

### Genesis FINAL Exhibit List

**Exhibit 400.** Revised Staff Assessment for the Genesis Solar Energy Project, dated June 11, 2010 and docketed on June 11, 2010. (Opening Testimony)

**Exhibit 402.** Rebuttal Testimony for the Genesis Solar Energy Project, dated June 25, 2010, and docketed on June 28, 2010.

**Exhibit 403.** Supplemental Staff Assessment, for the Genesis Solar Energy (July 2, 2010).

**Exhibit 404.** Air Quality-- Mojave Air Quality District Final Determination of Compliance (expected July 16, 2010)

**Exhibit 405.** Transmission Systems and Engineering--CAISO Phase II Interconnection Study (expected July 12, 2010)

**Exhibit 406.** Biological Resources--BLM CDD 2002. Bureau of Land Management California Desert District and California Department of Fish and Game Inland, Desert, and Eastern Sierra Region. Proposed Northern and Eastern Colorado Desert Coordinated Management Plan and Final EIS, July 2002. (selected portions, including Chapter 2, Alternatives, and Appendix D, Desert Tortoise Mitigation Measures, and Appendix A, Maps).

**Exhibit 407.** Biological Resources--BLM 2009 (tn# 57197). Survey Protocols for Special-status Plant Species. Information Bulletin No. 2010-. US Bureau of Land Management.

**Exhibit 408.** Biological Resources--CDFG 2009. Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities. California Natural Resources Agency, Department of Fish and Game, November 24 2009.

**Exhibit 409.** Biological Resources--Dimmitt M.A. 1977. Distribution of Couch's spadefoot toad in California (preliminary report). Unpublished report filed with the United States Bureau of Land Management, Riverside District Office, California, Under C-062, 6500, and 1792 Sundesert, May 10, 1977, Riverside, California.

**Exhibit 410.** Biological Resources--USFWS 2008. U.S. Fish and Wildlife Service, Draft revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, California and Nevada Region, Sacramento, California. 209 pp.

**Exhibit 411.** Biological Resources--USFWS 2009. Desert Tortoise Field Manual. U.S. Fish and Wildlife Service, Pacific Southwest Region, Ventura Fish and Wildlife Office.

**Exhibit 412.** Biological Resources--USFWS 2009. Final Environmental Assessment – Proposal to Permit Take Provided Under the Bald and Golden Eagle Protection Act.

**Exhibit 413.** Biological Resources--CBOC 1993. California Burrowing Owl Consortium. Burrowing Owl Survey Protocol and Mitigation Guidelines. April 1993.

**Exhibit 414.** Biological Resources--CDFG 1995 – California Department of Fish and Game, 1995. Memorandum: Staff Report on Burrowing Owl Mitigation||. DFG, Sacramento California.

**Exhibit 415.** Biological Resources--Mayhew 1965. Adaptations of the amphibian, *Scaphiopus couchi*, to desert conditions. American Midland Naturalist. 74: 95-109.

**Exhibit 416.** Soil & Water Resources--AECOM, 2010. Hydrogeologic Investigation Report. Application for Certification Blythe Solar Power Project Riverside, California. Appendix J3 Data Response in Technical Area: Soil and Water Resources (AFC Sections 5.12 and 5.17) Dated August 24, 2009, docketed August 25, 2009.

**Exhibit 417.** Soil & Water Resources--California Energy Commission, 2005. Blythe Energy Project Phase II, Commission Decision, December 2005, docketed December 14, 2005.

**Exhibit 418.** Soil & Water Resources--Metzger, D.G. and others. 1973 Geohydrology of the Parker-Blythe-Cibola Area, Arizona and California. U.S. Geological Survey Professional Paper 486-G. 130 pages.

**Exhibit 419.** Soil & Water Resources--U.S. Bureau of Reclamation, 2008. Accounting Surface Rule to Eliminate the Unlawful Use of Colorado River. July 16, 2008 in the Federal Register (73 Federal Regulation 40,916).

**Exhibit 420.** Soil & Water Resources--U.S. Supreme Court, 2006. Consolidated Decree, State of Arizona v. State of California. 547 U.S. 150 (2006).

**Exhibit 421.** Soil & Water Resources--Nishikawa, T., Izbicki, J.A., Hevesi, J.A., Stamos, C.L. and Martin, P., 2004. Evaluation of Geohydrologic Framework, Recharge Estimates, and Ground-Water Flow of the Joshua Tree Area, San Bernardino County, California. Scientific Investigations Report 2004-5267

**Exhibit 422.** Soil & Water Resources--Wiele, S.M., Leake, S.A., Owen-Joyce, S.J., McGuire, E.H., 2008. Update of the Accounting Surface along the Colorado River. Scientific Investigations Report 2008-5113.

**Exhibit 423.** Biological Resources--USFWS 2010. Preparing For Any Action Than May Occur Within The Range Of The Mojave Desert Tortoise (*Gopherus agassizii*). 2010 Field Season Protocol. U.S. Fish and Wildlife Service, Pacific Southwest Region, Ventura Fish and Wildlife Office.

**Exhibit 424.** Biological Resources--USFWS 2009. Preparing For Any Action Than May Occur Within The Range Of The Mojave Desert Tortoise (*Gopherus agassizii*). 2009 Field Season Protocol. U.S. Fish and Wildlife Service, Pacific Southwest Region, Ventura Fish and Wildlife Office.

**Exhibit 425.** Biological Resources—Tetrattech. Map of Mojave Fringe-Toed Lizard habitat, May 13, 2010; Google Earth Figure of sand shadow, November 5, 2005-May 25, 2009.

**Exhibit 426.** Biological Resources—Collison. Memorandum (including figures), Revised Wind Shadow Estimates, June 1, 2010, docketed June 8, 2010.

**Exhibit 427.** Biological Resources— Philip Williams & Associates, Ltd. Map, Genesis Project location, June 30, 2010.

**Exhibit 428.** Biological Resources—NatureServe. Conservation Status Assessments: Factors for Assessing Extinction Risk, April 2009.

**Exhibit 429.** Soil & Water Resources—USGS. Use of Superposition Models to Simulate Possible Depletion of Colorado River Water, 2008.

**Exhibit 430.** Soil & Water Resources—Blythe Solar Power Project. Response to CEC Staff Data Request 179 regarding recharge of the Palo Verde Mesa Groundwater Basin, January 6, 2010, docketed January 7, 2010.

**Exhibit 431.** Soil & Water Resources—Metzger. Map of Groundwater Basins in the Blythe area, 1964.

**Exhibit 432.** Soil & Water Resources—CEC Staff. Blythe II Soil and Water Resources, Final Staff Assessment Technical Report, p. 4.9-11. Schematic Diagram Showing the River Aquifer and Accounting Surface, June 2005, docketed June 2, 2005.

**Exhibit 433.** Worker Safety—CEC Staff. Revised Condition of Certification WORKER SAFETY-6.

**Exhibit 434.** Soil & Water Resources—CEC Staff. Memorandum Concerning Applicant's Proposed Changes to SOIL&WATER Conditions of Certification.

**Exhibit 435.** Biological Resources—CEC Staff. Revised BIOLOGICAL RESOURCES Conditions of Certification.

**WORKER SAFETY-6** The project owner shall:

- a. Identify and provide a second access gate for emergency personnel to enter the site. This secondary access gate shall be at least one-quarter mile from the main gate and shall be accessed via a gravel road off the main road near the facility fence line. The location shall be submitted to the Riverside County Fire Department (RCFD) for review and comment and to the CPM for review and approval.
- b. Provide two all-terrain fire engines, as identified and chosen by the RCFD, for emergency personnel to enter the site in the event the access to the plant is unavailable. The applicant will be required to provide funding for replacement of similar equipment based on the 20 year depreciation methodology used by the Riverside County Fire Department throughout the life of the project.
- c. If at some point in the future a second road that can serve as an alternate access road to the project site is built, reviewed by the RCFD and approved by the CPM, the need to provide the all-terrain fire engines or funding for equipment maintenance or replacement would no longer be required.

**Verification:** At least 180 days prior to the initial receipt of heat transfer fluid on-site, the project owner shall either:

- a. submit proof to the CPM in the form of a signed statement from the Chief of the RCFD that the all-terrain fire engines have been delivered to the RCFD and are acceptable to the RCFD; or
- b. if a second access road is built prior to the purchase of the all-terrain fire engines, the project owner shall submit to the RCFD for review and comment and to the CPM for review and approval plans describing the location and specification for the second road. The project owner shall also provide to the CPM documentation demonstrating that the RCFD approves the alternate road.

At least 60 days prior to the start of site mobilization, the project owner shall submit to the Riverside County Fire Department and the CPM preliminary plans showing the location of a second access gate to the site, a description of how the gate will be opened by the fire department, and a description and map showing the location and composition of the gravel road that will provide access from the main access road to the second access gate. At least thirty (30) days prior to the start of site mobilization, the project owner shall submit final plans to the CPM for review and approval. The final plan submittal shall also include a letter containing comments from the Riverside County Fire Department or a statement that no comments were received.

DATE: July 10, 2010

TO: Mike Monasmith

FROM: Michael P. Donovan, P.G., C.Hg.

**RE: Genesis Solar Energy Project - Changes to Conditions of Certification SOIL&WATER-3, 6, 8, 11, Appendix B and parts of Conditions of Certification-2 and 20; Rejecting Applicant Changes to SOIL&WATER-4, 19, and parts of Conditions of Certification-2 and 20; and Proposing Changes to SOIL&WATER-17**

Formatted: Border: Bottom: (Single solid line, Auto, 0.5 pt Line width)

In its opening testimony, the applicant proposed some changes to staff's soil and water conditions of certification. The conditions included below reflect staff's partial acceptance of changes proposed to the soil and water conditions. The Conditions of Certification are as follows:

S&W-2: changes in A.1 are acceptable; changes in A.2 are not acceptable.

S&W-3: changes are acceptable

S&W-4: changes are not acceptable

S&W-6: changes are acceptable

S&W-8: changes are acceptable

S&W-11: changes are acceptable

S&W-17: changes are not acceptable, although staff would consider a program of reduced scope with dry cooling, and would agree to change the requirement to cease pumping from immediate cessation to within 30 days.

S&W-19: changes are not acceptable

S&W-20: Changes in the first paragraph are acceptable; changes in D.1. are acceptable, changes in D.2. are not acceptable, changes in E are acceptable, changes in E.1. are not acceptable, changes in E.3. are acceptable, changes in E.4. are acceptable, and changes to the verification are acceptable.

Appendix B: changes are acceptable

These changes are reflected in underline/strikeout in the following selected Conditions of Certification for the BSEP.

## **GROUNDWATER LEVEL MONITORING, MITIGATION, AND REPORTING**

**SOIL&WATER-2** The Project owner shall submit a Groundwater Level Monitoring and Reporting Plan to the CPM for review and approval. The Groundwater Level Monitoring and Reporting Plan shall provide detailed methodology for monitoring background and site groundwater levels. Monitoring shall include pre-construction, construction, and Project operation water use. The primary objective for the monitoring is to establish pre-construction and Project related groundwater level trends that can be quantitatively compared against observed and simulated trends near the Project pumping wells and near potentially impacted existing wells.

The Project owner shall:

### **A. Prior to Project Construction**

1. A well reconnaissance shall be conducted to investigate and document the condition of existing water supply wells located within 10 miles of the project site for a wet-cooled project and within 2 miles of the project site for a dry-cooled project, provided that access is granted by the well owners. The reconnaissance will include sending notices by registered mail to all property owners within a 10 mile radius of the project ~~are~~site for a wet-cooled project and within 2 miles of the project site for a dry-cooled project.
2. Monitor to establish preconstruction conditions. The monitoring plan and network of monitoring wells will make use of the two test wells and observation wells installed during the Groundwater Resources Investigation completed by the applicant (WPAR, 2010) and any monitoring wells that are installed to comply with Waste Discharge Requirements issued by the RWQCB for the evaporation ponds and land treatment unit associated with the Project. In addition, up to four additional existing wells in the basin that are located up to 10 miles from the Project site (if wet cooling is utilized) or 2 miles (if dry cooling is utilized) will be incorporated into the program, provided access is granted by the owners and that the wells are deemed to be of suitable location and construction to satisfy the requirements for the monitoring program. The off-site wells incorporated in the program will include both shallower wells completed above the pumped interval and deeper wells completed within the pumped interval. The monitoring plan shall also include the identification of any seeps and or springs within one mile of the perimeter of the project site. The seeps and or springs shall be included in the groundwater level monitoring network.
3. Collect groundwater levels from the off-site and on-site wells, seeps and or springs to provide initial groundwater levels for both on-site and off-site wells.

4. Map groundwater levels within the CVGB within 10 miles of the site from the groundwater data collected prior to construction. Update trend plots and statistical analyses, as data is available.

**B. During Construction:**

1. Collect water levels within the monitoring network and seeps and or springs on a quarterly basis throughout the construction period and at the end of the construction period. In addition, collect continuous water level measurements from two shallow (water table) wells at the site using recording pressure transducers. Perform statistical trend analysis for water levels data. Assess the significance of an apparent trend and estimate the magnitude of that trend. Use pressure transducer data to characterize seasonal and diurnal fluctuations in groundwater levels.

