1 sampling is limited to non-stormwater related pollutant sources. No particle size analysis will be conducted, as the site will not be employing sediment basins.

The following construction materials, wastes, or activities are potential sources of non-visible pollutants to stormwater discharges from the ISEGF construction process.

- Vehicle batteries
- Concrete pours and curing
- Sealants
- Adhesives
- Cleaning products
- Solvents; Thinners
- Fertilizers; Herbicides
- Dust palliatives
- Soil binders
- Painting products

- Line flushing products
- Masonry products

Sampling Strategy Risk Level 1

Risk Level 1 projects like ISEGF collect water samples for non-visible pollutants if there is (1) a breach, leakage, malfunction, or spill is observed; and (2) the leak or spill has not been cleaned up prior to the rain event; and (3) there is the potential for discharge of non-visible pollutants to surface waters or drainage system.

In conformance with the minimum of 48 hours of dry weather will be used to distinguish between separate rain events.

Collection of discharge samples for non-visible pollutant monitoring will be triggered when any of the following conditions are observed during inspections conducted before or during rain events:

- Materials or wastes containing potential non-visible pollutants are not stored under watertight conditions. Watertight conditions are defined as (1) storage in a watertight container, (2) storage under a watertight roof or within a building, or (3) storage protected by temporary cover and containment that prevents stormwater contact and runoff from the storage area.

- Materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up prior to the rain event, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm sewer system.

- An operational activity with the potential to contribute non-visible pollutants (1) was occurring during or within 24 hours prior to the rain event, (2) applicable BMPs were observed to be breached, malfunction, or be improperly implemented, and (3) there is the potential for discharge of non-visible pollutants to surface waters.

- Soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied, and there is the potential for discharge of non-visible pollutants to surface waters.

.Sampling Locations

Sampling locations are based on proximity to planned non-visible pollutant storage, occurrence, or use; accessibility for sampling; personnel safety; and other factors in accordance with the applicable requirements in the General Permit.

- Sampling locations have been identified for the collection of runoff samples from material storage areas with spill potential.

- A location has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. This location was

selected such that the sample will not have come in contact with storage areas associated with the materials, wastes, and the activities identified or from disturbed soils areas.

If a construction activity or stormwater inspection conducted within two days prior to or during a qualifying rain event identifies the presence of a material storage, waste storage, or operations area with spills or the potential for the discharge of non-visible pollutants to surface waters that was an unplanned location and has not been identified on the WPCDs in Appendix B, sampling locations will be selected using the same rationale as that used to identify planned locations.

7.7 Quality Assurance and Quality Control

Quality assurance and quality control details are described in the Construction Site Monitoring Plan described in Appendix L.

7.8 Reporting Requirements and Record Retention

Most reporting will be addressed in the Annual Report. The Annual Report will include:

- A summary and evaluation of all sampling and analysis results, including original laboratory reports;
- The analytical method(s), method reporting unit(s), and MDL(s) of each analytical parameter (analytical results that are less than the MDL must be reported as “less than the MDL” or “<MDL”);
- A summary of all corrective actions taken during the compliance year;
- Identification of any compliance activities or corrective actions that were not implemented;
- A summary of all violations of the General Permit;
- The individual(s) who performed facility inspections, sampling, visual observation (inspections), and/or measurements;
- The date, place, time of facility inspections, sampling, visual observation (inspections), and/or measurements; and

In recognition of its status as Risk Level 1 Project which is being reviewed under the CEQA, if a discharge event occurs or a written notice of non-compliance is received, the QSP will immediately notify the Site Manager, and file a written report to Owner within seven (7) days of the discharge or notice. The Owner will file a written report to the CEC Compliance Project Manager and Lahontan Water Quality Control Board within 30 days of identification of non-compliance. Corrective measures will be implemented immediately following the discharge, notice, or order.

The report to the Owner and Compliance Project Manager and Lahontan Water Quality Control Board will contain the following items:

- The date, time, location, nature of operation, and type of unauthorized discharge, including the cause or nature of the notice or order
- The BMPs deployed before the discharge event, or prior to receiving the notice or order
- The date of deployment and type of BMPs deployed after the discharge event, or after receiving the notice or order, including additional measures installed or planned to reduce or prevent re-occurrence

- An implementation and maintenance schedule for any affected BMPs.

Monitoring related records will be retained for a minimum of 3 years for the following items:

- Site inspections (including visual observations and non-stormwater inspections)
- Correction Actions
- Discharge reports (including field reports, laboratory analytical results)
- Annual Reports
- QA/QC records

Section 8 References

The following documents are made a part of this SWPPP by reference:

Technical Resources

California Department of Water Resources, DWR (2004). California's Groundwater – Bulletin 118. Basin Descriptions: Ivanpah Valley Groundwater Basin. http://www.groundwater.water.ca.gov/bulletin118/basin_desc/basins_s.cfm

California Department of Transportation Caltrans, (2006a). Standard Plans, May 2006 http://www.dot.ca.gov/hq/esc/oe/specifications/std_specs/2006_StdSpecs/

California Department of Transportation – Caltrans (2006b). Standard Specifications, May 2006 http://www.dot.ca.gov/hq/esc/oe/specifications/std_specs/2006_StdSpecs/

California State Water Resources Control Board, SWRCB (2009). National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities. Order No. 2009-0009-DWQ, NPDES NO. CAS000002.

California Stormwater Quality Association, CSQA (2003). California Stormwater Best Management Practices Handbook.

Converse Consultants (2009). Geotechnical Study, Ivanpah Solar Electric Generating System, San Bernardino County, California. Prepared for BrightSource Energy. Converse Project No. 08-33231-01, dated October 16, 2009.

National Oceanic and Atmospheric Administration, NOAA, (2006), National Weather Service, Hydrometeorological Study Center, Precipitation Frequency Data Server (PFDS), Silver Spring, MD. Website: (Accessed 2/22/2010) http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html

Project Plans and Specifications

Air Quality Construction Management Plan for ISEGF (2010), Bechtel Document No. 25542-000-4CP-T07G-00005, Rev. 0, June 2010

Construction Waste Management Plan for ISEGF (2010), Bechtel Document No. 25542-000-4CP-T07G-00002, Rev. 0, June 2010

Hazardous Materials Management Plan for ISEGF (2010), Bechtel Document No. No. 25542-000-4CP-T07G-00004, Rev. 0, June 2010

ISEGF Special-Status Plant Avoidance and Protection Plan (2010), CH2MHill, 2010

California Energy Commission (CEC) Documentation

California Energy Commission (CEC) Documents (see CEC website for copies of the following documents [http://www.energy.ca.gov/sitingcases/ivanpah/documents/index.html])

California Energy Commission Presiding Members Proposed Decision (August 2010) Ivanpah Solar Electric Generating System, San Bernardino County.

Appendix A Construction General Permit

Appendix B Submitted Permit Registration Documents

"Also see Signed Certification statement on Page iii of document."

SWPPP Certification by Qualified SWPPP Developer

Project Name: Ivanpah SEGF

Project Number: Not applicable

"I certify under a penalty of law that I will have, upon receiving appropriate QSD certification training by 9/2/2011, appropriate QSD qualifications and that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that QSP and properly trained delegates gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____ 9/14/2010

Qualified SWPPP Developer Signature — Date

Dr. Kit Ng, Assistant Chief G&HES
California Professional Engineer (Civil) No. 51065 — 301-228-7652

QSD Name and Title — Telephone Number

Site Map

See Figure 1 - 25542-000-C2-0000-00002-001 Vicinity Map – see Water Pollution Control Figures

Risk Level Determination (Sediment and Receiving Water Risk)

The risk of accelerated erosion and sedimentation from wind and water depends on a number of factors, including proximity to receiving water bodies, climate, topography, and soil type. Construction General Permit Order 2009-0009-DWQ requires dischargers to assess the risk level of a site based on both sediment transport and receiving water risk. Risk levels are established by determining two factors: first, the site's sediment risk; and second, receiving water risk during periods of soil exposure (i.e., grading and site stabilization). Both factors are used to determine the combined site-specific Risk Level.

The risk level of the ISEGF project is determined using of the Risk Determination Worksheet from the 2009 Construction General Permit Order (Appendix A).

Step 1: Determine Sediment Risk via Option 1 (GIS Map Method - EPA Rainfall Erosivity Calculator & GIS map).