**C. During Operation:**

1. On a quarterly basis for the first year of operation and semi-annually thereafter for the following four years, collect water level measurements from any wells and seeps and or springs identified in the groundwater monitoring program to evaluate operational influence from the Project. In addition, collect continuous water level measurements from two shallow (water table) wells at the site using recording pressure transducers. Quarterly operational parameters (i.e., pumping rate) of the water supply wells shall be monitored. Additionally, quarterly groundwater-use in the eastern CVGB shall be estimated based on available data.
2. On an annual basis, perform statistical trend analysis for water levels and comparison to predicted water level declines due to project pumping. Analysis of the significance of an apparent trend shall be determined and the magnitude of that trend estimated. Use the pressure transducer data to characterize seasonal and diurnal fluctuations in groundwater levels. Based on the results of the statistical trend analyses and comparison to predicted water level declines due to Project pumping, the Project owner shall determine the area where the Project pumping has induced a drawdown in the water supply at a level of 5 feet or more below the baseline trend.
3. If water levels have been lowered more than 5 feet below pre-site operational trends, and monitoring data provided by the Project owner show these water level changes are different from background trends or influences by other groundwater pumpers and are caused by Project pumping, then the Project owner shall provide mitigation to the well owner(s) if impacted. Mitigation shall be provided to the impacted well owners that experience 5 feet or more of Project-induced drawdown if the CPM's inspection of the well monitoring data confirms the drawdown (or a portion thereof) is the result of Project-related changes to water levels and water level trends relative to measured pre-project

water levels, and the well yield or performance has been significantly affected by Project pumping. The type and extent of mitigation shall be determined by the amount of water level decline induced by the Project, the type of impact, and site specific well construction and water use characteristics. If an impact is determined to be caused by drawdown from more than one source, the level of mitigation provided shall be proportional to the amount of drawdown induced by the Project relative to other sources. In order to be eligible, a well owner must provide documentation of the well location and construction, including pump intake depth, and that the well was constructed and usable before Project pumping was initiated. The mitigation of impacts shall be determined as follows:

- a. If Project pumping has lowered water levels and increased pumping lifts, increased energy costs shall be calculated. Payment or reimbursement for the increased costs shall be provided at the option of the affected well owner on an annual basis. In the absence of specific electrical use data supplied by the well owner, the Project owner shall use **SOIL&WATER-3** to calculate increased energy costs.
- b. If groundwater monitoring data indicate Project pumping has lowered water levels below the top of the well screen, and the well yield is shown to have decreased by 10 percent or more of the initial yield, compensation shall be provided for the diagnosis and maintenance to treat and remove encrustation from the well screen. Reimbursement shall be provided at an amount equal to the customary local cost of performing the necessary diagnosis and maintenance for well screen encrustation. Should well yield reductions be reoccurring, the Project owner shall provide payment or reimbursement for either periodic maintenance throughout the life of the Project or, if treatment is anticipated to be required more frequently than every 3-5 years, replacement of the well.
- c. If Project pumping has lowered water levels to significantly impact well yield so that it can no longer meet its intended purpose, causes the well to go dry, or cause casing collapse, payment or reimbursement of an amount equal to the cost of deepening or replacing the well shall be provided to accommodate these effects. Payment or reimbursement shall be at an amount equal to the customary local cost of deepening the existing well or constructing a new well of comparable design and yield (only deeper). The demand for water, which determines the required well yield, shall be determined on a per well basis using well owner interviews and field verification of property conditions and water requirements compiled as part of the pre-project well reconnaissance. Well yield shall be considered significantly impacted if it is incapable of



meeting 110 percent of the well owner's maximum daily demand, dry-season demand, or annual demand – assuming the pre-project well yield documented by the initial well reconnaissance met or exceeded these yield levels. For already low-yielding wells identified prior to Project construction, a reduction due solely to Project pumping of 10 percent or more below the pre-project yield shall be considered a significant impact. The contribution of Project pumping to observed decreases in observed well yield shall be determined by interpretation of the groundwater monitoring data collected and shall take into consideration the effect of other nearby pumping and the condition of the well prior to the commencement of project pumping.

- d. The Project owner shall notify any owners of the impacted wells within one month of CPM approval of the compensation analysis for increased energy costs.
  - e. Pump lowering – In the event that groundwater is lowered as a result of Project pumping to an extent where pumps are exposed but well screens remain submerged the pumps shall be lowered to maintain production in the well. The Project shall reimburse the impacted well owner for the costs associated with lowering pumps in proportion to the Project's contribution to the lowering of the groundwater table that resulted in the impact..
  - f. Deepening of wells – If the groundwater is lowered enough as a result of Project pumping that well screens and/or pump intakes are exposed, and pump lowering is not an option such affected wells shall be deepened or new wells constructed. The Project shall reimburse the impacted well owner for all costs associated with deepening existing wells or constructing new wells in proportion to the Project's contribution to the lowering of the water table that resulted in the impact.
4. After the first five-year operational and monitoring period the CPM shall evaluate the data and determine if the monitoring program water level measurement frequencies should be revised or eliminated. Revision or elimination of any monitoring program elements shall be based on the consistency of the data collected. The determination of whether the monitoring program should be revised or eliminated shall be made by the CPM.
  5. At the end of every subsequent five-year monitoring period, the collected data shall be evaluated by the CPM and they shall determine if the sampling frequency should be revised or eliminated.
  6. During the life of the Project, the Project owner shall provide to the CPM all monitoring reports, complaints, studies and other relevant data within ten (10) days of being received by the Project owner.

**Verification:** The Project owner shall do all of the following:

1. At least thirty (30) days prior to Project construction, the Project owner shall submit to the CPM, a comprehensive report presenting all the data and information required in item A above.
2. The Project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations.
3. During Project construction, the Project owner shall submit to the CPM quarterly reports presenting all the data and information required in item B above.
4. The Project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations.
5. No later than sixty (60) days after commencing Project operation, the Project owner shall provide to the CPM for review and approval, documentation showing that any mitigation to private well owners during Project construction was satisfied, based on the requirements of the property owner as determined by the CPM.
6. During Project operation, the Project owner shall submit to the CPM, applicable quarterly, semi-annual and annual reports presenting all the data and information required in item C above. Quarterly reports shall be submitted to the CPM thirty (30) days following the end of the quarter. The 4<sup>th</sup> quarter report shall serve as the annual report, and will be provided on January 31 in the following year.
7. The Project owner shall submit to the both the CPM all calculations and assumptions made in development of report data and interpretations, calculations, and assumptions used in development of any reports.
8. The Project owner shall provide mitigation as described in item 3.c above, if the CPM's inspection of the monitoring information confirms Project-induced changes to water levels and water level trends relative to measured pre-project water levels, and well yield has been lowered by Project pumping. The type and extent of mitigation shall be determined by the amount of water level decline and site specific well construction and water use characteristics. The mitigation of impacts will be determined as set forth in item 3.c above.
9. If mitigation includes monetary compensation, the Project owner shall provide documentation to the CPM that compensation payments have been made by March 31 of each year of Project operation or, if lump-sum payment are made, payment is made by March 31 following the first year of operation only. Within thirty (30) days after compensation is paid, the Project owner shall submit to the CPM a compliance report describing compensation for increased energy costs necessary to comply with the provisions of this condition.
10. After the first five year operational and monitoring period, the Project owner shall submit a 5-year monitoring report to the CPM that submits all monitoring data collected and provides a summary of the findings. The CPM will determine if the water level measurement frequencies should be revised or eliminated.

**SOIL&WATER-3:** Where it is determined that the Project owner shall reimburse a private well owner for increased energy costs identified as a result of analysis performed in Condition of Certification **SOIL&WATER-25**, the Project owner shall calculate the compensation owed to any owner of an impacted well as described below.

Increased cost for energy = change in lift/total system head x total energy consumption x costs/unit of energy

Where:

change in lift (ft) = calculated change in water level in the well resulting from project

total system head (ft) = elevation head + discharge pressure head

elevation head (ft) = difference in elevation between wellhead discharge pressure gauge and water level in well during pumping.

discharge pressure head (ft) = pressure at wellhead discharge gauge (psi) X 2.31

The Project owner shall submit to the CPM for review and approval the documentation showing which well owners must be compensated for increased energy costs and that the proposed amount is sufficient compensation to comply with the provisions of this condition.

- Any reimbursements (either lump sum or annual) to impacted well owners shall be only to those well owners whose wells were in service within six months of the Commission decision and ~~within a 3-mile radius of the project site~~ that experience more than 5 feet of project-induced drawdown.
- The Project owner shall notify all owners of the impacted wells within one month of the CPM approval of the compensation analysis for increase energy costs.
- Compensation shall be provided on either a one-time lump-sum basis, or on an annual basis, as described below.

**Annual Compensation:** Compensation provided on an annual basis shall be calculated prospectively for each year by estimating energy costs that will be incurred to provide the additional lift required as a result of the project. With the permission of the impacted well owner, the Project owner shall provide energy meters for each well or well field affected by the project. The impacted well owner to receive compensation must provide documentation of energy consumption in the form of meter readings, calculations based on pump characteristics and volumes pumped, or other verification of fuel consumption. For each year after the first year of operation, the Project owner shall include an adjustment for any deviations between projected and actual energy costs for the previous calendar year.

**One-Time Lump-Sum Compensation:** Compensation provided on a one-time lump-sum basis shall be based on a well-interference analysis, assuming the maximum projected project-pumping rates of 600 afy for a wet-cooled or

dry-cooled project, as applicable. Compensation associated with increased pumping lift for the life of the project shall be estimated as a lump sum payment as follows:

- The current cost of energy to the affected party considering time of use or tiers of energy cost applicable to the party's billing of electricity from the utility providing electric service, or a reasonable equivalent if the party independently generates their electricity;
- An annual inflation factor for energy cost of 3 percent; and
- A net present value determination assuming a term of 30 years and a discount rate of 9 percent;

**Verification:** The Project owner shall do all of the following:

1. No later than thirty (30) days after CPM approval of the well drawdown analysis, the Project owner shall submit to the CPM for review and approval all documentation and calculations describing necessary compensation for energy costs associated with additional lift requirements.
2. The Project owner shall submit to the CPM all calculations, along with any letters signed by the well owners indicating agreement with the calculations, and the name and phone numbers of those well owners that do not agree with the calculations.

Compensation payments shall be made by March 31 of each year of project operation or, if lump-sum payment is selected, payment shall be made by March 31 of the first year of operation only. Within thirty (30) days after compensation is paid, the Project owner shall submit to the CPM a compliance report describing compensation for increased energy costs necessary to comply with the provisions of this condition.

## **WASTE DISCHARGE REQUIREMENTS**

**SOIL&WATER-6:** The Project owner shall comply with the requirements specified in Appendix B, C, and D. These requirements relate to discharges, or potential discharges, of waste that could affect the quality of waters of the state, and were developed in consultation with staff of the State Water Resources Control Board and/or the applicable California Regional Water Quality Control Board (hereafter "Water Boards"). It is the Commission's intent that these requirements be enforceable by both the Commission and the Water Boards. In furtherance of that objective, the Commission hereby delegates the enforcement of these requirements, and associated monitoring, inspection and annual fee collection authority, to the Water Boards. Accordingly, the Commission and the Water Board shall confer with each other and coordinate, as needed, in the enforcement of the requirements. The Project owner shall pay the annual waste discharge permit fee associated with this facility to the Water Boards. In addition, the Water Boards may "prescribe" these requirements as waste discharge requirements pursuant to Water Code Section 13263 solely for the purposes of enforcement, monitoring, inspection,

and the assessment of annual fees, consistent with Public Resources Code Section 25531, subdivision (c)

**Verification:** No later than sixty (60) days prior to any wastewater ~~or storm water~~ discharge or use of land treatment units, the Project owner shall provide documentation to the CPM, with copies to the CRBWQCB, demonstrating compliance with the WDRs established in Appendices B, C, D, and E. Any changes to the design, construction, or operation of the evaporation basins, treatment units, or associated storm water system shall be requested in writing to the CPM, with copies to the CRBWQCB, and approved by the CPM, in consultation with the CRBWQCB, prior to initiation of any changes. The Project owner shall provide to the CPM, with copies to the CRBWQCB, all monitoring reports required by the WDRs, and fully explain any violations, exceedances, enforcement actions, or corrective actions related to construction or operation of the evaporation basins, treatment units, or storm water system.

## REVISED PROJECT DRAINAGE REPORT AND PLANS

**SOIL&WATER-8** The Project owner shall provide a revised Drainage Report which includes the following additional information:

- A. Calculations for all the collector/conveyance channels and onsite drainage channels showing adequate depth and non-erosive velocities. Data provided shall include depth, velocity, Froude number and other relevant hydraulic parameters.
- B. Detailed scour calculations to justify toe-down depths for all soil cement segments, drop structures, slope protection, and any other features where scour is an issue.
- C. Post development onsite drainage maps, calculations and discussion which include a delineation of all onsite watersheds with basin areas, points of concentration, and peak discharge values where the smaller onsite channels discharge into the larger collector and conveyance channels. The maps should also show peak flow values at all downstream points of discharge from the Project.
- D. A discussion and associated calculations documenting the methods to be used for erosion control at outlet locations along the southern property boundary where flow is released to existing ground.
- E. A specific discussion of how the proposed onsite drainage design will protect the facility from erosion and the possible failure of the facilities resulting in a release of HTF.
- F. Stage-discharge rating calculations for all outlet structures (i.e. pipes and weirs) used to outlet water along the southern project boundary.
- G. Digital copies of all hydrologic and hydraulic analysis.

The Project owner shall also provide the 30 percent Grading and Drainage Plans which include the design based on information provided in the revised Drainage Report outlined above.

**Verification:** The Project owner shall submit a Revised Project Drainage Report with the 30 percent Grading and Drainage Plans to the CPM for their review and comments a minimum of sixty (60) days before project mobilization. The owner will address comments provided by the CPM until approval of the report is issued. All comments and concepts presented in the approved Revised Project Drainage Report with the 30 percent Grading and Drainage Plans will be included in the final Grading and Drainage Plans.

## **CHANNEL EROSION PROTECTION**

**SOIL&WATER-11** The Project owner must provide revised preliminary Grading and Drainage Plans which incorporate the items and information as listed below for the channels designated as A, B, C, D, E, B/C, D/E on the Conceptual Grading Plans (GSEP 2010a).

- A.** Soil cement bank protection must be provided such that the channels are protected from bank erosion and lateral headcutting. The extents of the proposed bank protection must be shown on the revised Grading and Drainage Plans. Typical sections for these channels must show the layout of the bank protection including thickness, width and toe-down location and depth consistent with the scour calculation provided in the revised Drainage Report.
- B.** Soil cement bank protection shall be provided on both channel banks wherever 10-year channel flow velocity exceeds 5 ft/s. It shall be provided on the outer channel bank wherever offsite topography and a detailed FLO-2D analysis indicate surface flow would enter the collector channels.
- C.** Soil cement bank protection shall be provided at all channel confluences of otherwise unlined channels where the result of the detailed hydraulic analysis presented in the revised Drainage Report indicate the increased potential for erosion due to adverse angles of confluence. Detailed plans for each confluence showing the extents of the soil cement based on specific hydraulic conditions shall be provided in the formal Grading and Drainage Plans.
- D.** Other methods of channel stabilization, such as dumped riprap or gabions, will not be permitted. Bio-stabilization measures are not permitted.
- E.** Earthen berms used on the outside of collector channels to guide flow to discreet points of discharge into a channel shall not be utilized in lieu of soil cement on the outside bank of collector channels. Offsite flows shall discharge directly into collector channels.

- F. The plans shall include reference to regionally accepted specifications for soil cement production and construction. A copy of the specification must be submitted with the revised plans.
- G. A soils report indicating the suitability of the Project soils for use in the production of soil cement to the Project specifications shall be submitted with the revised Grading and Drainage Plans.
- H. The bottom of engineered collector channels may be left earthen or fully lined at the discretion of the engineer. Fully lined channels will have higher allowable velocities and Froude numbers assuming hydraulic jumps are modeled and considered in the channel design.
- I. If modifications to the existing drainages to allow construction of and future access to linear facilities require stabilization of the channel in the vicinity of those modifications, location of disturbance to the existing drainages shall be stabilized consistent with best engineering practice to eliminate future negative impacts to those drainages upstream and downstream of the linear facility in the form of downcutting, erosion and headcutting. The use of "non-engineered" culvert crossings shall not be allowed. All structures to be utilized in existing drainages along linear facilities shall be documented in the project drainage report and reflected in the project improvement plans. Channel erosion mitigation measures along linear facilities shall be subject to all the requirements of this Condition of Certification where applicable.

**Verification:** The required information and criteria shall be incorporated into the Grading and Drainage Plans and with all subsequent submittals as required in **SOIL&WATER-8** through **SOIL&WATER-10**. The drainage report associated with the linears identified in "I" above may be submitted separately from the site Grading and Drainage Plans. The Project owner will update and modify the design as necessary to obtain CPM approval.

## **GROUNDWATER QUALITY MONITORING AND REPORTING PLAN**

**SOIL&WATER-20** The Project owner shall submit a Groundwater Quality Monitoring and Reporting Plan to the CPM for review and approval. The Groundwater Quality Monitoring and Reporting Plan shall provide a description of the methodology for monitoring background and site groundwater levels and quality. The sampling required for the water quality monitoring program shall be implemented during groundwater level monitoring events using the well identified to comply with **SOIL&WATER-25**. Prior to project construction, monitoring shall commence to establish pre-construction groundwater quality conditions in the well proposed for the program. Monitoring shall continue during and shall include pre-construction, construction, and project operation water use. The primary objectives for the water quality monitoring program are to identify potential changes in the existing water quality of the proposed water supply resulting from Project pumping, if any, in concert with Condition

of Certification **SOIL&WATER-25**, establish pre-construction and project related groundwater quality ~~data that can be quantitatively compared against observed from the project pumping well and near potentially impacted existing wells,~~ and to avoid, minimize, or mitigate significant impacts to sensitive receptors (springs and groundwater-dependent vegetation, and groundwater supply users).

- A. The Plan shall include a scaled map showing the site and vicinity, existing well locations, and proposed monitoring locations (both existing wells and new monitoring wells proposed for construction). Additional monitoring wells to be installed include wells required under Waste Discharge Requirements issued by the CRBRWQCB for the evaporation ponds and land treatment unit proposed for the project. The map shall also include relevant natural and man-made features (existing and proposed as part of this project). The plan also shall provide: (1) well construction information and borehole lithology for each existing well proposed for use as a monitoring well; (2) description of proposed drilling and well installation methods; (3) proposed monitoring well design; and, (4) schedule for completion of the work.
- B. At least four (4) weeks prior to construction, a Well Monitoring Installation and Groundwater Quality Network Report shall be submitted to the CPM for review and approval in conjunction with Condition of Certification **SOIL&WATER-25**. The report shall include a scaled map showing the final monitoring well network. It shall document the drilling methods employed, provide individual well construction as-builds, borehole lithology recorded from the drill cuttings, well development, and well survey results. The well survey shall measure the location and elevation of the top of the well casing and reference point for all water level measurements, and shall include the coordinate system and datum for the survey measurements.
- C. As part of the monitoring well network development, all newly constructed monitoring wells shall be constructed consistent with State and Riverside County specifications.
- D. At least four (4) weeks prior to use of any groundwater for construction, all groundwater quality and groundwater level monitoring data shall be reported to the CPM. The report shall include the following:
  1. An assessment of pre-project groundwater levels, a summary of available climatic information (monthly average temperature and rainfall records from the nearest weather station), ~~and a comparison and assessment of water level data relative to the assumptions and spatial trends simulated by the applicant's groundwater model.~~
  2. As assessment of pre-project groundwater quality with groundwater samples analyzed for TDS, chloride, nitrates, major cations and anions, oxygen-18 and deuterium isotopes, and any other constituents the CPM deem critical in protecting existing water supply quality.
  3. The data shall be tabulated, summarized, and submitted to the CPM. The data summary shall include the estimated range (minimum and maximum



values), average, and median for each constituent analyzed. If a sufficient number of data points are available, the data shall also be analyzed using the Mann-Kendall test for trend at 90 percent confidence to assess whether pre-project water quality trends, if any, are statistically significant.

- E. During project construction and during the first five years of project operations, the Project owner shall semi-annually monitor the quality of groundwater and changes in groundwater elevation and submit data semi-annually to the CPM. After five years of project operations, the frequency and scope of the monitoring program shall be reassessed by the CPM. The summary report shall document water level and quality monitoring methods, the water level and quality data, water level and quality plots and trend evaluation, and a comparison between pre- and post-project start-up water level trends as itemized below. The report shall also include a summary of actual water use conditions, monthly climatic information (temperature and rainfall) from the nearest meteorological monitoring station, and a comparison and assessment of water level data relative to the assumptions and simulated spatial trends predicted by the applicant's groundwater model.
1. Groundwater samples from all wells in the monitoring well network shall be analyzed and reported semi-annually for TDS, chloride, nitrates, cations and anions, oxygen-18 and deuterium isotopes. These analyses, and particularly the stable isotope data, can be useful for identifying water sources and assessing their contributions to the quality of water produced by wells.
  2. For analysis purposes, pre-project water quality shall be defined by samples collected prior to project construction as specified above, and compliance data shall be defined by samples collected after the construction start date. The compliance data shall be analyzed for both trends and for contrast with the pre-project data.
  3. Trends shall be analyzed using the Mann-Kendall test for trend at the 90 percent confidence, once a statistically significant number of sample data are available. Trends in the compliance data shall be compared and contrasted to pre-project trends, if any.
  4. The contrast between pre-project and compliance mean or median concentrations shall be compared using an Analysis of Variance (ANOVA) or other appropriate statistical method approved by the RWQCB for evaluation of water quality impacts. A parametric ANOVA (for example, an F-test) can be conducted on the two data sets if the residuals between observed and expected values are normally distributed and have equal variance, or the data can be transformed to an approximately normal distribution. If the data cannot be represented by a normal distribution, then a nonparametric ANOVA shall be conducted (for example, the Kruskal-Wallis test). If a statistically significant difference is identified at 90 percent confidence between the two data sets, the monitoring data are inconsistent with random differences between the pre-project and baseline

data indicating a significant water quality impact from project pumping may be occurring.

5. If compliance data indicate that the water supply quality has deteriorated (exceeds pre-project constituent concentrations in TDS, sodium, chloride, or other constituents identified as part of the monitoring plan and applicable Water Quality Objectives are exceeded for the applicable beneficial uses of the water supply) for three consecutive years, the Project owner shall provide treatment or a new water supply to either meet or exceed pre-project water quality conditions to any impacted water supply wells.

**Verification:** The Project owner shall complete the following:

At least six (6) weeks prior to the start of construction activities, a Groundwater Level and Quality Monitoring and Reporting Plan shall be submitted to the CPM for review and approval before completion of Condition of Certification **SOIL & WATER-2**.

**SOIL AND WATER  
APPENDIX B**

**Waste Discharge Requirement  
Facts for Waste Discharge**

## SOIL AND WATER RESOURCES – APPENDIX B

### FACTS FOR WASTE DISCHARGE—Genesis Solar LLC, Owner/Operator, Genesis Solar Power Project, Riverside County

1. Genesis Solar, LLC, (the Discharger) is proposing to construct, own and operate a concentrated solar power (CSP) electric generating facility and a land treatment unit (LTU) on land owned by the Bureau of Land Management (BLM). The Facility referred to as the Genesis Solar Power Project is located near Ford Dry Lake in Riverside County, California. A site map is included as **Figure 1**, as incorporated here in and made a part of these requirements for waste discharge (Waste Discharge Requirements, or WDRs). The address for Genesis Solar, LLC is 700 Universe Blvd, FED/JB, Juno Beach, FL 33408. The address for the land owner (BLM) is 1201 Bird Center Drive, Palm Springs, CA 92258.
2. These WDRs regulate the Facility's three evaporation ponds and the LTU. The evaporation ponds are designated as Class II Surface Impoundments Waste Management Units (WMU) and must meet the requirements of the California Code of Regulations (CCRs), Title 27, CCR §20200 et seq. The boundaries of the Genesis Solar Power Project are shown on **Figure 2**, as incorporated here in and made a part of these WDRs.
3. The Discharger submitted a Report of Waste Discharge dated August 27, 2009 for the Genesis Solar Power Project.
4. Definition of terms used in these WDRs:
  - a. **Facility** – The entire parcel of property where the proposed Genesis Solar Power Project industrial operation or related solar industrial activities are conducted.
  - b. **Waste Management Units (WMUs)** – The area of land, or the portions of the Facility where wastes are discharged. The LTU and the evaporation ponds are WMUs.
  - c. **Discharger** – The term Discharger means any person who discharges waste that could affect the quality of the waters of the State, and includes any person who owns the land, WMU or who is responsible for the operation of a WMU. Specifically, the terms "discharger" or "dischargers" in these WDRs means Genesis Solar, LLC.

### **Facility Location**

5. The Facility will be located in the Colorado Desert in Chuckwalla Valley between the communities of Blythe, CA (approximately 24 miles east) and Desert Center, CA (approximately 27 miles west). Ford Dry Lake is located approximately 1 mile south west of the Project. The Facility is located in Township 6S, Range 19E San Bernardino Base and Meridian. The Facility covers approximately 1,800 acres of Federal land managed by the BLM.

### **Surrounding Land Use**

6. Current land uses around the Facility include I-10 to the south, the Palen McCoy Wilderness to the north, the Palen Dry Lake Area of Critical Environmental Concern (ACEC) to the west and open (unrestricted access) lands to the east. Most of the land near the Facility is managed by BLM. However, there are also private holdings in the area.

### **Facility Description**

7. The Discharger is proposing to develop a 250-megawatt (MW) solar thermal power generating project, using concentrated solar trough technology. There will be two independent 125 MW units on site to provide a total net electrical output of 250 MW. Commercial operation is planned to commence July 2014.
8. The process to produce 125 MW of electrical power in each module is as follows:
  - a. 650 to 800 acres of solar fields containing Parabolic Mirrors to collect the Sun's energy (field is oversized to ensure 125MW can still be generated when there is less sun);
  - b. HTF absorbs the Sun's energy from the mirrors;
  - c. HTF creates Steam in the Solar Steam Generator (SSG);
  - d. Steam drives the Steam Turbine Generator (STG); then STG produces Electrical Power.
  - e. Solar Arrays;
  - f. Wet Cooling area;
  - g. Power Block (161-230 KV substation);

- h. Evaporation Ponds (24 acres per unit, for a total of 48 acres);
  - i. Bioremediation LTU (5 acres); and
  - j. Stormwater Detention Pond.
9. The solar thermal technology will provide 100 percent of the power generated by the Project; no supplementary energy source (e.g. natural gas to generate electricity at night) is proposed to be used for electric energy production. The Project will utilize a natural gas fired auxiliary boilers to reduce start up time and for HTF freeze protection. Freeze protection shall maintain HTF at a minimum 100 degrees Fahrenheit [°F]
10. The Discharger proposes to use a wet cooling tower for power plant cooling. Water for cooling tower makeup, process water makeup, and other industrial uses such as mirror washing will be supplied from on-site groundwater wells, which also will be used to supply water for employee use (e.g., drinking, showers, sinks, and toilets). A package water treatment system will be used to treat the water to meet potable standards. A sanitary septic system and on-site leach field will be used to dispose of sanitary wastewater.
11. Project cooling water blow down from each unit will be piped to lined, on-site evaporation ponds, which are designated as Class II Surface Impoundments. There evaporation ponds are allocated to each unit for a total of six evaporation ponds. For safety and operational purposes, accumulated precipitated solids will be removed from the base of the evaporation ponds when they reach a depth of 3 feet. It is estimated that 3 feet of solids will accumulate approximately every 7 years when using groundwater containing 5,000 mg/l of total dissolved solids (TDS) as a water supply. Dewatered residues from the ponds will be sent to an appropriate off-site landfill for disposal. No off-site backup cooling water supply is planned at this time; the use of multiple on-site water supply wells and redundancy in the well equipment will provide an inherent backup in the event of outages affecting one of the on-site supply wells.
12. The Project will include a LTU to treat soil contaminated with HTF. The unit will be designed in accordance with Colorado River Basin Regional Water Quality Control Board (Regional Board) requirements.

#### Climate

13. The Project is located in an arid desert climate; therefore, there are extreme daily temperature changes, low annual precipitation, strong seasonal winds and mostly clear skies. Evaporation rates are higher than precipitation rates. Based on 60 years of data from Blythe Airport,

the mean maximum temperatures in June to September exceed 100°F. Winter months are more moderate with mean maximum temperatures of high 60's to low 70's °F and minimum temperatures in the low to mid 40's °F. Although there are no average minimal temperatures below freezing point (32°F), the temperature has historically dropped below freezing point between November and March.