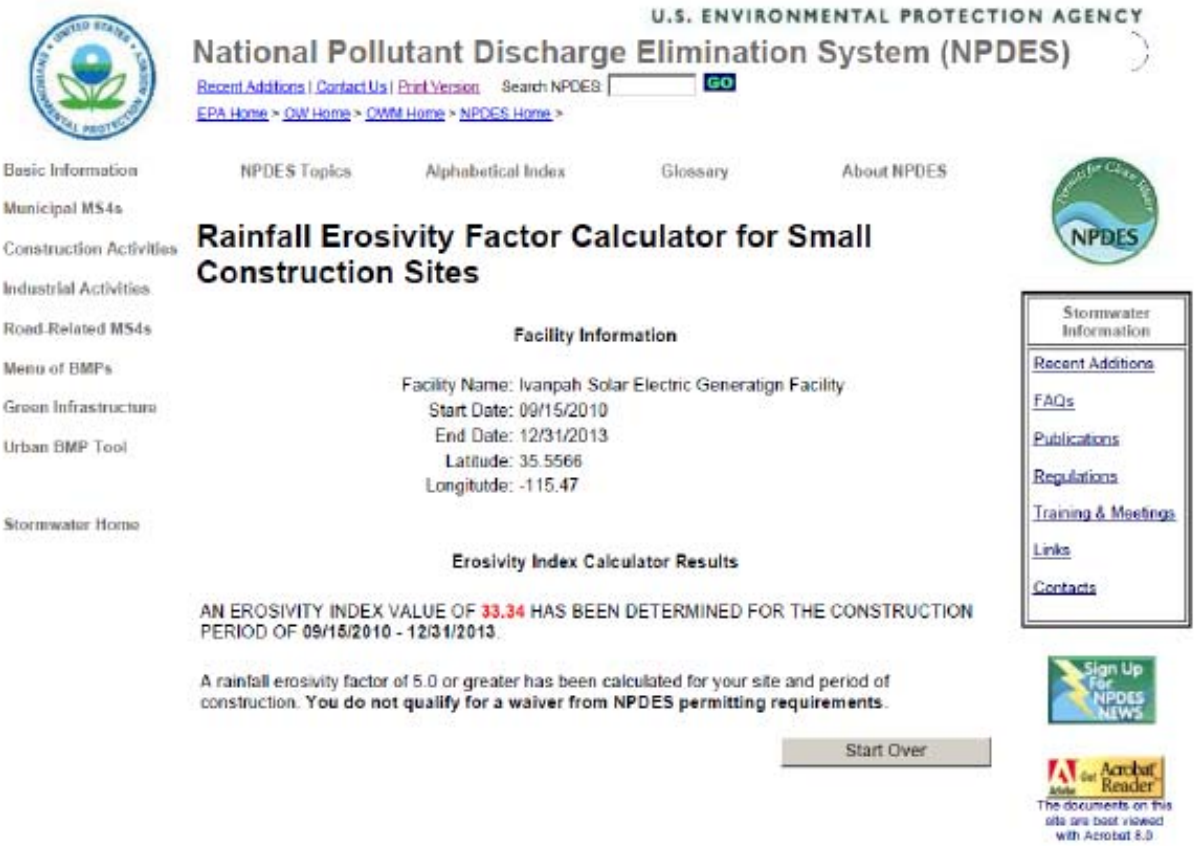
For the GIS method, the Rainfall Erosivity Factor (R) for Ivanpah 1, 2 and 3 is determined to be 33.34, with the aid of the EPA online Erosivity Index Calculator as shown in the following page.

(see http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm)

The start date of earth disturbance is in October 2010 based on schedule start of the earthwork activities for Ivanpah 1, but is conservatively set to September 15, 2010 for risk level determination. The end date of December 31, 2013 for final site stabilization is conservatively tied to the start of commercial operation for Ivanpah 3. The latitude and longitude of the solar tower for Ivanpah 2 is used to represent the facility location.

The product of K (soil erodibility factor) and LS (hillslope length and gradient factors) for the Ivanpah site is estimated to be 0.4 from the GIS map published by the State Regional Water Quality Control Board as shown in figure below. The watershed erosion estimate or soil loss can be determined by multiplying the R factor and the product of K and LS factors and is equal to 13.3 tons per acre.

The site Sediment Risk factor is determined to be LOW because the estimated soil loss is less than 15 tons per acre.



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National Pollutant Discharge Elimination System (NPDES)

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Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

Facility Name: Ivanpah Solar Electric Generatign Facility
Start Date: 09/15/2010
End Date: 12/31/2013
Latitude: 35.5566
Longitutde: -115.47

Erosivity Index Calculator Results

AN EROSIVITY INDEX VALUE OF **33.34** HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **09/15/2010 - 12/31/2013**.

A rainfall erosivity factor of 5.0 or greater has been calculated for your site and period of construction. **You do not qualify for a waiver from NPDES permitting requirements.**

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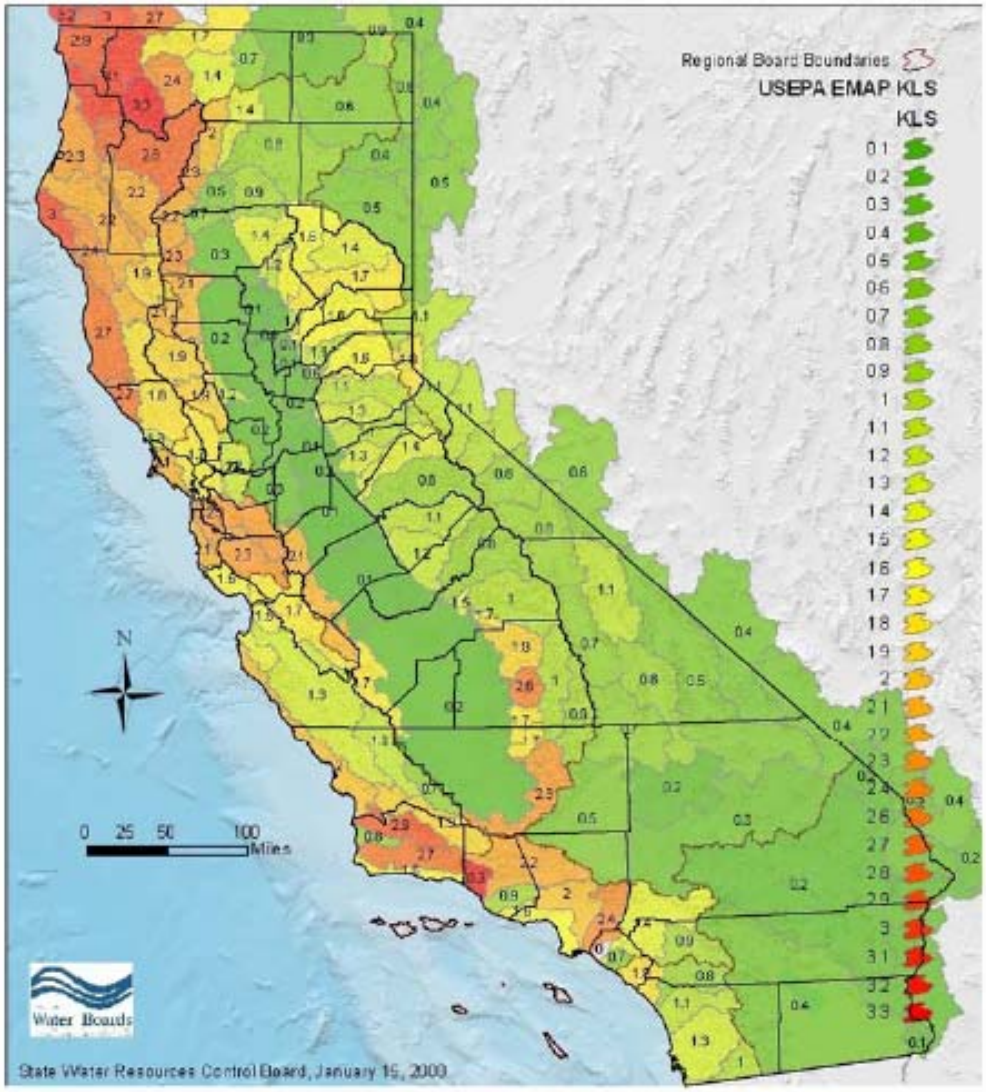
Last updated on August 07, 2009 3:37 PM
URL: http://cfpub.epa.gov/npdes/stormwater/lew/erosivity_index_result.cfm



Step 2: Determine Receiving Water Risk using the list of Sediment Sensitivity Watersheds provided.

According to the list of sediment impaired watersheds provided in the worksheet, the disturbed area of the ISEGF project site will not discharge (either directly or indirectly) to a 303(d)-listed waterbody impaired by sediment. In addition, the disturbed area of the ISEGF project site will not discharge to any waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY. Consequently, the Receiving Water (RW) Risk Factor is determined as Low as shown below.

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	yes/no	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment**? For help with impaired waterbodies please check the attached worksheet or visit the link below.	No	Low
2006 Approved Sediment-impared WBs Worksheet		
http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml		
OR		
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY?		
http://www.ice.ucdavis.edu/newobs/asp/wbguse.asp		

Step 3: Determine Combined Risk Level.

With the assessment of low risk on both sediment transport and receiving water, the combined risk for the ISEGF project is determined to be Level 1 as shown below.

Combined Risk Level Matrix

Receiving Water Risk \ Sediment Risk	Low	Medium	High
Low	Level 1	Level 2	
High	Level 2		Level 3

Project Sediment Risk:	Low
Project RW Risk:	Low
Project Combined Risk:	Level 1

Hydraulic Analysis

Technical Memoranda

- 25542-000-G27-GZC-00112-001 - Technical Memorandum #16: Stormwater Design Flows for Ivanpah 1 and Common Area Diversion Channels, dated May 10, 2010.

  This TM documents the 100-year design flood flow for both Ivanpah 1 Power Block and the Common Area using the HEC-1 model and stochastic method for alluvial fans.

  The HEC-1 model flood flow from the mountain block is developed based on the 1986 San Bernardino County Hydrology Manual, which previously requires that the runoff curve numbers for the 100-year return period storm events to be corresponding to the Type III antecedent moisture condition (AMC III). AMC III condition represents highly saturated soils at the beginning of the storm, thus leading to low infiltration and high runoff condition. In March, 2010, an addendum to the 1986 San Bernardino County Hydrology Manual was issued to address the use of AMC Type I condition for arid regions in the county. The predicted flood flow in TM 16 of May 10, 2010 used for this DESCP is based on Type I AMC designation, consistent with the requirements of the addendum.

- 25542-000-G27-GZC-00116-001 - Technical Memorandum #18: Summary of Stormwater Runoff and Sediment Transport Analysis for Ivanpah Solar Electric Generating System, dated May 10, 2010:

  The 2-, 5-,10-, 50- and 100-year flood flows were calculated for the pre- and post-project conditions. Floods were calculated by applying the FLO-2D Model for alluvial fan area using outflows from the mountain watersheds generated by HEC-1 model. The flood flows from the mountain block is predicted with the same methodology as used in the HEC-1 analysis documented in TM 16. The result in TM 18 indicates that change in the runoff volumes between the pre- and post-project condition is, on the average, about 1.5% or less for all storm return periods. One out of the four sections on the downstream end of the project site selected for evaluation shows a more noticeable increase in runoff in the post-project condition of around 4.1% during a 100-year event, while another section shows a corresponding decrease in runoff in the post-project condition of 3.0% for a 10-year storm event. The post-project changes in the peak flow at the downstream end of the site are in general very small, less than 1%, with the exception of one section where it shows an increase of about 7.3% during a 5-year storm, and another section where it shows a decrease of about 6.7% during a 2-year storm. The net change in sediment transport (inflow, outflow and deposition) volumes is also very small, less than 1.7%, for all storm events evaluated.

Engineering Calculations:

- 25542-009-CGC-CG00-00001-003 - Ivanpah 1 Power Block and Common Area Diversion Channels Hydraulic Design:

  This calculation described the hydraulic design of the flood and erosion protection berms/diversion channels for Ivanpah 1 power block and the Common Area. The design objective is to provide flood protection to the two areas for storm events with a return period of 100 years or lower. The 100-year flood flow for both Ivanpah 1 Power Block and the Common Area determined in TM 16, issued May 10, 2010, are used as basis for the flood and erosion protection design.

- 25542-001-CGC-CG00-00001-001 - Ivanpah 1 Power Block and Administration Building Drainage Sizing:

  This calculation documents the runoff analysis and hydraulic design of the drainage swales, culverts and catchbasins/inlets in Ivanpah 1 power block and the Common Area facilities, based on a design storm event of 25-year return period. In addition, the target BMP storm water treatment flow rates are determined, in accordance with San Bernardino County Water Quality Management Plan Guidance, to be about 0.9 cfs each for the two oil-water separator units (each serving a capture area of about 3 acres) on the Ivanpah 1 power block, and about 0.1 cfs for the 0.32 acre parking lot area of the Administrative Building.

- 25542-009-CGC-CG00-00002-000 - Hydraulic Design of Access Road Culverts in Common Area

  Because of the hydrological and topographic nature in alluvial fan regions, conventional drainage design concepts based on a selected return period event are not suitable for the roadway design in the Ivanpah site. To minimize impact to the existing drainage condition, the improved Colosseum Road and the paved plant access roads are designed to follow the existing terrain to the extent possible. As a result, a portion of the roads will potentially become barriers to the natural overland flow from the upslope areas especially during regular and less severe storm events. Where necessary, drainage culverts will be installed at the ephemeral wash or improved channel crossings. The culverts are sized to provide the maximum flow area allowable within the physical confine of the channel or the washes at the crossings. During heavy rainfall events, it is expected that the flood flow will overtop and potentially washout the road surfaces including the culvert crossings. The culvert crossings described in this calculation are on the 20-ft wide and 2 ft height drainage channel with 1V:3H side slopes adjacent to the Colosseum Road downstream of the diversion channel in the Common Area that serves to drain runoff from the regular and less severe storms. Each of the culverts consists of 7 - 24 inch x 18 inch corrugated metal pipe-arches. This calculation documents the capacity of the culvert crossings and the 20-ft wide channel.

- 25542-009-CGC-CG00-00003-000 - Heliostat Assembly Building Area Drainage Sizing

  This calculation describes the sizing of the storm drain system, consisting of ditches, culverts and storm drain pipes in the Heliostat Assembly Building Area to pass the peak discharges generated by a storm event of 25-year return period. The precipitation data are obtained from NOAA's Atlas 14 for the site and the analysis is based on the NRCS TR-55 method.

Water Pollution Control Drawings (WPCDs)

Figure 1 – 25542-000-C2-0000-00002-001 Vicinity Map
Figure 2 – 25542-000-C2-0000-00001-004 Site Plan
Figure 3 – 25542-000-C2-0010-00001-003 Ivanpah 1, Ivanpah 2 & Common Area Fencing Plan
Figure 4 – 25542-000-C2-0010-00002-003 Ivanpah 2 & Ivanpah 3 Fencing Plan
Figure 5 – 25542-000-C2-0010-00003-001 Construction Facilities Layout Arrangement Power Block Typical
Figure 6 – 25542-009-C2-0010-00002-001 Construction Facilities Layout Arrangement Common Area
Figure 7 – 25542-000-C2-0000-00003-000 Topography Map
Figure 8 – 25542-000-CG-0090-00001-001 Grading and Surface Details for Ephemeral Wash Crossing
Figure 9 – 25542-001-CG-0010-00001-002 Ivanpah 1 Power Block Rough Grading Plan
Figure 10 – 25542-000-CG-0090-00002-002 Ivanpah 1 Power Block Rough Grading Sections
Figure 11 – 25542-009-CG-0010-00001-002 Ivanpah Common Area SCE Switchyard Rough Grading Plan
Figure 12 – 25542-009-CG-0010-00002-002 Ivanpah Common Area Administration Building and Wells Rough Grading Plan
Figure 13 – 25542-009-CG-0010-00003-002 Ivanpah Common Area Heliostat Building and Laydown Area Rough Grading Plan
Figure 14 – 25542-009-CG-0090-00001-001 Common Area Switchyard Rough Grading Sections and Details
Figure 15 – 25542-009-CG-0090-00002-001 Admin Building and Well Area Rough Grading Sections & Detail
Figure 16 – 25542-009-CG-0090-00003-002 Heliostat Building and Laydown Area – Rough Grading Sections & Detail
Figure 17 – 25542-001-CG-0011-00001-001 Ivanpah 1 Wash Crossings at Depths Greater than 3'-0" at Road/Path Intersections
Figure 18 – 25542-001-CG-0011-00002-001 Ivanpah 1 Wash Crossings at Depths of 2'-0" to 3'-0" at Road/Path Intersections
Figure 18a – 25542-001-CG-0011-00003-000 Ivanpah 1 Wash Crossings at Depths of 1'-0" to 2'-0" at Road/Path Intersections
Figure 18b – 25542-001-CG-0011-00004-000 Ivanpah 1 Wash Crossings at Depths of 1'-0" to 2'-0" Location Tables
Figure 19 – 25542-000-CD-0000-00001-001 Hydrology Map Pre-Development
Figure 20 – 25542-000-CD-0000-00002-001 Ivanpah 1 & Common Area – Hydrology Plan - Post Development
Figure 21 – 25542-001-CD-0000-00001-001 Ivanpah 1 Power Block Hydrology Plan Post-Development
Figure 22 – 25542-009-CD-0000-00001-001 Ivanpah Common Area – Administration Building/Well Hydrology Plan – Post Development
Figure 23 – 25542-000-CE-0010-00001-002 Ivanpah 1 and Common Area Erosion and Sediment Control Plan
Figure 24 – 25542-000-C0-0090-00001-001 Site Work Sheet 1 – Notes, Legend & Details
Figure 25 – 25542-000-C0-0090-00002-000 Site Work Sheet 2 – Erosion & Sediment Control Sections and Details
Figure 26 – 25542 -000-C0-0090-00003-002 Site Work Sheet 3 – Typical Fencing Sections & Details
Figure 27 – 25542-000-C0-0090-00004-002 Site Work Sheet 4 – Typical Grading & Surfacing Details
Figure 28 – 25542-000-C0-0090-00005-002 Site Work Sheet 5 – Typical Grading & Surfacing Details
Figure 29 – 25542-000-C0-0090-00006-003 Site Work Sheet 6 – Typical Fencing Sections and Details
Figure 30 – 25542-000-CS-0010-00001-001 Roadway Grading and Paving Plan Colosseum Road - Station 0+00 to 10+04 - Sheet 1
Figure 31 – 25542-000-CS-0010-00002-001 Roadway Grading and Paving Plan - Colosseum Road - Station 10+04 to 35+27 - Sheet 2