14. Average annual evaporation in the Facility area, based on published data at the Indio Fire Station 70 miles west of the Project site, is 105 inches, of which 87 percent of that evaporation occurs between March and October. Average annual precipitation in the Project area, based on the gauging station at Blythe Airport, is 3.55 inches, with August recording the highest monthly average of 0.63 inches and June recording the lowest monthly average of 0.02 inches. Per the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 for the Southern California area, 3.51 inches of rainfall shall fall in the 100 year, 24 hour storm event.
15. Winds in the Project area are generally south to southwest with a less frequent component of northerly winds (north through northwest). Calm conditions occur approximately 16.43% of the time, with the annual average wind speed being approximately 7.62 miles per hour (mph) (3.41 m/s).

#### **Regional Topography and Drainage**

16. The general topography in the area of the Facility consists of mountain ranges surrounded by extensive alluvial fans coalesced into bajadas that slope toward the topographic low-points of the valley, Ford Dry Lake and Palen Lake. The Project site is situated within the Chuckwalla Valley and is relatively flat. The Project site generally slopes from north to south with elevations of approximately 400 to 370 feet above mean sea level. There are no perennial streams in Chuckwalla Valley and a vast majority of the time, the area is dry and devoid of any surface flow anywhere. Water runoff occurs only in response to infrequent intense rain storms. Much of the area is subject to inundation either by sheet flow or flow confined to an expansive network of ephemeral washes, Palen and Ford Dry Lakes, and other local topographic low-points. The entire area drains first to these two dry lakes, and then to evaporation or groundwater.

#### **Flood Hazard**

17. The Facility is within "RIVERSIDE COUNTY AND INCORPORATED AREAS" as designated by the Federal Emergency Management Agency (FEMA); however, there are no flood insurance maps provided for this

area. The Site is not located in a flood hazard area identified in the Riverside County General Plan Safety Element.

### **Regional Geology**

18. The region has undergone a complex geologic history that includes sedimentation, volcanic activity, folding, faulting, uplift and erosion. The Project area is underlain by Holocene to Miocene basin fill deposits (Stone, 2006). These deposits include younger alluvium, older (Pleistocene) alluvium, the Pliocene Bouse Formation and the Miocene fanglomerate. The uppermost alluvium in the basin consists of Holocene to Pleistocene alluvial fan, fluvial, playa, and aeolian (wind blown) deposits. In general, coarser alluvial fan deposits are found near the valley edges and grade into finer distal fan, valley axial (fluvial) and playa deposits near the low points of the basin. Holocene-age playa deposits are found in the Ford Dry Lake area and consist mainly of clay, silt, and sand above the water table (DWR 1963). The older alluvium (Pleistocene age) consists of fine to coarse sand interbedded with gravel, silt, and clay (DWR 1963). The Pleistocene alluvium likely comprises the most important aquifer in the area (DWR 1963). The Pliocene-age Bouse Formation is a marine to brackish-water sequence that is composed of a basal limestone overlain by interbedded clay, silt, sand, and tufa. Near the southeastern portion of the basin the Bouse Formation occurs at a depth between approximately 100 to 800 feet below ground surface (bgs) (Wilson and Owens-Joyce 1994). The fanglomerate lies unconformably below the Bouse Formation and is composed chiefly of angular to subrounded and poorly sorted partially to fully cemented pebbles with a sandy matrix (Metzger 1973). The fanglomerate is likely Miocene age; however, it may in part be Pliocene age (Metzger 1973). Near the southeastern portion of the basin the fanglomerate occurs at a depth between approximately 800 to 5,000 feet bgs (Wilson and Owens-Joyce 1994).

### **Site Specific Geology**

19. Geologic units near the project area consist of the recent dune sand, recent alluvium, and non-marine sedimentary deposits. The unconsolidated alluvial fan, river channel, and stream deposits consist of silt, sand, clay, and gravel. These also include recent floodplain deposits of the Colorado River including silt, sand, and clay. The nonmarine sedimentary deposits consist of older alluvium and fanglomerate, dissected with well-developed desert pavement and desert varnish in some areas. These consist mostly of clay, siltstone, sand, and gravel.

### **Seismicity**



20. The Project site lies within the eastern part of Riverside County in a part of California considered not to be very seismically active. Although there are several bedrock faults off site in the mountains surrounding Chuckwalla Valley, these do not exhibit recent activity and are presumed to be Tertiary or pre-Tertiary in age (Stone, 2006). In addition, gravity anomalies suggest the presence of several subsurface faults beneath Chuckwalla Valley in the vicinity of the project area (Stone, 2006; Rotstein, et al., 1976). The gravity anomalies reflect abrupt changes in basement elevation strongly suggestive of dip-slip movements. In addition, some of these faults may have undergone right-lateral strike slip movements. These faults are presumed Tertiary and likely inactive with very low chance of earthquakes.
21. The active faults considered most likely to produce large earthquakes potentially affecting the Project site are located at a considerable distance to the west and southwest and include the San Andreas, Imperial, and San Jacinto-Anza faults. Other smaller faults are located within approximately 100 kilometers (km) of the Site. These faults are believed to be capable of producing ground shaking with peak ground accelerations exceeding 0.10 times the force of gravity (0.10 g).

#### **Seismic Shaking**

22. A preliminary estimate of ground motions expected at the site was prepared using source and attenuation models developed by the USGS National Seismic Hazard Mapping Project (NSHMP, 2009). For design of important facility structures, a site-specific Probabilistic Seismic Hazard Assessment is being completed as part of an ongoing Geotechnical Investigation and will be made available to the CEC. The preliminary results indicate that peak ground acceleration (PGA) with a probability of exceedance of 10 percent in 50 years (475 Year Return Period) is 0.14 g. The deaggregation information indicates that the mean moment magnitude is 6.8 at a mean distance of 68 km. The PGA with a probability of exceedance of 2 percent in 50 years (2475 Year Return Period) is 0.23 g. The mean moment magnitude is 6.7 at a mean distance of 48 km.

#### **Ground Rupture**

23. The Project site is not located within a State of California Earthquake Fault Zone designated by the Alquist-Priolo Special Studies Zone Act of 1972 (formerly known as a Special Studies Zone), an area where the potential for fault rupture is considered probable (Riverside County, 2008). In addition, no Quaternary, Sufficiently Active, or Well Defined Faults are located under or near the Site. Based on this information and

engineering judgment, earthquake-induced ground rupture is not considered to be a significant hazard at the Site.

### **Slope Stability**

24. The Site is not considered to be an area with the potential for permanent ground displacement due to earthquake-induced landslides because surface topography at and near the site is relatively flat (Riverside County, 2008). A review of the Riverside County General Plan, Safety Element, did indicate areas considered susceptible to earthquake induced landslides and rockfalls in the Palen and McCoy Mountains; however, these areas are several miles from the Site and are not expected to impact the Project. Based on this information and engineering judgment, slope instability is not considered to be a significant hazard at the Site.

### **Erosion**

25. Erosion is the displacement of solids (soil, mud, rock, and other particles) by wind, water, or ice and by downward or down-slope movement in response to gravity. Due to generally flat terrain, the Project site is not prone to significant mass wasting (gravity-driven erosion and non-fluvial sediment transport) at present. The Riverside County General Plan, Safety Element (Riverside County, 2008), indicates the Site is in an area with moderate potential for wind erosion, the off-site linears are in areas with moderate to high potential for wind erosion. Soil characteristics at the Project site allow for the potential for wind and water erosion, and significant sediment transport currently occurs across the valley axial drainage that crosses the majority of the proposed plant site. As indicated above, these valley axial deposits are characterized by subdued bar and swale topography and ongoing deposition from sheet floods. Limited sand and aeolian erosion also occurs between depositional episodes.
26. To address the management of sediment transport, erosion and sedimentation during operation, the project design will incorporate diversion berms, channels, detention basins and dispersion structures. The final design for these features will be developed during detailed design, and will include industry-standard calculations and modeling to reduce the potential for erosion or sedimentation, and to reduce the need for ongoing maintenance. Dirt roads and exposed surfaces will be periodically treated with dust palliatives as needed to reduce wind erosion. Construction and maintenance of the proposed drainage and sediment management system at the Site is expected to reduce water and wind erosion at and downstream of the Site to less than significant levels.

## **Liquefaction**

27. Liquefaction is a soil condition in which seismically induced ground motion causes an increase in soil water pressure in saturated, loose, uniformly-graded sands, resulting in loss of soil shear strength. As a result, the effects of liquefaction can include loss of bearing strength, differential settlement, ground oscillations, lateral spreading, and flow failures or slumping. Liquefaction occurs primarily in areas where the groundwater table is within approximately 50 feet of the surface (Riverside County, 2008). The Riverside County General Plan Safety Element (Riverside County, 2008) indicates that the majority of Chuckwalla Valley, including the soils beneath the Project site and associated Project off-site linears, is mapped as having deep groundwater but underlain by soils with an otherwise moderate susceptibility to liquefaction. The depth to water beneath the Site is estimated to range from approximately 61 to 94 feet bgs. In addition, the sandy soils encountered in the upper 100 feet beneath the Project site during geotechnical drilling are generally dense and well graded. Dense, well-graded sands are not generally considered susceptible to liquefaction. Based on this information and engineering judgment, the potential for liquefaction hazard at the Project site is considered to be low. The potential for liquefaction will be further evaluated as part of the Final Geotechnical Investigation for the Project, and if necessary, design parameters to address identified conditions will be incorporated into the detailed project design.

## **Differential Settlement**

28. Seismically induced settlement can occur during moderate and large earthquakes in soft or loose, natural or fill soils that are located above the ground water table, resulting in differential settlement. The settlement can cause damage to surface and near-surface structures. The most susceptible soils are clean loose granular soils. Due to the expected dense to very dense nature of the near surface soils, the potential for damage due to seismically induced settlement is considered to be low at the Project site. The potential for seismically-induced settlement will be further evaluated as part of the Final Geotechnical Investigation for the Project, and if necessary, design parameters to address identified conditions will be incorporated into the detailed project design.

## **Collapsible Soil Conditions**

29. Alluvial soils in arid and semi-arid environments can have characteristics that make them prone to collapse with increase in moisture content and

without increase in external loads. Soils that are especially susceptible to collapse or hydrocompaction in a desert environment are loose dry sands and silts, and soils that contain a significant fraction of water soluble salts. In the Site vicinity, this would include aeolian sand, playa evaporite deposits, and potential loose flash flood deposits. Based on surface reconnaissance, review of geologic mapping, and review of aerial photographs, although there are aeolian deposits south of the Site near Ford Dry Lake, but no significant aeolian or playa deposits are located within the Site. There do not appear to be near surface evaporite deposits associated with Ford Dry Lake (Stone, 2006). The near surface soils at the Site are composed primarily of alluvial soils which appear to have been deposited in relatively thin sheet flood and fluvial deposits have a low potential for hydrocompaction. Based on this data and engineering judgment, the site soils do not have a significant potential for hydrocompaction or collapse. The potential for hydrocompaction and soil collapse will be further evaluated as part of the Final Geotechnical Investigation for the Project, and if necessary, design parameters to address identified conditions will be incorporated into the detailed project design.

#### **Expansive Soil**

30. Expansive soil is predominantly fine grained and contains clay minerals capable of absorbing water in their crystal structure. It is often found in areas that were historically a flood plain or lake area, but can also be associated with some types of shale, volcanic ash or other deposits, and can occur in hillside areas also. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. As water is initially introduced into the soil (by rainfall or watering) expansion takes place. If dried out, the soil will contract, often leaving small fissures or cracks. Excessive drying and wetting of the soil can progressively deteriorate structures that are not designed to resist this effect, and can lead to differential settlement under buildings and other improvements. The surficial soils at the site generally consist of predominantly granular soils that do not contain much clay and are not subject to significant expansion hazards. The potential for expansive soils will be further evaluated as part of the Final Geotechnical Investigation for the Project, and if necessary, design parameters to address identified conditions will be incorporated into the detailed project design.
31. Based on the above information, the cut and fill slope dimensions and earthwork requirements will be adequate to address the stability of the evaporation ponds and LTU for the life of the project and no further analysis is warranted.

## Regional Hydrogeology

32. The site is located in the eastern half of the Chuckwalla Valley Groundwater Basin which encompasses approximately 605,000 acres. The basin generally trends east-southeast and is bounded by consolidated rocks of the Chuckwalla, Little Chuckwalla, and Mule Mountains on the south, of the Eagle Mountains on the west, and of the Mule and McCoy Mountains on the east. Groundwater flow is directed southward from the basin's boundary with the Cadiz Valley Basin and east-southeastward from its boundary with the Pinto Valley Basin, toward the eastern basin boundary where it flows into the adjacent Palo Verde Mesa Basin. Beneath the Site, groundwater occurs at depths ranging from approximately 70 to 90 feet bgs (approximately 298 to 315 feet msl).
33. There are three water-bearing sedimentary units overly non-water bearing bedrock in the Chuckwalla Valley Groundwater Basin; Quaternary Alluvium., Pliocene Bouse Formation and Miocene Fanglomerate (DWR, 2004; DWR, 1963). DWR reports the maximum thickness of these deposits as about 1,200 feet in the Chuckwalla Valley Basin (DWR 1979). Gravity studies performed by USGS near the narrows between the McCoy and Mule Mountains on the southeastern portion of the basin suggests the depth to non-water bearing bedrock ranges from approximately 6,500 feet bgs to 1,000 feet bgs (Wilson and Owens-Joyce 1994).
34. Groundwater quality varies markedly in the basin. The best groundwater quality is located in the western portion of the basin near Desert Center and the worst water quality is located in the southeastern portion of the basin near Ford Dry Lake (Steinemann, 1989). Groundwater to the south and west of Palen Lake is typically sodium chloride to sodium sulfate-chloride in character (DWR 2004). The detected concentrations of TDS in the basin range from 274 milligrams per liter (mg/L) to 8,150 mg/L with an average concentration of 2,100 mg/L (Steinemann 1989). Generally, the dissolved-solids concentrations increase moving further downgradient from Desert Center (to the southeast) and are highest in the central and eastern parts of the basin (Steinemann 1989). In general, the groundwater in the basin has concentrations of sulfate, chloride, fluoride, and dissolved solids too high for domestic use and concentrations of sodium, boron and dissolved solids too high for irrigation use (DWR 1975). Several of the wells sampled in the basin contain high levels of fluoride and boron.