Water Pollution Control Drawings (WPCDs) – continued

Figure 32 – 25542-000-CS-0010-00003-001 Roadway Grading and Paving Plan - Colosseum Road Station 35+27 to 56+76 - Sheet 3
Figure 33 – 25542-000-CS-0010-00004-001 Roadway Grading and Paving Plan - Colosseum Road Station 56+76 to 78+12 - Sheet 4
Figure 34 – 25542-000-CS-0010-00005-001 Roadway Grading and Paving Plan - Colosseum Road Station 78+12 to 105+34 - Sheet 5
Figure 35 – 25542-000-CS-0010-00006-002 Roadway Grading and Paving Plan - Unit 1 - Station 4+09 to 25+57 - Sheet 6
Figure 36 – 25542-000-CS-0010-00007-002 Roadway Grading and Paving Plan - Unit 1 - Station 25+57 to 50+28 - Sheet 7
Figure 37 – 25542-000-CS-0010-00008-002 Roadway Grading and Paving Plan - Unit 1 - Station 50+27 to 59+69 - Sheet 8
Figure 38 – 25542-000-CS-0010-00009-002 Roadway Grading and Paving Plan - Colosseum Road - Station 105+34 to 126+65 - Sheet 9
Figure 39 – 25542-000-CS-0010-00012-001 Roadway Grading and Paving Plan – Colosseum Road - Station 126+65 to 141+65 - Sheet 12
Figure 40 – 25542-001-CS-0010-00001-002 Ivanpah 1 Finished Paving and Grading
Figure 41 – 25542-000-CS-0090-00001-001 Colosseum Road Profile – Sheet 1
Figure 42 – 25542-000-CS-0090-00002-001 Colosseum Road Profile – Sheet 2
Figure 43 – 25542-000-CS-0090-00003-001 Colosseum Road Profile – Sheet 3
Figure 44 – 25542-000-CS-0090-00004-001 Colosseum Road Alignment
Figure 45 – 25542-000-CS-0090-00005-002 Unit 1 Road Profile
Figure 46 – 25542-000-CS-0090-00006-001 Unit 1 Road Alignment
Figure 47 – 25542-000-CS-0090-00007-001 Switchyard Road Profile and Alignment
Figure 48 – 25542-001-CS-0011-00001-000 Ivanpah 1 Dirt Road and Dirt Maintenance Path Plan
Figure 49 - 25542-000-CD-0090-00002-000 Storm Drainage Sections and Details
Figure 50 - 25542-000-CD-0090-00001-000 Units 1, 2, 3 & Common Plant Road Cross Drains Plans, Sections and Tables
Figure 51 - 25542-000-CS-0010-00019-000 Truck Wash and Concrete Washout Area Plan

Appendix C SWPPP Amendment Log

This SWPPP shall be amended:

- Whenever there is a change in construction or operations which may affect the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm sewer system (MS4); or
- If any condition of the Permit is violated or the general objective of reducing or eliminating pollutants in stormwater discharges has not been achieved. If the RWQCB determines that a Permit violation has occurred, the SWPPP shall be amended and implemented within 14-calendar days after notification by the RWQCB;
- Annually, prior to the defined rainy season; and
- When deemed necessary by the Owner (i.e., Solar Partners I, II, VIII, LLC) and/or Contractor Developer (Bechtel Power Corporation).

The following items will be included in each amendment:

- Who requested the amendment.
- The location of proposed change.
- The reason for change.
- The original BMP proposed, if any.
- The new BMP proposed.

The amendments for this SWPPP, along with the QSD Certification, can be found in the following pages. Amendments are listed in the following Amendment Log

SWPPP Amendment No.

Project Name: Ivanpah SEGF

Project Number: Not applicable

Preparer Certification of the
Stormwater Pollution Prevention Plan Amendment

"I certify under a penalty of law that I will have, upon receiving appropriate QSD certification training by 9/2/2011, appropriate QSD qualifications and that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that QSP and properly trained delegates gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Qualified SWPPP Developer Signature	Date
Dr. Kit Ng, Assistant Chief G&HES California Professional Engineer (Civil) No. 51065 QSD Name and Title	301-228-7652 Telephone Number

Amendment Log

Project Name: Ivanpah SEGF

Project Number: Not applicable

Example:

Amendment No.	Date	Brief Description of Amendment	Prepared By
001	September 30, 2010	Grading Schedule to begin December 1, 2010 and will include Unit 1 Heliostat Field	

Amendment No.	Date	Brief Description of Amendment	Prepared By

Appendix D Non-Compliance Evaluations

Sample Form

To: Name of [City] Engineer/Regional Board Staff Date: Insert Date

Subject: Notice of Non-Compliance

Project Name: Ivanpah Solar Electric Generating Facility

Project Number/Location: NA / San Bernardino County, Nipton, CA

In accordance with the NPDES Statewide Permit for Storm Water Discharges Associated with Construction Activity, the following instance of discharge is noted:

Date, time, and location of discharge
Insert description and date of event

Nature of the operation that caused the discharge
insert description of operation

Initial assessment of any impact cause by the discharge
insert assessment

Existing BMP(s) in place prior to discharge event
list BMPs in place

Date of deployment and type of BMPs deployed after the discharge.
BMPs deployed after the discharge (with dates)

Steps taken or planned to reduce, eliminate and/or prevent recurrence of the discharge
insert steps taken to prevent recurrence

Implementation and maintenance schedule for any affected BMPs
insert implementation and maintenance schedule

If further information or a modification to the above schedule is required, notify the contact person below.

Name of Contact Person *Title*

Company *Telephone Number*

Signature *Date*

Appendix E Submitted Changes to PRDS

Appendix F Construction Schedule

Construction of ISEGF from site preparation and grading to commercial operation is expected to take place from the fourth quarter of 2010 to the end of 2013, a total of 38 months approximately. Commercial operations of all three units are expected to commence in 2013.

Major milestones are listed in Table F-1. Table F-2 lists the anticipated project schedule during the initial stages of Phase 1 work. Additional detailed project schedule for later phases of the project will be provided as necessary.

TABLE F-1 Project Schedule Major Milestones

Activity	Date
Begin Construction	Fourth Quarter 2010
Installation of initial sediment and erosions control measures	Fourth Quarter 2010
Ivanpah 1 Commercial Operation	2013
Ivanpah 2 Commercial Operation	2013
Ivanpah 3 Commercial Operation	2013

TABLE F-2 Anticipated Initial Phase Project Schedule

Construction Activities	Schedule
Surveying (Stake Marking/Monuments)	July 2010
Mobilization and Start of Field Works	October 2010
Removal of Rare Plants at Project Boundary	October 2010
Installation of Silt Fencing	October 2010
Clearing and Grubbing	October 2010
Perimeter Fence (Tortoise/Combo) Installation	November 2010 to March 2011
Established Plant Access Road	October 2010 to December 2010
Cut and Fill – Rough Grading Common Area including Flood Diversion Control	November 2010 to February 2011
Installation of Water Wells	November 2010 to March 2011
Establish Site Office Complex	November 2010 to February 2011
Installation of Foundations/Underground Utilities – Common Area	November 2010 to July 2011
Cut and Fill – Rough Grading Power Block and Flood Diversion Control	November 2010 to January 2011

Construction Activities	Schedule
Establish Permanent Flood Diversion Berms and Channels	March 2012 to July 2012
Develop Dirt Roads in Solar Field	January 2011 to November 2011
Installation of Foundations/Underground Utilities – Power Block	January 2011 to August 2011
Installation of Solar Field Pylons	March 2011 to April 2012
Final Grading – Power Block and Common Area	August 2011 to March 2012
Ivanpah 1 Performance Testing	January 2013
Demobilization – Ivanpah 1	February 2013

Construction will generally be scheduled to occur between 5:00 a.m. and 7:00 p.m. Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities (e.g., pouring concrete at night during hot weather, working around time-critical shutdowns and constraints). During some construction periods and during the startup phase of the project, some activities may continue 24 hours per day, 7 days per week.

The following sections describe the major construction work processes.

Mobilization

The selected Contractor will mobilize and develop temporary construction facilities and laydown areas adjacent to the power block and the common area situated between Ivanpah 1 and Ivanpah 2. Before starting the clearing and grading, the sediment and erosion control measures will be placed on site. Clearing and grubbing will start in the power block area.

Heliostat Erection

Solar field erection works will require at least two pre-assembly sheds for assembling heliostat structures. Approximately 53,500 heliostats will need to be installed in Ivanpah 1, and Ivanpah 2 and Ivanpah 3 each requiring about 60,000 heliostats. Fabrication buildings will be used to assemble heliostats during all three construction phases. Once construction of Ivanpah 3 is completed, the buildings will be removed and the area restored.

Power Block and Towers

Concrete, mechanical and electrical works of the power block will be performed over a period of 15 months after the immediate area is brought to its designated grade elevations.

The Common Area, located between Ivanpah 1 and 2, will be used for the fabrication sheds and construction parking. It can be used for construction laydown, if necessary. However, temporary laydown of materials at each site will generally occur in the vicinity of active construction work.

Appendix G CASQA BMP Handbook Fact Sheets

Attached are the BMP Fact Sheets from the California Stormwater BMP Handbook, Construction, for those BMPs selected for use on the Ivanpah Electric Generating Facility Project.

Document Number	Stormwater Best Management Practice
25542-000-G27-GGG-00005-001	California Stormwater Best Management Practices Handbook – Water Conservation Practices
25542-000-G27-GGG-00006-001	California Stormwater Best Management Practices Handbook – Dewatering Operations
25542-000-G27-GGG-00007-001	California Stormwater Best Management Practices Handbook – Paving and Grinding Operations
25542-000-G27-GGG-00008-001	California Stormwater Best Management Practices Handbook – Vehicle and Equipment Cleaning
25542-000-G27-GGG-00009-001	California Stormwater Best Management Practices Handbook - Vehicle and Equipment Fueling
25542-000-G27-GGG-00010-001	California Stormwater Best Management Practices Handbook - Vehicle and Equipment Maintenance
25542-000-G27-GGG-00011-001	California Stormwater Best Management Practices Handbook - Scheduling
25542-000-G27-GGG-00012-001	California Stormwater Best Management Practices Handbook – Preservation and Existing Vegetation
25542-000-G27-GGG-00013-001	California Stormwater Best Management Practices Handbook –Earth Dikes and Drainage Swales
25542-000-G27-GGG-00014-001	California Stormwater Best Management Practices Handbook – Velocity and Dissipation Devices
25542-000-G27-GGG-00015-001	California Stormwater Best Management Practices Handbook – Geotextiles and Mats
25542-000-G27-GGG-00016-001	California Stormwater Best Management Practices Handbook – Concrete Curing
25542-000-G27-GGG-00017-001	California Stormwater Best Management Practices Handbook – Concrete Finishing
25542-000-G27-GGG-00018-001	California Stormwater Best Management Practices Handbook – Silt Fence
25542-000-G27-GGG-00019-001	California Stormwater Best Management Practices Handbook – Check Dams
25542-000-G27-GGG-00020-001	California Stormwater Best Management Practices Handbook – Fiber Rolls
25542-000-G27-GGG-00021-001	California Stormwater Best Management Practices Handbook – Street Sweeping and Vacuuming
25542-000-G27-GGG-00022-001	California Stormwater Best Management Practices Handbook – Stabilized Construction Entrance/Exit
25542-000-G27-GGG-00023-001	California Stormwater Best Management Practices Handbook – Stabilized Construction Roadway
25542-000-G27-GGG-00024-001	California Stormwater Best Management Practices Handbook – Entrance/Outlet Tire Wash
25542-000-G27-GGG-00025-001	California Stormwater Best Management Practices Handbook – Wind Erosion Control

Document Number	Stormwater Best Management Practice
25542-000-G27-GGG-00026-001	California Stormwater Best Management Practices Handbook – Material Delivery and Storage
25542-000-G27-GGG-00027-001	California Stormwater Best Management Practices Handbook – Material Use
25542-000-G27-GGG-00028-001	California Stormwater Best Management Practices Handbook – Stockpile Management
25542-000-G27-GGG-00029-001	California Stormwater Best Management Practices Handbook – Spill Prevention and Control
25542-000-G27-GGG-00030-001	California Stormwater Best Management Practices Handbook – Solid Waste Management
25542-000-G27-GGG-00031-001	California Stormwater Best Management Practices Handbook – Hazardous Waste Management
25542-000-G27-GGG-00032-001	California Stormwater Best Management Practices Handbook – Contaminated Soil Management
25542-000-G27-GGG-00033-001	California Stormwater Best Management Practices Handbook – Concrete Waste Management
25542-000-G27-GGG-00034-001	California Stormwater Best Management Practices Handbook – Sanitary/Septic Waste Management
25542-000-G27-GGG-00035-001	California Stormwater Best Management Practices Handbook – Liquid Waste Management
25542-000-G27-GGG-00036-001	California Stormwater Best Management Practices Handbook – Water Conservation Practices
25542-000-G27-GGG-00037-001	California Stormwater Best Management Practices Handbook – Dewatering Operations
25542-000-G27-GGG-00038-001	California Stormwater Best Management Practices Handbook – Paving and Grinding Operations
25542-000-G27-GGG-00039-001	California Stormwater Best Management Practices Handbook – Vehicle and Equipment Cleaning

Appendix H Construction Site Inspection Report Form

GENERAL INFORMATION				
Project Name	Ivanpah Solar Electric Generating Facility Project			
Project Location	NA / San Bernardino County, Nipton, CA			
Contractor	Bechtel Power Corporation			
Inspector's Name				
Inspector's Title				
Signature				
Date of Inspection				
Inspection Type (Check Applicable)	❒ Prior to forecast rain		❒ After a rain event	
	❒ 24-hr intervals during extended rain		❒ Other _____	
Season (Check Applicable)	❒ Rainy		❒ Non-Rainy	
Storm Data	Storm Start Date & Time:		Storm Duration (hrs):	
	Time elapsed since last storm (Circle Applicable Units)	Min. Hr. Days	Approximate Rainfall Amount (inches)	

PROJECT AREA SUMMARY AND DISTURBED SOIL AREA (DSA) SIZE		
Total Project Area	_____	Acres
Field Estimate of Active DSAs	_____	Acres
Field Estimate of Non-Active DSAs	_____	Acres

INSPECTION OF BMPs				
BMP	**Yes**	**No**	**N/A**	**Corrective Action**
Preservation of Existing Vegetation				
Is temporary fencing provided to preserve vegetation in areas where no construction activity is planned?				

INSPECTION OF BMPs				
Location:				
Location:				
Location:				
Location:				
Erosion Control				
Does the applied temporary erosion control provide 100% coverage for the affected areas?				
Are any non-vegetated areas that may require temporary erosion control?				
Is the area where erosion controls are used required free from visible erosion?				
Location:				
Location:				
Location:				
Location:				
Temporary Linear Sediment Barriers (Silt Fence, Fiber Rolls, Sandbag Barriers, etc.)				
Are temporary linear sediment barriers properly installed, functional and maintained?				
Are temporary linear sediment barriers free of accumulated litter?				
Is the built-up sediment less than 1/3 the height of the barrier?				
Are cross barriers installed where necessary and properly spaced?				
Location:				
Location:				
Location:				
Location:				
Location:				
Storm Drain Inlet Protection				
Are storm drain inlets internal to the project properly protected?				
Are storm drain inlet protection devices in working order and being properly maintained?				
Location:				
Location:				
Location:				
Location:				
Location:				
Sediment Basins				

INSPECTION OF BMPs				
Are basins designed in accordance with the requirements of the General Permit?				
Are basins maintained to provide the required retention/detention?				
Are basin controls (inlets, outlets, diversions, weirs, spillways, and racks) in working order?				
Location:				
Location:				
Location:				
Location:				
Stockpiles				
Are all locations of temporary stockpiles, including soil, hazardous waste, and construction materials in approved areas?				
Are stockpiles protected from run-on, run-off from adjacent areas and from winds?				
Are stockpiles located at least 15 m from concentrated flows, downstream drainage courses and storm drain inlets?				
Are required covers and/or perimeter controls in place?				
Location:				
Location:				
Location:				
Location:				
Concentrated Flows				
Are concentrated flow paths free of visible erosion?				
Location:				
Location:				
Location:				
Location:				
Tracking Control				
Is the entrance stabilized to prevent tracking				
Is the stabilized entrance inspected daily to ensure that it is working properly				
Are points of ingress/egress to public/private roads inspected and swept and vacuumed as needed?				
Are all paved areas free of visible sediment tracking or other particulate matter?				
Location:				
Location:				
Location:				
Location:				

INSPECTION OF BMPs				
Wind Erosion Control				
Is dust control implemented?				
Location:				
Location:				
Location:				
Location:				
Dewatering Operations				
Are all one-time dewatering operations covered by the General Permit inspected before and as they occur and BMPs implemented as necessary during discharge?				
Is ground water dewatering handled in conformance with the dewatering permit issued by the RWQCB?				
Is required treatment provided for dewatering effluent?				
Location:				
Location:				
Location:				
Location:				
Vehicle & Equipment Fueling, Cleaning, and Maintenance				
Are vehicle and equipment fueling, cleaning and maintenance areas reasonably clean and free of spills, leaks, or any other deleterious material?				
Are vehicle and equipment fueling, cleaning and maintenance activities performed on an impermeable surface in dedicated areas?				
If no, are drip pans used?				
Are dedicated fueling, cleaning, and maintenance areas located at least 15 m away from downstream drainage facilities and watercourses and protected from run-on and runoff?				
Is wash water contained for infiltration/ evaporation and disposed of appropriately?				
Is on-site cleaning limited to washing with water (no soap, soaps substitutes, solvents, or steam)?				
On each day of use, are vehicles and equipment inspected for leaks and if necessary, repaired?				
Location:				
Location:				
Location:				
Location:				
Waste Management & Materials Pollution Control				
Are material storage areas and washout areas protected from run-on and runoff, and located at least 15 m from concentrated flows and downstream drainage facilities?				