## Site Specific Hydrogeology

35. Site-specific investigation indicates the water quality in the study area varies laterally and vertically. Generally, water quality improves vertically with depth and laterally to the south. Vertically, water quality is generally the worst in the alluvium followed by the Bouse Formation and finally by the Fanglomerate. Calculated TDS concentrations from borehole geophysical logging indicate TDS concentrations as high as 30,500 mg/L within finer grained units (silt and clay) in the alluvium decreasing to less than 5,000 mg/L TDS in more transmissive sediments in the Bouse Formation at depths of 800 to 900 feet bgs. Laterally, water quality is generally better south and southeast of the Site within all three water bearing units in the basin. The best water quality in the study area is generally in the vicinity of and south of I-10.

#### **On-site Drainage**

36. On-site storm water management for the completed facility will be provided through the use of source control techniques, site design and treatment control. The storm flows from the solar collector arrays will be treated through the use of swales, ditches and detention ponds. Minimum preliminary volumes required for the detention basins are 66 acre-feet for Unit 1, and 49 acre-feet for Unit 2. These volumes are based on the detention ponds receiving the 100 year, 24 hour event post-development runoff from the Project site, and then discharging the run-off at the pre-developed rate into the existing drainage system. The Riverside County Best Management Practice (BMP) Manual requires extended detention basins to release runoff over a 48 hour draw down period, and the outlet sized to retain the first half of the design volume for a minimum of 24 hours.
37. Locations within the power block for the potential of chemical or oil releases will be fully contained. Rainfall within the containment areas will be allowed to evaporate or will be drained through an oil water separator. Locations within the power block where "contact" storm water may occur, will be contained within a system of curbs or trenches. Drains from these curbed areas or containment trenches will be directed to an oil water separator. The oil separated and captured within the oil water separator will be trucked off-site to a licensed disposal/recycling facility. Clean water discharged from the oil water separator will be used on Project site by discharging it to the cooling tower or to the raw water storage tank. The water discharge from the oil water separator will not be discharged to the storm water system.

#### **Facility Operational Water**

38. Water to supply the project will be derived from a minimum of two new groundwater supply wells located near each unit's power block area.

The wells will pump groundwater from the Bouse Formation below a depth of 780 feet bgs. Two wells at each units power block will provide redundancy in the event of outages or maintenance.

39. The average total annual water usage for each 125 MW unit is estimated to be about 822 acre-feet per year (afpy), or 1644 afpy for the Project, which corresponds to an average daily flow rate of about 1000 gallons per minute (gpm). Usage rates will vary during the year and will be higher in the summer months when the peak maximum flow rate (instantaneous daytime maximum rate) could be as high as about 2,013 gpm for each 125 MW power plant, or 4,026 gpm for The Project. Equipment sizing will be consistent with peak daily rates to ensure adequate design margin.
40. The TDS concentration of the proposed groundwater supply is 5000 mg/L. The groundwater is not considered a potential source for municipal or domestic water supply under Resolution 88-63 of the State Water Resources Control Board as the TDS exceeds 3000 mg/L.

#### **Evaporation Ponds (Design and Installation Sequence)**

41. The six 8-acre evaporation ponds (three per unit) have a proposed average design depth of 8 feet across each pond which incorporates:
  - a. 3 feet of sludge buildup;
  - b. 3 feet of operational depth; and
  - c. 2 feet of freeboard.
42. The sub grade under the liner system will be scarified, moisture conditioned, compacted, and proof-rolled with a smooth drum roller to form a competent working surface. The subgrade beneath the Geosynthetic Clay Layer (GCL) needs to have an adequate moisture content to ensure effectiveness of the GCL layer. Therefore, additional moisture conditioning will be specified immediately prior to installation of the GCL layer. The purpose of this is to add additional moisture beneath the GCL to provide moisture for hydration of the GCL material.
43. The GCL liner will be installed in accordance with current practices and will employ the use of proper installation requirements, following manufacturer requirements for the GCL and proper QA/QC during installation to ensure proper continuity of the base layer.
44. The secondary liner or lower liner will consist of a 40 mil thick HDPE geomembrane liner. This liner will be installed in accordance with

current practices and will employ the use of wedge welding and extrusion welding procedures. In addition, destructive and non-destructive testing procedures will be used to ensure liner quality and continuity.

45. A HDPE geonet drainage layer, with an option for non-woven geotextile heat bonded to one side or both sides, will be used in the leak detection and collection layer between the primary and secondary liners. HDPE geonet used in combination with geotextile materials has been selected because polyethylene is not reactive with the fluids and provides a highly conductive layer, it is readily available, and is easily installed with minimal potential for damage to the liner system during installation.
46. The base of the evaporation pond leak detection and collection layer will slope at a minimum inclination of 1% to a leak collection trench. The trench will contain screened coarse sand (with no fines) and a perforated pipe that will slope at a minimum inclination of ¾% towards a leak detection and collection sump, located at the lowest point in the pond. The water in the collection sump will drain by gravity to a monitoring well that is constructed for each evaporation pond (one well per pond). Automated pneumatic pumping systems in the monitoring wells will automatically return water collected in the sump to that evaporation pond, which in turn minimizes the hydraulic pressures across the secondary liners and therefore the risk of leakage through the secondary liner. Leakage rates will be measured using a flow totalizer.
47. The collection sump, pipe, and monitoring well, will include prefabricated and field-fabricated HDPE components with water tight, extrusion welded and wedge welded seams and penetrations. The liner system will be installed in accordance with current practices. Destructive and non-destructive testing procedures will be used to verify sump and penetration tightness and continuity.
48. This design is consistent with CCR, Title 27, Section 20340, which requires a Leachate Collection and Removal System (LCRS) between the liners for surface impoundments.
49. The upper or primary liner will consist of a 60 mil thick HDPE geomembrane liner. Consistent with installation of the secondary 40 mil HDPE liner, current installation, quality control monitoring, testing, and quality assurance measures and techniques will be employed to ensure liner quality and continuity. The primary liner will be protected by a non-woven geotextile that will be installed directly on top of the liner.
50. The moisture detection system below the liner system consists of continuous carrier pipes installed at the sides and low point of each pond (one carrier pipe per pond) at a depth of approximately 5 feet below the



secondary liner. The carrier pipes will be terminated at the surface on each side of the pond and will be equipped with a pull cable system for conveyance of a neutron probe for moisture detection.

51. Prior to the placement of the hard surfacing, a 1 foot thick sub-base layer consisting of granular fill with a maximum particle size of ½" shall be placed and spread over the non-woven geotextile. The sub-based layer will be spread carefully and sequentially to avoid damage to the underlying liner system. After placement, the granular layer will be proof rolled using light compaction equipment.
52. A hard surface / protective layer will be constructed on the non-woven geotextile that covers the primary liner. The hard surface will allow for vehicular traffic during unscheduled or emergency maintenance or cleanout. Hard surface types to be considered and assessed include roller compacted concrete, or an approved equivalent (formed concrete, gunite, or other alternates, all of which must be submitted for approval).
53. An aggregate road base material will be placed along the top of each berm to provide an all weather access location for maintenance vehicles. The material will conform to the Department of Transportation Specifications for Class II Aggregate Base. This will be installed to a minimum thickness of 6 inches and will be placed and compacted in accordance with the Department of Transportation requirements.

#### **Action Leakage Rate**

54. The action leakage rate (ALR) is the allowable leakage from the primary liner system above which contingency actions are triggered. According to CFR Title 40, Section 264.222, the ALR is defined as "...the maximum design flow rate that the leak detection system can remove without the fluid head on the bottom liner exceeding 1 foot". The ALR must also include an adequate safety margin to allow for variability in the containment system design (e.g. liner and collection pipe slope, interstitial fill hydraulic conductivity, thickness of drainage material).
55. The estimated ALR for the evaporation ponds is 2,750 gallons per acre per day. This is based on one standard hole per acre, a drainage layer geonet with hydraulic conductivity of 0.06 m/s and a 50% safety factor. The assumption underlying this ALR calculation will be verified in the actual constructed ponds. Based on an 8 acre pond, each evaporation pond would have an ALR of 2,200 gallons per day. However, the ALR will need to have field verification as this rate will vary depending on actual drainage material used and its hydraulic conductivity. A final ALR will be submitted to the Regional Board within six months of the effective date of these WDRs based on field analysis.

56. A large hole in the geomembrane may cause a rapid large leakage rate (RLLR) of approximately 9,500 gallons per acre per day. This would equate to a RLLR of 76,000 gallons per day per pond. The RLLR is provided herein for informational purposes only.
57. The recording flow totalizer at each sump will be monitored at least weekly to determine the leakage rate through the primary liner. If the leakage rate exceeds the ALR, then the appropriate actions in the Contingency Plan will be implemented.

### **Waste Classification**

58. Wastewater from several processes within each 125MW Unit will be piped to three 8-acre evaporation ponds (total combined pond top area of 24 acres) for disposal. Therefore there is a total of 48 acres (top pond area) of evaporation ponds on the Project site. Discharge into the evaporation ponds is derived from three primary and one occasional source:
  - a. Pre-cooling tower water treatment multi media filter (MMF) waste stream;
  - b. Post-cooling tower water treatment MMF waste stream;
  - c. Post-cooling tower water treatment 2nd Stage reverse osmosis (RO) waste stream; and
  - d. Occasionally, stormwater accumulated in the proposed LTU that will be used to treat soil affected by spills of HTF.
59. Raw water and pre-treated water are used to supply various plant needs, including cooling tower circulating water, solar steam generator makeup water, and various plant service needs. All these water streams eventually discharge into the evaporation ponds.

### **Wastewater Discharge**

60. The combined estimated rate of wastewater discharge into the evaporation ponds is 214 gpm for peak conditions and 182 gpm under annual average conditions. The peak flow rates occur in the summer months, between May and August, when solar energy production is at a peak.
61. The modeled water chemistry of the blowdown from the cooling tower after 15 COC indicates that chloride, sodium and sulfate will be the

primary species, along with smaller concentrations of scale forming species (i.e., calcium, magnesium and silica) that were not removed during pre-treatment. Therefore post-treatment is needed to recover most of the wastewater for reuse to minimize the quantity of makeup water required, and to minimize the size of the waste management units (evaporation ponds). Post-treatment will consist of an MMF and Reverse Osmosis (RO) unit, where similar to the pre-treatment process, the MMF will remove solids from the cooling tower blowdown that may damage or reduce the efficiency of the RO membranes. Treated water through the RO units will be returned to the cooling tower for recycling, and the waste stream from the MMF and second RO unit will be discharged into onsite evaporation ponds.

62. The estimated rate of wastewater discharge into the evaporation ponds from the post-treatment MMF unit is 13 gpm for peak conditions and 11 gpm under annual average conditions. Similar to the pre-treatment MMF system, this discharge will occur only when the MMF system is backwashed to remove the build up of residue.
63. The estimated rate of wastewater discharge into the evaporation ponds from the post-treatment RO unit is 161 gpm for peak conditions and 137 gpm under annual average conditions.

#### **Evaporation Residue**

64. During the 30-year operating life of the Facility, it is estimated that up to 13 ft of sludge may accumulate in the bottoms of the evaporation ponds that consists of precipitated solids from the evaporated wastewater. For operational and safety purposes, the ponds will be cleaned when 3 feet of precipitated solids are accumulated in the base of the ponds, which is estimated to be every 7 years when using groundwater with a TDS of 5,000 mg/L. Approximately 7,150 tons of evaporative residues will be accumulated yearly, which equates to approximately 50,000 tons of evaporative residue being removed during each cleanout. The total amount of accumulated sludge is estimated to be approximately 215,000 tons over 30 years.
65. The predicted concentrations of chemical constituents in the evaporation residue in the ponds are less than the Total Threshold Limit Concentrations (TTLCs) for all reported parameters. The predicted concentrations of chemical constituents in the evaporation residue in the ponds is also less than 10 times the Soluble Threshold Limit Concentrations (STLCs) for reported parameters; therefore, further analysis of the residue using the Waste Extraction Test (WET) would not be required and the waste may be classified as non-hazardous under

CCR Title 22, Division 4.5. In addition, the total concentrations of chemical constituents in the evaporation residue in the ponds is less than the Toxicity Characteristic Leaching Procedure (TCLP) for all reported parameters; therefore, further analysis of the residue using the TCLP method would not be required and the waste may be considered a non-hazardous waste under federal regulations. Testing of this material will be conducted as part of the facility monitoring program to verify this characterization. The evaporation residue accumulated in the ponds is non hazardous; however, it does contain pollutants which could exceed water quality objectives if released, or that could be expected to affect the beneficial uses of waters of the state. Therefore, the evaporation residue is classified as a "designated waste." This classification is consistent with CCR Title 27, Chapter 3, Subchapter 2, Article 2, Section 20210.