INSPECTION OF BMPs				
Are all material handling and storage areas clean; organized; free of spills, leaks, or any other deleterious material; and stocked with appropriate clean-up supplies?				
Are liquid materials, hazardous materials, and hazardous wastes stored in temporary containment facilities?				
Are bagged and boxed materials stored on pallets?				
Are hazardous materials and wastes stored in appropriate, labeled containers?				
Are proper storage, clean-up, and spill-reporting procedures for hazardous materials and wastes posted in open, conspicuous and accessible locations adjacent to storage areas?				
Are temporary containment facilities free of spills and rainwater?				
Are temporary containment facilities and bagged/boxed materials covered?				
Are temporary concrete washout facilities designated and being used?				
Are temporary concrete washout facilities functional for receiving and containing concrete waste and are concrete residues prevented from entering the drainage system?				
Do temporary concrete washout facilities provide sufficient volume and freeboard for planned concrete operations?				
Are concrete wastes, including residues from cutting and grinding, contained and disposed of off-site or in concrete washout facilities?				
Are spills from mobile equipment fueling and maintenance properly contained and cleaned up?				
Is the site free of litter?				
Are trash receptacles provided in the yard, field trailer areas, and at locations where workers congregate for lunch and break periods?				
Is litter from work areas collected and placed in watertight dumpsters?				
Are waste management receptacles free of leaks?				
Are the contents of waste management receptacles properly protected from contact with storm water or from being dislodged by winds?				
Are waste management receptacles filled at or beyond capacity?				
Location:				
Location:				
Location:				
Location:				
Temporary Water Body Crossing or Encroachment				
Are temporary water body crossings and encroachments constructed appropriately?				
Does the project conform to the requirements of the 404 permit and/or 1601agreement?				
Location:				

INSPECTION OF BMPs				
Location:				
Location:				
Location:				
Illicit Connection/ Discharge				
Is there any evidence of illicit discharges or illegal dumping on the project site?				
If yes, has the Owner/Operator been notified?				
Location:				
Location:				
Location:				
Location:				
Discharge Points				
Are discharge points and discharge flows free from visible pollutants?				
Are discharge points free of any significant sediment transport?				
Location:				
Location:				
Location:				
Location:				
SWPPP Update				
Do the SWPPP and Project Schedule adequately reflect the current site conditions and contractor operations?				
Are all BMPs shown on the water pollution control drawings installed in the proper location(s) and according to the details in the SWPPP?				
Location:				
Location:				
Location:				
Location:				
General				
Are there any other potential concerns at the site?				
Location:				
Location:				
Location:				
Location:				
Storm Water Monitoring				

INSPECTION OF BMPs				
Does storm water discharge directly to a water body listed in the General Permit as impaired for sediment/sedimentation or turbidity?				
If yes, were samples for sediment/sedimentation or turbidity collected pursuant to the sampling and analysis plan in the SWPPP?				
Did the sampling results indicate that the discharges are causing or contributing to further impairment?				
If yes, were the erosion/sediment control BMPs improved or maintained to reduce the discharge of sediment to the water body?				
Were there any BMPs not properly implemented or breaches, malfunctions, leakages or spills observed which could result in the discharge of pollutants to surface waters that would not be visually detectable in storm water?				
If yes, were samples for non-visually detectable pollutants collected pursuant to the sampling and analysis plan during rain events?				
If sampling indicated pollution of the storm water, were the leaks, breaches, spills, etc. cleaned up and the contaminated soil properly disposed of?				
Were the BMPs maintained or replaced?				
Were soil amendments (e.g., gypsum, lime) used on the project?				
If yes, were samples for non-visually detectable pollutants collected pursuant to the sampling and analysis plan in the SWPPP?				
If sampling indicated pollution of the storm water by the use of the soil amendments, is there a contingency plan for retention onsite of the polluted storm water?				
Did storm water contact stored materials or waste and run off the construction site? (Materials not in watertight containers, etc.)				
If yes, were samples for non-visually detectable pollutants collected pursuant to the sampling and analysis plan in the SWPPP?				

Appendix I Training Reporting Form

Storm Water Management Training Log

Project Name: Ivanpah Solar Electric Generating Facility Project

Project Number/Location: NA / San Bernardino County, Nipton, CA

Storm Water Management Topic: (check as appropriate)

- ❑ Erosion Control
- ❑ Sediment Control
- ❑ Wind Erosion Control
- ❑ Tracking Control
- ❑ Non-storm water management
- ❑ Waste Management and Materials Pollution Control
- ❑ Storm Water Sampling

Specific Training Objective: _____

Location: _____ Date: _____

Instructor: _____ Telephone: _____

Course Length (hours): _____

Attendee Roster (attach additional forms if necessary)

Name	Company	Phone

Name	Company	Phone

Comments

_____
_____
_____
_____
_____
_____

Appendix J Responsible Parties

List of Responsible Individuals

Name/Company	Responsibility	Phone Number	Address	Date of Training	Date of Recorded Entry
Terry Copeland/Bechtel	Site Manager	301-228-7255 512-608-1494 (cell)	5275 Westview Drive Frederick, MD 21703	Pending	
Dr. Kit Ng	Qualified SWPPP Developer (QSD)	301-228-7652	5275 Westview Drive Frederick, MD 21703	Professional Engineer (Civil No. 51065 - California	
Lorie Palkow	Qualified SWPPP Practitioner (QSP)	TBD	100302 Yates Well Road Nipton, CA 92366	TBD	
John Cassidy/Bechtel	Project Field Engineer	301-228-6537 240-344-7804	5275 Westview Drive Frederick, MD 21703	Pending	
Peter Carr/Bechtel	Project Environmental Lead	301-349-2040 240-344-0897	5275 Westview Drive Frederick, MD 21703	Pending	

Training Certificates & Verification of Training

See attached.

Appendix K Subcontractors

SUBCONTRACTOR LOG
(QSP Direction)

Project Name: Ivanpah Solar Electric Generating Facility Project

Project Number/Location: NA / San Bernardino County, Nipton, CA

SUBCONTRACTOR COMPANY NAME	CONTACT NAME	ADDRESS	PHONE NUMBER	CELL OR FIELD PHONE	DATE NOTIFICATION LETTER SENT	TYPE OF WORK

USE ADDITIONAL PAGES AS NECESSARY

Appendix L Construction Site Monitoring Program

The specific monitoring required for ISEGF Project can be defined by its status as Risk Level 1 site and by its lack of sediment basins. The California Handbook (2009) Tables D-2 for Risk Level 1 indicates that the following applicable monitoring requirements.

Table L-1 Monitoring Requirements

Type of Monitoring		When
Sampling & Analysis	Non-visible pollutants: spill/BMP failure based on pollutant source assessment	Within first two hours of discharge from site. Collect samples of runoff affected by the spilled or released material(s) and runoff that is unaffected by the spilled or released material(s).
Visual Inspections	Non-stormwater inspection	Quarterly for each drainage area.
	Qualifying rain event: Pre-rain inspection	All drainage areas, BMPs, and stormwater containments within two business days of each qualifying rain event.
	Qualifying rain event: Post-rain inspection	All discharge locations within two business days after each qualifying rain event. Visually observe discharge of contained stormwater when discharged.
	During rain inspection	See BMP inspection below.
	BMP	Weekly and every 24 hours during extended storm events.

Monitoring Locations

Monitoring and sampling locations will be based on proximity to planned non-visible pollutant storage, occurrence, or use; accessibility for sampling; personnel safety; and other factors in accordance with the applicable requirements in the General Permit.

- Sampling locations have been identified for the collection of runoff samples from material storage areas with spill potential.
- Power block drainage outlets – downstream of the oil water separators
- A location has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. This location was selected such that the sample will not have come in contact with operational or storage areas associated with the materials, wastes, and activities identified or disturbed soils areas.

If an operational activity or stormwater inspection conducted 48 hours prior to or during a rain event identifies the presence of a material storage, waste storage, or operations area with spills or the potential for the discharge of non-visible pollutants to surface waters that was an unplanned location and has not been identified on the WPCDs in Appendix B, sampling locations will be selected using the same rationale as that used to identify planned locations.

Safety

The primary safety concerns are with related to lightning from the thunderstorms (a primary source of rainfall) and from the potentially significant storm water flowing through existing ephemeral drainage pathways during rain events. Stormwater runoff at the site is predominantly sheet flow from west to east, eventually discharging into Ivanpah Dry Lake. With exception of the immediate areas near the power blocks, substation, and the common administrative area, the general pre-development drainage and flood flow patterns will be maintained – much of this flow follows ephemeral washes. Water levels can rise quickly in these step-sided washes, presenting risks to sampling activities conducted in these areas during storm events.

Visual Monitoring

Risk Level 1 sites are required to conduct visual monitoring (inspections). Visual monitoring includes inspections of BMPs, inspections before and after qualifying rain events, and inspection for non-stormwater discharges. Visual inspections are required for the duration of the project with the goal of confirming that appropriately selected BMPs have been implemented, are being maintained, and are effective in preventing potential pollutants from coming in contact with stormwater.

BMP Inspections

The General Permit requires that BMPs be inspected weekly and once each 24-hour period during extended storm events. The purpose of these inspections is to identify BMPs that:

- Need maintenance to operate effectively;
- Failed; or
- Could fail to operate as intended.

If deficiencies are identified during BMP inspections, repairs or design changes to BMPs will be initiated within 72 hours of identification and completed as soon as possible.

All BMP inspections will be documented on an inspection checklist. The checklist includes:

- Inspection date and date the inspection report was written;
- Weather information, including presence or absence of precipitation, estimate of the beginning of qualifying storm event, duration of event, time elapsed since last storm, and approximate amount of rainfall in inches;
- Site information, including stage of construction, activities completed, and approximate area of the site exposed;
- A description of the BMPs evaluated and any deficiencies noted;
- If the construction site is safely accessible during inclement weather, list the observations of all BMPs: erosion controls, sediment controls, chemical and waste controls, and non-stormwater controls. Otherwise, list the results of visual inspections at all relevant outfalls, discharge points, downstream locations, and identify any projected maintenance activities;
- Report the presence of noticeable odors or any visible sheen on the surface of any dischargers;

- Any corrective actions required, including any necessary changes to the SWPPP and the associated implementation dates;
- Photographs taken during the inspection, if any; and
- Inspector's name, title, and signature.

Qualifying Rain Event Inspections

The construction site be inspected within two days prior to a predicted qualifying rain event (50% probability National Weather Service forecast) is and within two days after a qualifying rain event (1/2 inch or more of precipitation within a ≥48 hour period between events). These inspections will be performed during normal business hours of the construction site.

The pre-rain event inspection addresses:

- All stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources;
- All BMPs to identify whether they have been properly implemented per the SWPPP;
- Stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard; and
- The presence or absence of floating and suspended materials, a sheen on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants within stored stormwater.

The post-rain event inspection addresses:

- All stormwater discharge locations;
- The discharge of stored or contained stormwater that is derived from and discharged subsequent to a qualifying rain event; and
- All BMPs to determine if they were adequately designed, implemented, and effective.

Inspection records will document:

- Personnel performing the observations;
- Observation dates (time and date);
- Weather conditions (including the rain gauge reading for the qualifying rain event);
- Locations observed; and
- Corrective actions taken in response to observations.

The Visual Inspection Field Log Sheet is included in Attachment 1.

Non-Stormwater Inspections

The Ivanpah site will be inspected quarterly for the presence of non-stormwater discharges. These inspections focus on identifying unauthorized non-stormwater discharges and observing authorized non-stormwater discharges.

The quarterly inspections will address the each drainage area of the project and document:

- Presence or indications of unauthorized and authorized non-stormwater discharges and their sources;

- Pollutant characteristics of the non-stormwater discharge (floating and suspended material, sheen, discoloration, turbidity, odor, etc;
- Personnel performing the observations;
- Dates and approximate time each drainage area and non-stormwater discharge was observed; and
- Response taken to observations.

The Visual Inspection Field Log Sheet is included in Attachment 1.

Water Quality Sampling and Analysis

The sampling and analysis activities described herein are designed to determine whether the Ivanpah BMPs are effective in controlling potential construction site pollutants. The following sections addresses the potential pollutant sources, the Risk Level 1 sampling strategy and constituents, sampling locations and handling and the associated analytical methods and laboratories.

Pollutant Sources

Per the General Permit, the Risk Level 1 sampling is limited to non-stormwater related pollutant sources. No particle size analysis will be conducted, as the site will not be employing sediment basins.

The following construction materials, wastes, or activities are potential sources of non-visible pollutants to stormwater discharges from the ISEGF construction process.

- Vehicle batteries
- Concrete pours and curing
- Sealants
- Adhesives
- Cleaning products
- Solvents; Thinners
- Fertilizers; Herbicides
- Dust palliatives
- Soil binders
- Painting products
- Line flushing products
- Masonry products

Sampling Strategy Risk Level 1

Risk Level 1 projects like ISEGF collect water samples for non-visible pollutants if there is (1) a breach, leakage, malfunction, or spill is observed; and (2) the leak or spill has not been cleaned up prior to the rain event; and (3) there is the potential for discharge of non-visible pollutants to surface waters or drainage system.

In conformance with the minimum of 48 hours of dry weather will be used to distinguish between separate rain events.

Collection of discharge samples for non-visible pollutant monitoring will be triggered when any of the following conditions are observed during inspections conducted before or during rain events:

- Materials or wastes containing potential non-visible pollutants are not stored under watertight conditions. Watertight conditions are defined as (1) storage in a watertight container, (2) storage under a watertight roof or within a building, or (3) storage protected by temporary cover and containment that prevents stormwater contact and runoff from the storage area.

- Materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up prior to the rain event, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm sewer system.

- An operational activity with the potential to contribute non-visible pollutants (1) was occurring during or within 24 hours prior to the rain event, (2) applicable BMPs were observed to be breached, malfunction, or be improperly implemented, and (3) there is the potential for discharge of non-visible pollutants to surface waters.

- Soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied, and there is the potential for discharge of non-visible pollutants to surface waters.

.Sampling Locations

Sampling locations are based on proximity to planned non-visible pollutant storage, occurrence, or use; accessibility for sampling; personnel safety; and other factors in accordance with the applicable requirements in the General Permit.

- Sampling locations have been identified for the collection of runoff samples from material storage areas with spill potential.

- A location has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. This location was selected such that the sample will not have come in contact with storage areas associated with the materials, wastes, and the activities identified or from disturbed soils areas.

If a construction activity or stormwater inspection conducted within two days prior to or during a qualifying rain event identifies the presence of a material storage, waste storage, or operations area with spills or the potential for the discharge of non-visible pollutants to surface waters that was an unplanned location and has not been identified on the associated Water Pollution Control Drawings, sampling locations will be selected using the same rationale as that used to identify planned locations.

Monitoring Preparation

Samples on the project site will be collected by the following sampling personnel:

Name/Telephone Number: Lorie Palkow/TBD

Prior to the rainy season, sampling personnel and alternates will review the Construction Site Monitoring Plan.

An adequate stock of monitoring supplies and equipment for monitoring non-visible pollutants will be available on the project site prior to a sampling event. Monitoring supplies and equipment will be stored in a cool-temperature environment that will not contact rain or direct sunlight. Sampling personnel will be available to collect samples in accordance with the sampling schedule.

Supplies maintained at the project site will include surgical gloves, sample collection equipment, coolers, appropriate number and volume of sample bottles, identification labels, re-sealable storage bags, paper towels, personal rain gear, ice, Sampling Activity Log forms, and Chain of Custody (COC) forms. Field-testing instruments for analyzing samples in the field by sampling personnel will be obtained and maintained.

Safety practices for sample collection will be in accordance with the ES& H Execution Plan.

The SWPPM will contact sampling personnel 24 hours prior to a predicted rain event and if one of the triggering conditions is identified during an inspection before, during, or after a storm event. This will ensure that adequate sample collection personnel, supplies, and field test equipment for monitoring non-visible pollutants are available and mobilized to collect samples on the project site in accordance with the sampling schedule.

Analytical Constituents

Identification of Non-Visible Pollutants

Table L-2 lists specific sources and types of potential non-visible pollutants anticipated to be on the project site and the applicable water quality indicator constituent(s) for that pollutant.

TABLE L-2 Potential Non-Visible Pollutants and Water Quality Indicator Constituents

Pollutant Source	Pollutant	Water Quality Indicator Constituent
Acids and bases	pH	pH
Treated lumber	Copper, Total Chromium, Arsenic	Copper, Total Chromium, Arsenic
Concrete curing compounds	pH (Alkalinity)	pH
Lead-acid batteries	Lead, sulfates, or pH	Lead, sulfates, or pH
Cleaners	Acid, Phosphates	pH
Painting Products	Paint Strippers, Solvents, Thinners	COD

Sample Collection and Handling

Sample Collection Procedures

Samples of discharge will be collected at the designated sampling locations for observed breaches, malfunctions, leakages, spills, operational areas, soil amendment application areas, and/or historical site usage areas that triggered the sampling event.

Grab samples will be collected and preserved in accordance with the methods identified in Table L-3. Only personnel trained in proper water quality sampling will collect samples.