#### **Land Treatment Unit**

66. The proposed design for the LTU has been selected to optimize performance based on the operating requirements. The location of the LTU is shown in Attachment B, as incorporated here in and made a part of these WDRs. The LTU will not incorporate a liner containment system or LCRS, but will be constructed with a prepared base consisting of 2 feet of compacted, low permeability, lime-treated material. This base will serve as a competent platform for land farming activities, and will serve to slow the rate of surface water infiltration in the treatment area. The compacted and native soil beneath the LTU is designated as a "treatment zone" to a depth of 5 feet. Although the LTU will be taking vehicle traffic, no hard surface will be required, as there is no liner system to protect. A staging area is allocated in the LTU for storage of HTF-impacted soils while they are being characterized. Soil characterized as hazardous will be removed from the site; therefore, no additional liner system is required in the LTU to cater for the hazardous waste.
67. The LTU will be surrounded on all sides by a 2-foot high compacted earthen berm with side slopes of approximately 3:1 (horizontal: vertical). These berms will control and prevent potential inflow (run-on) of surface storm water into the LTU or runoff of stormwater from the LTU.
68. The LTU will be used to treat HTF-affected soil at various concentrations. HTF (Therminol VP-1 or equivalent) is an oil that consists of a mixture of biphenyl and diphenyl oxide that is solid at temperatures below 54 degrees Fahrenheit, is relatively insoluble in water (solubility of approximately 25 milligrams per liter), combustible, and has relatively low volatility (Solutia, 2006). The components of HTF are reported to biodegrade relatively rapidly in the environment, have slight toxicity to

tested terrestrial species, higher toxicity to tested aquatic species, and a potential to bio-accumulate (IPCS, 1999; JECFA, 2003; SOCMA Biphenyl Working Group, 2003).

69. Spills of HTF will be cleaned up within 48 hours and affected soil will be moved to a staging area in the LTU where it will be placed on plastic sheeting pending receipt of analytical results and characterization of the waste material. Samples of excavated HTF-affected soil will be collected in accordance with the Environmental Protection Agency's (EPA's) current version of the manual – "Test Methods for Evaluating Solid Waste" (SW-846) and the waste material characterized in accordance with State and Federal requirements.
70. If the soil is characterized as a hazardous waste, the impacted soils will be transported from the site by a licensed hazardous waste hauler for disposal at a licensed hazardous waste landfill. No HTF-impacted soils characterized as hazardous waste will be disposed or treated on site. Based on past experience, it is anticipated that soil containing 10,000 milligrams per kilogram (mg/kg) HTF or more will be managed as hazardous waste, and that soil containing less than 10,000 mg/kg HTF will be a non-hazardous waste and managed at the Project site. If the soil is characterized as a non-hazardous waste, it will be spread in the LTU for bioremediation treatment. In general, more highly contaminated soil will be covered with plastic sheeting to prevent contact with stormwater and to control potential odors and emissions, as well as for moisture and temperature retention. Once the soil has been treated to a concentration of less than 100 mg/kg HTF, it will be moved from the LTU to another portion of the site until it is reused at the facility as fill material.
71. Based on available operation data from other sites, it is anticipated that approximately 750 cubic yards (on average) of HTF-affected soil may be treated per year. Larger or smaller quantities could be generated during some years, depending on the frequency and size of leaks and spills.
72. A spill prevention, control and countermeasure (SPCC) plan will be undertaken for this site. The SPCC will include:
  - a. Secondary containment around the tanks storing HTF, capable of containing the 110% of the storage tank capacity and/or sufficient freeboard to contain precipitation from a 25-year, 24-hour storm event.
  - b. It is not practicable to provide secondary containment around HTF product piping, therefore will have daily inspections of all infrastructure containing HTF.

- c. If leaks are identified, the affected area will be isolated and spills cleaned up within 48 hours.

#### **Heat Transfer Fluid Treatment Process**

73. Treatment of HTF-impacted soil in the LTU will involve moisture conditioning and addition of nitrogen and phosphorous nutrients (i.e., fertilizers) as needed to stimulate consumption of HTF by the indigenous bacteria. The HTF-impacted soil will be moisture conditioned and turned periodically as needed to enhance aeration, promote breakdown of HTF by the indigenous bacteria and/or to control dust emissions. Permanent or portable irrigation sprinklers will supply water to the area for dust control and to assist in treatment.
74. Treatment piles may be covered by plastic sheeting as needed to enhance temperature and moisture retention characteristics, and as needed to control storm water contact, odors and dust emissions.
75. Representative soil samples will be collected for every batch of HTF contaminated soil undergoing treatment in the LTU and composited according to methods specified in EPA SW-846. It is expected that treatment times will vary between one to four months, depending on initial concentrations, and the ambient air and soil temperature.

#### **Hazardous Waste**

76. There will be a variety of chemicals stored and used during construction and operation of the project. The storage, handling, and use of all chemicals will be conducted in accordance with applicable laws, ordinances, regulations, and standards.
77. Hazardous materials will be stored in proper containers in material yards and designated construction areas. Cleanup materials (spill kits) will also be stored in these areas. Fuel, oil, and hydraulic fluids used in on-site vehicles will be transferred directly from a service truck to construction equipment and will not otherwise be stored on site.
78. Designated, trained service personnel will perform fueling either prior to the start of the workday or at completion of the workday. Service personnel and construction contractors will follow SOPs for filling and servicing construction equipment and vehicles.
79. Any HTF impacted soil classified as hazardous will be removed from the LTU staging area after the initial characterization. The evaporation ponds will not contain hazardous wastewater or sludge as it is illegal to

discharge hazardous waste into surface impoundments under the Toxic Pits Cleanup Act of 1984.

#### **Basin Plan**

80. The Water Quality Control Plan for the Colorado River Basin Region of California (Basin Plan) was adopted on November 17, 1993, and designates the beneficial uses of ground and surface water in this Region.
81. The beneficial uses of ground water in the Imperial Hydrological Unit are:
  - a. Municipal Supply (MUN)
  - b. Industrial Supply (IND)
82. The beneficial uses of nearby surface waters are as follows:
  - a. Ford Dry Lake:
    - i. Wildlife Habitat (WILD)
    - ii. Preservation of Rare, Threatened, or Endangered Species (RARE)
  - b. Palen Dry Lake
    - i. Wildlife Habitat (WILD)
    - ii. Preservation of Rare, Threatened, or Endangered Species (RARE)

#### **Monitoring Parameters**

83. Based on the chemical characteristics of the projected discharges to the evaporation ponds from wastewater, the following list of monitoring parameters are required. These specific parameters are selected because they provide the best distinction between the wastewater and the groundwater in the Project area that can be used to differentiate a potential release that could change the chemical composition of the groundwater.
  - a. Cations: Antimony, Arsenic, Barium, Cadmium, Calcium, Total Chromium, Cobalt, Copper, Lead, Mercury, Nickel, Selenium, Zinc;
  - b. Anions: Chloride and Sulfate; and
  - c. Other: HTF, Total Dissolved Solids, Specific Conductivity, and pH.

#### **California Environmental Quality Act (CEQA)**

84. The California Energy Commission (CEC) is the lead agency under the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) for all thermal power plants with power ratings of 50 MW or more. The CEC's power plant licensing process is a CEQA-equivalent process. The CEC will coordinate reviews and approvals with the regulatory agencies to ensure that the proposed project meets CEQA requirements. This includes obtaining these WDRs from the staff of the Regional Board. The CEC will certify this project and will include these WDRs as conditions of certification in accordance with the Warren-Alquist Act.<sup>1</sup>

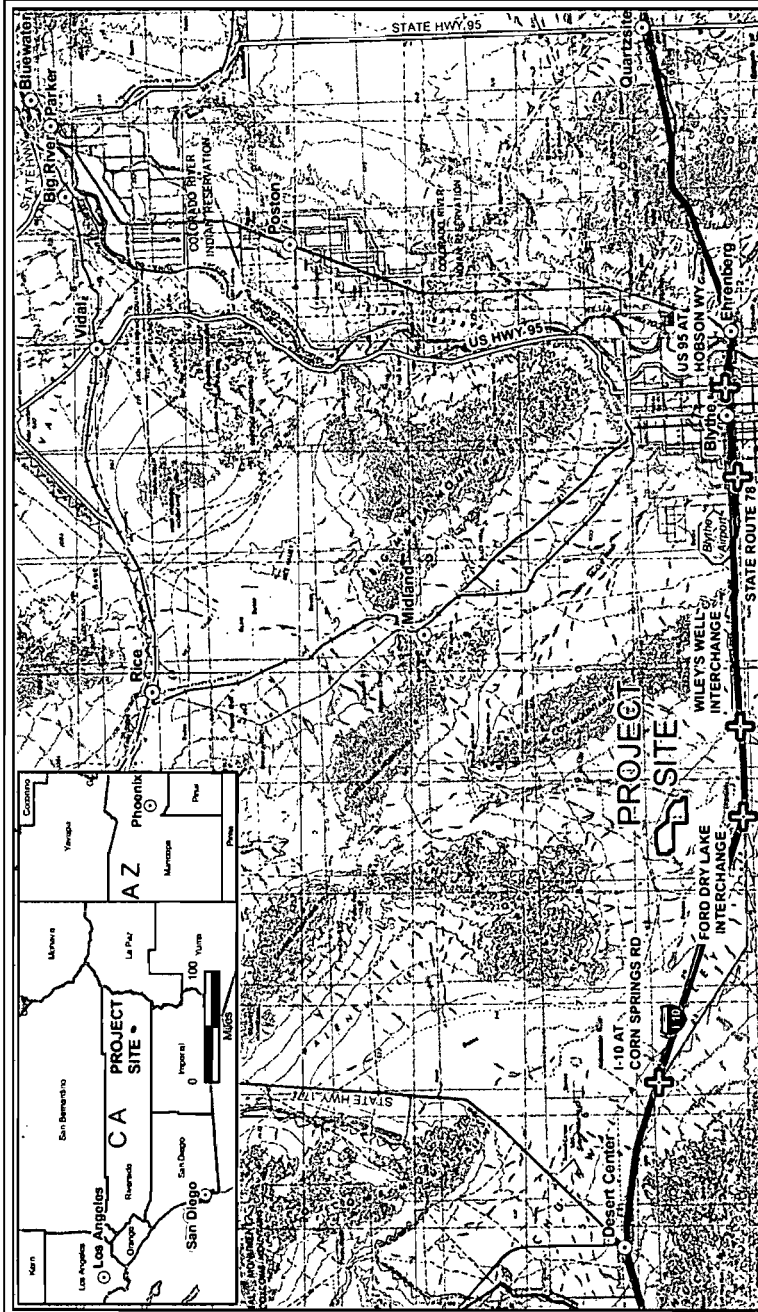
#### **Monitoring and Reporting Program**

85. The monitoring and reporting requirements in the Monitoring and Reporting Program (Appendix D), and the requirement to install groundwater monitoring wells, are necessary to determine compliance with these WDRs, and to determine the Facility's impacts, if any, on receiving water.

---

<sup>1</sup> The Warren-Alquist State Energy Resources Conservation and Development Act is the authorizing legislation for the California Energy Commission. The Act is codified at Public Resources Code (PRC) Section 25000 et seq.. PRC Section 25500 establishes the Commission's authority to certify all sites and related facilities for thermal power plants with power ratings of 50 megawatts or more. The section further declares that "the issuance of a certificate by the commission shall be in lieu of any permit, certificate, or similar document required by any state, local or regional agency, or federal agency to the extent permitted by federal law, for such use of the site and related facilities, and shall supersede any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law."





**WorleyParsons**  
resources & energy

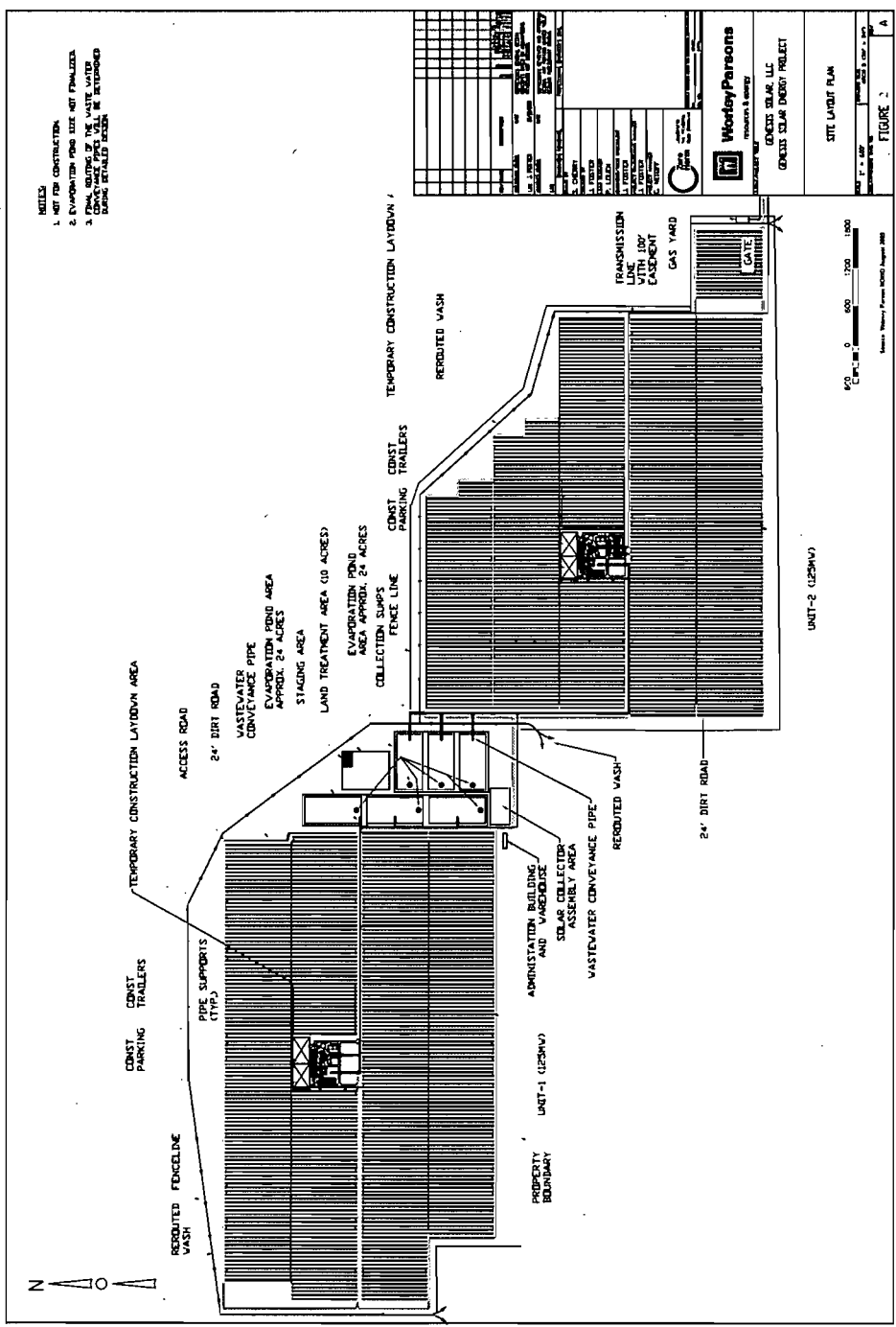
GENESIS SOLAR ENERGY PROJECT

LOCATION MAP

0 10 Miles

SOURCE:  
USGS 250K Quad Sheet, Salton Sea, Needles  
ESRI Cities, SDC Major Roads, Teger Railroad  
All locations approximate

SWL	JM	7/2009
52004617		1





## Genesis Solar Energy Project

### Revisions to Biological Resources Conditions of Certification

Staff, applicant and intervenors discussed a number of biological resource issues at workshops held on July 1 and 7, 2010 that resulted in revisions to proposed conditions of certification in the Revised Staff Assessment and/or the Supplemental Revised Staff Assessment. Most of the revised language provided below is as agreed upon by all parties at the workshops, but some additional revisions were made subsequent to the workshops, including changes to **BIO-28** (Golden Eagle Inventory and Monitoring) that were made after additional consultation with USFWS regarding compliance with the Eagle Act. Consultation with USFWS also resulted in minor changes to **BIO-8, #9** (Avoidance and Minimization, Noise Impacts). **BIO-19** (Special-Status Plant Mitigation) has been extensively reorganized and revised since the RSA was published, and additional language has been added since the workshop. Table 1 summarizes the proposed changes.