TABLE L-3 Sample Collection, Preservation and Analysis for Monitoring Non-Visible Pollutants

Constituent	Analytical Method	Minimum Sample	Sample Bottle	Sample Preservation	Reporting Limit	Maximum Holding Time
COD	EPA 410.4	1 × 250 mL	Glass-amber	Store at 4° C, H_2SO_4 to pH<2	5 mg/L	28 days
pH	EPA 150.1	1 × 100 mL	Polypropylene	None	Unit less	Immediate
Alkalinity	SM 2320B	1 × 250 mL	Polypropylene	Store at 4° C	1 mg/L	14 days
Metals (Cu, As, Pb)	EPA 6010B/ 7470A	1 × 250 mL <2	Polypropylene	Store at 4° C, HNO_3 to pH	0.1 mg/L	6 months
Metals (chromium VI)	EPA 7199	1 × 500 mL	Polypropylene	Store at 4° C	1 µg/L	24 hours

Notes:

C = degree(s) Celsius µg/L = microgram(s) per Liter EPA = Environmental Protection Agency H_2SO_4 = hydrogen sulfide HNO_3 = nitric acid L = liter SM = Standard Method	mg/L = milligrams per liter mL = milliliter(s)

Samples will be collected by placing a separate lab-provided sample container directly into a stream of water down gradient and close to the potential non-visible pollutant discharge location. This separate lab-provided sample container will be used to collect water, which will be transferred to sample bottles for laboratory analysis. The up gradient and uncontaminated background samples will be collected prior to collecting the down gradient sample to minimize cross-contamination. Sampling personnel will collect the water up gradient

of where they are standing. Once the separate lab-provided sample container is filled, the water sample will be poured directly into sample bottles provided by the laboratory for the analyte(s) being monitored.

To maintain sample integrity and prevent cross-contamination, sampling collection personnel will:

- Wear a clean pair of surgical gloves prior to the collection and handling of each sample at each location.
- Prevent the inside of the sample bottle from contacting any material other than the water sample.
- Discard sample bottles or sample lids that have been dropped onto the ground prior to sample collection.
- Prevent the cooler lid from remaining open for an extended period of time once samples are placed inside.
- Avoid sampling near a running vehicle where exhaust fumes may affect the sample.
- Avoid touching the exposed end of a sampling tube, if applicable.
- Prevent rainwater from rain gear or other surfaces from dripping into sample bottles.
- Avoid eating, smoking, or drinking during sample collection.
- Avoid sneezing or coughing in the direction of an open sample bottle.
- Minimize the exposure of the samples to direct sunlight, as sunlight may cause biochemical transformation of the sample to take place.
- Decontaminate sampling equipment prior to sample collection using a TSP-soapy water wash, distilled water rinse, and final rinse with distilled water.
- Dispose of decontamination water/soaps appropriately; i.e., avoid discharge to the receiving water.

Sample Handling Procedures

Immediately following collection, sample bottles for laboratory analytical testing will be capped, labeled, documented on a COC form provided by the analytical laboratory; sealed in a re-sealable storage bag; placed in an ice-chilled cooler, as close to 4°C as practicable; and delivered within 24 hours to the California-certified laboratory. Prospective laboratories are shown below:

Sierra Analytical Laboratories
26052 Merit Circle Suite 105
Laguna Hills, CA 92653
949-348-9389

BC Laboratories
4100 Atlas Ct.
Bakersfield, CA 93308
661-327-4911

Immediately following collection, samples for field analysis will be tested in accordance with the field instrument manufacturer's instructions and results will be recorded on the Sampling Activity Log (Attachment 2).

Sample Documentation Procedures

Original data documented on sample bottle identification labels, COC forms, Sampling Activity Logs, and Inspection Checklists will be recorded using waterproof ink. These will be considered accountable documents. If an error is made on an accountable document, the individual will make corrections by lining through the error

and entering the correct information. The erroneous information will not be obliterated. Corrections will be initialed and dated.

Sampling and field analysis activities will be documented using the following:

- **Sample Bottle Identification Labels:** Sampling personnel will attach an identification label to each sample bottle. At a minimum, the following information will be recorded on the label:

  - Project name
  - Project number
  - Unique sample identification number and location:

    a) [Project Number]-[Six digit sample collection date]- [Location](*Example:* 25542-081801-Inlet 472)
    b) QA/QC samples will be identified similarly using a unique sample number or designation (*Example:* 25542-081801-DUP1)

  - Collection date/time (no time applied to QA/QC samples)
  - Analysis constituent

- **Sampling Activity Logs:** A log of sampling events will identify:
  - Sampling date
  - Separate times for collected samples and QA/QC samples recorded to the nearest minute
  - Unique sample identification number and location
  - Analysis constituent
  - Names of sampling personnel
  - Weather conditions (including precipitation amount)
  - Field analysis results
  - Other pertinent data

- **Chain of Custody Forms:** Samples to be analyzed by a laboratory will be accompanied by a COC form provided by the laboratory. Only the sample collectors will sign the COC form over to the lab. COC procedures will be strictly adhered to for QA/QC purposes.

- **Stormwater Quality Construction Inspection Checklists:** When applicable, the stormwater inspector will document on the checklist that samples for non-visible pollutants were taken during a rain event.

Sample Analysis

Samples will be analyzed for the applicable constituents using the analytical methods identified in Table L-3. For samples collected for field analysis, collection, analysis, and equipment calibration will be in accordance with the field instrument manufacturer's specifications.

Quality Assurance/Quality Control

For an initial verification of laboratory or field analysis, duplicate samples will be collected at a rate of 10 percent or 1 duplicate per sampling event. The duplicate sample will be collected, handled, and analyzed using the same protocols as primary samples. A duplicate sample will be collected at each location immediately after the primary sample has been collected. Duplicates will be collected where contamination is likely, not on the background sample. Duplicate samples will not influence evaluations or conclusions; however, they will be used as a check on laboratory quality assurance.

Data Management and Reporting

A copy of water quality analytical results and QA/QC data will be submitted to the Project Manager and Bright Source Energy, Inc. within 5 days of sampling (for field analyses) and within 30 days (for laboratory analyses).

Lab reports and COCs will be reviewed for consistency between lab methods, sample identifications, dates, and times for both primary samples and QA/QC samples. Data, including COC forms and Sampling Activity Logs, shall be kept with the SWPPP.

Data Evaluation

An evaluation of the water quality sample analytical results, including figures with sample locations, the water quality analytical results, and the QA/QC data, will be included in the onsite SWPPP.

Should the runoff/downgradient sample show an increased level of the tested analyte relative to the background sample, the BMPs, site conditions, and surrounding influences will be assessed to determine the probable cause for the increased analyte level. As determined by the site and data evaluation, appropriate BMPs will be repaired or modified to mitigate discharges of non-visual pollutant concentrations. Any revisions to the BMPs will be recorded as an amendment to the SWPPP.

Attachment 1 – Visual Inspection Field Log

Risk Level 1, 2, 3 ***Visual Inspection Field Log Sheet***						
Date and Time of Inspection:				Report Date:		
Inspection Type:	□ Weekly	□ Before predicted rain	□ During rain event	□ Following qualifying rain event	□ Contained stormwater release	□ Quarterly non-stormwater
Site Information						
Construction Site Name:						
Construction stage and completed activities:					Approximate area of exposed site:	
Weather and Observations						
Date Rain Predicted to Occur:				Predicted % chance of rain:		
Estimate storm beginning: _____ (date and time)		Estimate storm duration:_____ (hours)		Estimate time since last storm: _____ (days or hours)	Rain gauge reading: _____ (inches)	
Observations: If yes identify location						
Odors	Yes □	No □				
Floating material	Yes □	No □				
Suspended Material	Yes □	No □				
Sheen	Yes □	No □				
Discolorations	Yes □	No □				
Turbidity	Yes □	No □				
Site Inspections						
Outfalls or BMPs Evaluated			**Deficiencies Noted**			
(add additional sheets or attached detailed BMP Inspection Checklists)						
Photos Taken:	Yes □	No □	Photo Reference IDs:			
Corrective Actions Identified (note if SWPPP/REAP change is needed)						
Inspector Information						
Inspector Name:				Inspector Title:		
Signature:					Date:	

Attachment 2 – Sampling Activity Log

RAIN EVENT GENERAL INFORMATION				
Project Name	Ivanpah Electric Generating Facility Project			
Project Number	NA			
Contractor	Bechtel Power Corporation			
Sampler's Name				
Signature				
Date of Sampling				
Season (Check Applicable)	❒ Rainy		❒ Non-Rainy	
Storm Data	Storm Start Date & Time:		Storm Duration (hrs):	
	Time elapsed since last storm (Circle Applicable Units)	Min. Hr. Days	Approximate Rainfall Amount (inches)	

For rainfall information: http://cdec.water.ca.gov/weather.html or http://www.wrh.noaa.gov/wrhq/nwspage.html

SAMPLE LOG		
Sample Identification	**Sample Location**	**Sample Collection Date and Time**

Specific sample locations descriptions may include: 100 ft upstream from discharge at eastern boundary, runoff from northern waste storage area, down gradient of inlet located near the intersection of A Street and B avenue, etc.

FIELD ANALYSIS		
❑Yes	❑ No	
Sample Identification	**Test**	**Result**