**Table 1. Summary of Changes to Conditions of Certification**

<b>Condition of Certification</b>	<b>Changes from Revised Staff Assessment/ Supplemental Staff Assessment</b>
<b>BIO-1</b> Designated Biologist Selection and Qualifications	none
<b>BIO-2</b> Designated Biologist Duties	none
<b>BIO-3</b> Biological Monitor Selection and Qualifications	none
<b>BIO-4</b> Biological Monitor Duties	none
<b>BIO-5</b> Designated Biologist and Biological Monitor Authority	none
<b>BIO-6</b> Worker Environmental Awareness Program	none
<b>BIO-7</b> Biological Resources Mitigation Implementation & Monitoring Plan	none
<b>BIO-8</b> Impact Avoidance and Minimization Measures	#3 – Accepted applicant’s suggested change to allow a 45 mph speed limit on paved roads rather than 25 mph. #9 – Added “fiber optic lines” to the list of project features that needed to include avian protection

Condition of Certification	Changes from Revised Staff Assessment/ Supplemental Staff Assessment
	guidelines. #9 – Staff added language to reflect discussions at the July 7 <sup>th</sup> workshop that allowed the applicant to conduct noisy construction during the February 15 – April 15 breeding season as long as they provided evidence that no nesting birds would be subject to 60 dBH noise levels.
<b>BIO-9</b> Desert Tortoise Clearance Surveys and Fencing	Minor clarification on use of temporary desert tortoise exclusion fencing during construction on utility corridors.
<b>BIO-10</b> Desert Tortoise Translocation Plan	none
<b>BIO-11</b> Desert Tortoise Compliance Verification	none
<b>BIO-12</b> Desert Tortoise Compensatory Mitigation	Added clarifying language that the compensatory mitigation lands would need to be at least equal in habitat quality and function as the impacted Project area habitat.
<b>BIO-13</b> Raven Management Plan	none
<b>BIO-14</b> Weed Management Plan	Minor clarification that allowed use of additional sources for weed control guidance.
<b>BIO-15</b> Pre-Construction Nest Surveys	Clarified that this condition applied to birds other than burrowing owls, which have their own condition.
<b>BIO-16</b> Avian Protection Plan	Based on consultation with USFWS on Eagle Act compliance, staff added a clarification that bird collision monitoring would also be needed for Project transmission lines.
<b>BIO-17</b> Badger and Kit Fox Avoidance and Minimization Measures-	Reduced the survey areas for kit fox and badger from 250 feet to 90 feet beyond project disturbance areas. Also added a provision for trapping and relocating badgers if passive relocation failed.
<b>BIO-18</b> Burrowing Owl Impact Avoidance and Minimization Measures	Added clarification on characteristics of proposed passive relocation sites; specified that artificial burrow sites be maintained for two years; added more detailed specifications for the amount of compensatory mitigation land required depending on the characteristics of those lands; added a provision that allows the mitigation to be accomplished by depositing funds into the REAT-NFWF account; and a minor revision to the criteria for burrowing owl compensation land.
<b>BIO-19</b> Special-Status	Extensively reorganized and revised to provide greater

<b>Condition of Certification</b>	<b>Changes from Revised Staff Assessment/ Supplemental Staff Assessment</b>
Plant Impact Avoidance and Minimization	clarity on avoidance requirements and compensatory mitigation options. Mitigation for CNDDDB Rank 2 plants revised to require complete avoidance of special-status plant occurrences on linears and compensatory mitigation for unavoidable impacts on the solar facility.
<b>BIO-20</b> Sand Dune Community/Mojave Fringe-Toed Lizard Mitigation	Revised to eliminate mitigation for indirect impacts to Mojave fringe-toed lizard habitat, a reduction of 76 acres of compensatory mitigation lands, based on staff's revised conclusion that the area indirectly impacted does not support Mojave fringe-toed lizard.
<b>BIO-21</b> Evaporation Pond Monitoring	none
<b>BIO-22</b> Mitigation for Impacts to State Waters	none
<b>BIO-23</b> Decommissioning	none
<b>BIO-24</b> Revegetation of Temporarily Disturbed Areas	none
<b>BIO-25</b> Monitoring Groundwater Dependent Vegetation	Specified that the groundwater dependent vegetation monitoring would only be required if the applicant used wet cooling.
<b>BIO-26</b> Remedial Action for Groundwater Dependent Vegetation	none
<b>BIO-27</b> Couch's Spadefoot Toad Mitigation	none
<b>BIO-28</b> Golden Eagle Inventory & Monitoring	Revised based on guidance from USFWS to shrink the required survey area from 10 miles to one mile from Project boundaries, and to allow ground surveys rather than aerial surveys. Deleted the requirement that USFWS produce a letter stating that a monitoring plan was not required, and added guidance on immediate contacts with resource agencies if a nest was detected within one mile of Project construction activities.
<b>BIO-29</b> In-Lieu Fee Mitigation Option	none

## REVISED CONDITIONS OF CERTIFICATION

Changes that are based on workshop agreements between staff and other parties are indicated by bold, italicized red font and deleted text is shown with strikethrough. Changes made subsequent to the workshops are in bold, italicized red font and are also highlighted. **BIO-19** is provided in its entirety, but for all other conditions of certification only the relevant revised excerpts are included.

## IMPACT AVOIDANCE AND MINIMIZATION MEASURES

### BIO-8

The Project owner shall undertake the following measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to biological resources:

3. Minimize Traffic Impacts. Vehicular traffic during Project construction and operation shall be confined to existing routes of travel to and from the Project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit shall not exceed 25 miles per hour on all **dirt roads and 45 mph on all paved roads**. Signs shall be established at appropriate locations (for example, at Arizona crossings of drainages) to remind drivers to be aware of the potential for desert tortoise and other wildlife occurring on the roadways.
6. Implement APLIC Guidelines. Transmission lines, **fiber optic lines**, and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006) and *Mitigating Bird Collisions with Power Lines* (APLIC 1994) to reduce the likelihood of large bird electrocutions and collisions.
9. Minimize Noise Impacts. A continuous low-pressure technique shall be used for steam blows, to the extent possible, in order to reduce noise levels in sensitive habitat proximate to the Genesis Project. Loud construction activities (e.g., unsilenced high pressure steam blowing and pile driving, or other) shall be avoided from February 15 to April 15 when it would result in noise levels over 60 dBA in nesting habitat. **Loud construction activities may be permitted from February 15 to April 15 only if the Designated Biologist provides documentation (i.e., nesting bird data collected using methods described in BIO-15 and maps depicting location of the nest survey area in relation to noisy construction) to the CPM indicating that no active nests would be subject to 60 dBA noise.**

**Verification:** *If loud construction activities are proposed between February 15 to April 15, no more than 10 days before initiation of such construction the Project owner shall provide documentation to the CPM indicating that no active nests occur in areas that would be subject to noise 60 dBA or greater.*

## DESERT TORTOISE CLEARANCE SURVEYS AND FENCING

- BIO-9** The Project owner shall undertake appropriate measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to desert tortoise....
6. Desert Tortoise Exclusion Fence Installation. Per the Applicant's Desert Tortoise Translocation Plan, in order to avoid impacts to desert tortoises, permanent desert tortoise exclusion fencing shall be installed along the permanent perimeter security fence; along the utility corridors, **temporary desert tortoise exclusion fencing** or monitoring will be used to protect desert tortoises during construction and temporarily installed along the utility corridors.

## DESERT TORTOISE COMPENSATORY MITIGATION

- BIO-12** To fully mitigate for habitat loss and potential take of desert tortoise, the Project owner shall provide compensatory mitigation at a 1:1 ratio for impacts to 1749 acres, and at a 5:1 ratio for impacts to 23 acres of critical habitat, adjusted to reflect the final Project footprint...
1. Selection Criteria for Compensation Lands. The **quality and function of the** compensation lands selected for acquisition **shall be equal to or better than the quality and function of the habitat impacted and:**
    - d. be connected to lands where desert tortoises can be reasonably expected to occur ~~currently occupied by desert tortoise~~ based on habitat or historic occurrences, ideally with populations that are stable, recovering, or likely to recover;

## WEED MANAGEMENT PLAN

- BIO-14** The Project owner shall implement a Weed Management Plan that meets the approval of the CPM.
- The final plan shall only include weed control measures for target weeds with a demonstrated record of success, based on the best available information from **sources such as:** The Nature Conservancy's The Global Invasive Species Team, **Cooperative Extension**, California Invasive Plant Council: <http://www.cal->



ipc.org/ip/management/plant\_profiles/index.php , and the California Department of Food & Agriculture Encycloweedia: [http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/encycloweedia\\_html.htm](http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/encycloweedia_html.htm). The methods shall meet the following criteria: Team, California Invasive Plant Council: [http://www.cal-ipc.org/ip/management/plant\\_profiles/index.php](http://www.cal-ipc.org/ip/management/plant_profiles/index.php) , and the California Department of Food & Agriculture Encycloweedia: [http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/encycloweedia\\_html.htm](http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/encycloweedia_html.htm). The methods shall meet the following criteria:

1. **Manual**: well-timed removal of plants or seed heads with hand tools; seed heads and plants must be disposed of in accordance with guidelines from the Riverside County Agricultural Commissioner.
2. **Chemical**: Herbicides known to have residual toxicity, such as pre-emergents and pellets, shall not be used in natural areas or within the engineered channels. Only the following application methods may be used: wick (wiping onto leaves); inner bark injection; cut stump; frill or hack & squirt (into cuts in the trunk); basal bark girdling; foliar spot spraying with backpack sprayers or pump sprayers at low pressure or with a shield attachment to control drift, and only on windless days, or with a squeeze bottle for small infestations (see Nature Conservancy guidelines described above);

## PRE-CONSTRUCTION NEST SURVEYS AND AVOIDANCE MEASURES

**BIO-15** Pre-construction nest surveys for *bird species other than burrowing owls* shall be conducted if construction activities would occur at any time during the period of February 1 through July 31. *Burrowing owl nest surveys are addressed in BIO-18.*

**Verification:** ~~At least 10 days~~ Prior to the start of any Project-related ground disturbance activities, the Project owner shall provide the CPM a letter-report describing the findings of the pre-construction nest surveys.

## AVIAN PROTECTION PLAN

**BIO-16** The Project owner shall prepare and implement an Avian Protection Plan to monitor the death and injury of birds from collisions with facility features such as *transmission lines*, reflective mirror-like surfaces and from heat, and bright light from concentrating sunlight.

## AMERICAN BADGER AND DESERT KIT FOX IMPACT AVOIDANCE AND MINIMIZATION MEASURES

**BIO-17** To avoid direct impacts to American badgers and desert kit fox, pre-construction surveys shall be conducted for these species concurrent with the desert tortoise surveys. Surveys shall be conducted as described below:

Biological Monitors shall perform pre-construction surveys for badger and kit fox dens in the Project area, including areas within ~~250~~ **90** feet of all Project facilities, utility corridors, and access roads.

After verification that the den is unoccupied it shall then be excavated and backfilled by hand to ensure that no badgers or kit fox are trapped in the den. ***In the event that passive relocation techniques fail for badgers, the Applicant will contact CDFG to explore other relocation options, which may include trapping.*** BLM approval may be required prior to release of badgers on public lands.

## BURROWING OWL IMPACT AVOIDANCE, MINIMIZATION, AND COMPENSATION MEASURES

**BIO-18** The Project owner shall implement the following measures to avoid, minimize and offset impacts to burrowing owls:

3. ***Passive Relocation of Burrowing Owls.*** If pre-construction surveys indicate the presence of burrowing owls within the Project Disturbance Area (the Project Disturbance Area means all lands disturbed in the construction and operation of the Genesis Project), the Project owner shall prepare and implement a Burrowing Owl Relocation and Mitigation Plan, in addition to the avoidance measures described above. The final Burrowing Owl Relocation and Mitigation Plan shall be approved by the CPM, in consultation with USFWS, BLM and CDFG, and shall:

- a. Identify and describe suitable relocation sites within 1 mile of the Project Disturbance Area, and describe measures to ensure that burrow installation or improvements would not affect sensitive species habitat or existing burrowing owl colonies in the relocation area;

***b. Passive relocation sites shall be in areas of suitable habitat for burrowing owl nesting, and be***

**characterized by minimal human disturbance and access. Relative cover of non-native plants within the proposed relocation sites shall not exceed the relative cover of non-native plants in the adjacent habitats;**

d. Prepare a monitoring and management of the relocated burrowing owl site, and provide a reporting plan. The objective of the plan shall be to manage the relocation area for the benefit of burrowing owls, with the specific goals of:

**i. maintaining the functionality of the burrows for two years.**

4. Acquire Compensatory Mitigation Lands for Burrowing Owls. The following measures for compensatory mitigation shall apply only if burrowing owls that are detected within the Project Disturbance Area. The Project owner shall acquire, in fee or in easement, 19.5 acres of land for each burrowing owl that is displaced by construction of the Project. Staff anticipates displacement of two owls for a total of 39 acres of compensatory mitigation land. **This compensation acreage of 19.5 acres per single bird or pair of nesting owls assumes that there is no evidence that the compensation lands are occupied by burrowing owls. If burrowing owls are observed to occupy the compensation lands, then only 9.75 acres per single bird or pair is required, per CDFG (1995) guidelines. If the compensation lands are contiguous to currently occupied habitat, then the replacement ratio will be 13.0 acres per pair or single bird. All measures below that are based on a compensation lands total of 39 acres would be revised accordingly. Thirty-nine acres will be used as a placeholder for security.**

The Project owner shall provide funding for the enhancement and long-term management of these compensation lands. The acquisition and management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-governmental organization dedicated to habitat conservation, subject to approval by the CPM, in consultation with CDFG and USFWS prior to land acquisition or management activities. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat. **In lieu of**



**acquiring lands itself, the Project owner may satisfy the requirements of this condition by depositing funds into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF), as described in Section 3.i. of Condition of Certification BIO-12.**

- a. Criteria for Burrowing Owl Mitigation Lands.  
The terms and conditions of this acquisition or easement shall be as described in Paragraph 1 of **BIO-12** [Desert Tortoise Compensatory Mitigation], with the additional criteria to include: 1) the 39 acres of mitigation land must provide suitable habitat for burrowing owls, and 2) the acquisition lands must either currently support burrowing owls or be within dispersal distance from ~~an active burrowing owl nesting territory~~ **areas occupied by burrowing owls** (generally approximately 5 miles). The 39 acres of burrowing owl mitigation lands may be included with the desert tortoise mitigation lands ONLY if these two burrowing owl criteria are met. If the 39 acre of burrowing owl mitigation land is separate from the acquisition required for desert tortoise compensation lands, the Project owner shall fulfill the requirements described below in this condition.

## **SPECIAL-STATUS PLANT IMPACT AVOIDANCE, MINIMIZATION AND COMPENSATION**

- BIO-19** This condition contains the following four sections:
- **Section A: Special-Status Plant Impact Avoidance and Minimization Measures** contains the Best Management Practices and other measures designed to avoid accidental impacts to plants occurring **outside of and** within 100 feet of the Project Disturbance Area during construction, operation, and closure.
  - **Section B: Conduct Late Season Botanical Surveys** describes guidelines for conducting summer-fall **2010** surveys to detect special-status plants that would have been missed during the spring **2010** surveys.
  - **Section C: Avoidance Requirements for Special-Status Plants Detected in the Summer/Fall 2010 Surveys** outlines the level of avoidance required for plants detected during the summer-fall surveys, based on the species' rarity and status codes.

- **Section D: Off-Site Compensatory Mitigation for Special-Status Plants** describes performance standards for mitigation for a range of options for compensatory mitigation through acquisition, restoration/enhancement, **or a combination of acquisition and restoration/enhancement.**

**"Project Disturbance Area" encompasses all areas to be temporarily and permanently disturbed by the Project, including the plant site, linear facilities, and areas disturbed by temporary access roads, fence installation, construction work lay-down and staging areas, parking, storage, or by any other activities resulting in disturbance to soil or vegetation.**

The Project owner shall implement the following measures in Section A, B, C, and D to avoid, minimize, and compensate for impacts to special-status plant species:

### **Section A: Special-Status Plant Impact Avoidance and Minimization Measures**

To protect all special-status plants<sup>1</sup> located outside of and within 100 feet of the permitted Project Disturbance Area from accidental and indirect impacts during construction, operation, and closure, the Project owner shall implement the following measures:

"Project Disturbance Area" encompass all areas to be temporarily and permanently disturbed by the Project or by any other activities resulting in disturbance to soil or vegetation. from accidental and indirect impacts during construction, operation, and closure, the Project owner shall implement the following measures:

1. Designated Botanist. An experienced botanist who meets the qualifications described in Section **B-2** below shall oversee compliance with all special-status plant avoidance, minimization, and compensation measures described in this condition throughout construction and closure. The Designated Botanist shall oversee and train all other Biological Monitors tasked with conducting botanical survey and monitoring work. During operation of the Project, the Designated Biologist shall be responsible for protecting special-status plant occurrences within 100 feet of the Project boundaries.
2. Special-Status Plant Impact Avoidance and Minimization Measures. The Project owner shall incorporate all measures for protecting

---

<sup>1</sup> Staff defines special-status plants as described in *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (California Natural Resources Agency, Department of Fish and Game, issued November 24, 2009).

special-status plants in close proximity to the site into the BRMIMP (BIO-7). These measures shall include the following elements:

- a. Site Design Modifications: Incorporate site design modifications to minimize impacts to special-status plants along the Project linears: limiting the width of the work area; adjusting the location of staging areas, lay downs, spur roads and poles or towers; driving and crushing vegetation as an alternative to blading temporary roads to preserve the seed bank, and minor adjustments to the alignment of the roads and pipelines within the constraints of the ROW. Modify the engineered channel discharge points to maintain the natural surface drainage patterns between the engineered channel and the outlet of the natural washes at Ford Dry Lake. These modifications shall be clearly depicted on the grading and construction plans, and on report-sized maps in the BRMIMP.
- b. Establish Environmentally Sensitive Areas (ESAs). Prior to the start of any ground- or vegetation-disturbing activities, the Designated Botanist shall establish ESAs to protect avoided special-status plants that occur within 100 feet of Project Disturbance Areas. This includes plant occurrences identified during the spring 2009-2010 surveys and the late season 2010 surveys. The locations of ESAs shall be clearly depicted on construction drawings, which shall also include all avoidance and minimization measures on the margins of the construction plans. The boundaries of the ESAs shall be placed a minimum of 20 feet from the uphill side of the occurrence and 10 feet from the downhill side. Where this is not possible due to construction constraints, other protection measures, such as silt-fencing and sediment controls, may be employed to protect the occurrences. Equipment and vehicle maintenance areas, and wash areas, shall be located 100 feet from the uphill side of any ESAs. ESAs shall be clearly delineated in the field with temporary construction fencing and signs prohibiting movement of the fencing or sediment controls under penalty of work stoppages and additional compensatory mitigation. ESAs shall also be permanently marked (with signage or other markers) to ensure that avoided plants are not inadvertently harmed during construction, operation, or closure.
- c. Special-Status Plant Worker Environmental Awareness Program (WEAP). The WEAP (BIO-6) shall include training components specific to protection of special-status plants as outlined in this condition.



- d. Herbicide and Soil Stabilizer Drift Control Measures. Special-status plant occurrences within 100 feet of the Project Disturbance Area shall be protected from herbicide and soil stabilizer drift. The Weed Control Program (**BIO-14**) shall include measures to avoid chemical drift or residual toxicity to special-status plants consistent with guidelines such as those provided by the Nature Conservancy's *The Global Invasive Species Team*<sup>2</sup>, the U.S. Environmental Protection Agency, and the Pesticide Action Network Database<sup>3</sup>.
- e. Erosion and Sediment Control Measures. Erosion and sediment control measures shall not inadvertently impact special-status plants (e.g., by using invasive or non-native plants in seed mixes, introducing pest plants through contaminated seed or straw, etc.). These measures shall be incorporated in the ~~Storm Water Pollution Prevention Plan (SWPPP)~~ **Drainage, Erosion, and Sedimentation Control Plan required under SOIL&WATER-1.**
- f. Avoid Special-Status Plant Occurrences. Areas for spoils, equipment, vehicles, and materials storage areas; parking; equipment and vehicle maintenance areas, and wash areas shall be placed at least 100 feet from any ESAs.
- g. Monitoring and Reporting Requirements. The Designated Botanist shall conduct weekly monitoring of the ESAs that protect special-status plant occurrences during construction and decommissioning activities.

## Section B: Conduct Late-Season Botanical Surveys

The Project owner shall conduct late-summer/fall botanical surveys for late-season special-status plants as described below:

1. Survey Timing. Surveys shall be timed to detect: a) summer annuals triggered to germinate by the warm, tropical summer storms (which may occur any time between June and October). Fall-blooming perennials that respond to the cooler, later season storms (typically beginning in September or October) shall only be required if blooms and seeds are necessary for identification or the species are summer-deciduous and require leaves for identification. The surveys shall not be timed to coincide with the statistical peak bloom period of the target species but shall instead be based on

---

<sup>2</sup> Hillmer, J. & D. Liedtke. 2003. Safe herbicide handling: a guide for land stewards and volunteer stewards. Ohio Chapter, The Nature Conservancy, Dublin, OH. 20 pp. Online: <<http://www.invasive.org/gist/products.html>>

<sup>3</sup> Pesticide Action Network of North America. Kegley, S.E., Hill, B.R., Orme S., Choi A.H., PAN Pesticide Database, Pesticide Action Network, North America. San Francisco, CA, 2010 <<http://www.pesticideinfo.org>>

plant phenology and the timing of a significant storm event (i.e., a 10mm or greater rain or multiple storm events of sufficient volume to trigger germination, as measured at or within 1 mile of the Project site). Surveys shall occur at the appropriate time to capture the characteristics necessary to identify the taxon.

2. Surveyor Qualifications and Training. Surveys shall be conducted by a qualified botanist knowledgeable in the complex biology of the local flora, and consistent with CDFG protocols (CDFG 2009). Each surveyor shall be equipped with a GPS unit and record a complete tracklog; these data shall be compiled and submitted along with the Summer-Fall Survey Botanical Report (described below). Prior to the start of surveys, all crew members shall, at a minimum, visit reference sites (where available) and/or review herbarium specimens of all BLM Sensitive plants, CNPS List 1B or 2 (Nature Serve rank S1 and S2) or proposed List 1B or 2 taxa, and any new reported or documented taxa, to obtain a search image. Because range extensions are likely to be found, the list of potentially occurring special-status plants shall include all special-status taxa known to occur within the Sonoran Desert region and the eastern portion of the Mojave in California. The list shall also include taxa with bloom seasons that begin in fall and extend into the early spring as many of these are reported to be easier to detect in fall, following the start of the fall rains.
3. Survey Coverage. The survey coverage or intensity shall be in accordance with BLM Survey Protocols (issued July 2009)<sup>4</sup>, **which specify that intuitive controlled surveys shall only be accomplished by botanists familiar with the habitats and species that may reasonably be expected to occur in the project area.**
4. Documenting Occurrences. If a special-status plant is detected, the full extent of the population onsite shall be recorded using GPS in accordance with BLM survey protocols. Additionally, the extent of the population within one mile of Project boundaries shall be assessed at least qualitatively to facilitate an accurate estimation of the proportion of the population affected by the Project. For populations that are very dense or very large, the population size may be estimated by simple sampling techniques. When populations are very extensive or locally abundant, the surveyor must provide some basis for this assertion and roughly map the extent on a topographic map. All but the smallest populations (e.g., a population occupying less than 100 square feet) shall be recorded as area polygons; the smallest populations may be

---

<sup>4</sup> Bureau of Land Management (BLM), California State Office. *Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species*. Issued July 2009.



recorded as point features. All GPS-recorded occurrences shall include: the number of plants, phenology, observed threats (e.g., OHV or invasive exotics), and habitat or community type. The map of occurrences submitted with the final botanical report shall be prepared to ensure consistency with definition of an occurrence by CNDDDB, i.e., occurrences found within 0.25 miles of another occurrence of the same taxon, and not separated by significant habitat discontinuities, shall be combined into a single 'occurrence'. The Project Owner shall also submit the raw GPS shape files and metadata, and completed CNDDDB forms for each 'occurrence' (as defined by CNDDDB).

5. Reporting. Raw GPS data, metadata, and CNDDDB field forms shall be provided to the CPM within two weeks of the completion of each survey. If surveys are split into two or more periods (e.g., a late summer survey and a fall survey), then a summary letter shall be submitted following each survey period.

The Final Summer-Fall Botanical Survey Report shall be prepared consistent with CDFG guidelines (CDFG 2009), and BLM 2009 guidelines and shall include **all of** the following components:

- a. the BLM designation, NatureServe Global and State Rank of each species or taxon found (or proposed rank, or CNPS List);
- b. the number or percent of the occurrence that will be directly affected, and indirectly affected by changes in drainage patterns or altered geomorphic processes;
- c. the habitat or plant community that supports the occurrence and the total acres of that habitat or community type that occurs in the Project Disturbance Area;
- d. an indication of whether the occurrence has any local or regional significance (e.g., if it exhibits any unusual morphology, occurs at the periphery of its range in California, represents a significant range extension or disjunct occurrence, or occurs in an atypical habitat or substrate);
- e. a completed CNDDDB field form for every occurrence (occurrences of the same species within one-quarter mile or less of each other combined as one occurrence, consistent with CNDDDB methodology); and
- f. two maps: one that depicts the raw GPS data (as collected in the field) on a topographic base map with Project features; and a second map that follows the CNDDDB protocol for occurrence mapping.

## Section C: Avoidance Requirements for Special-Status Plants Detected in the Summer/Fall 2010 Surveys

The Project owner shall apply the following avoidance standards to special-status plants that might be detected during late summer/fall season surveys. Avoidance and/or the mitigation measures described in Section D below would reduce impacts to special-status plant species to less than significant levels.

- 1. Mitigation for CNDDB Rank 1 Plants (Critically Imperiled) - 75% Avoidance Required:** If species with a CNDDB rank of 1 are detected within the Project Disturbance Area *or are otherwise directly impacted by discharges from or the diversion of streams around the Project, the Project owner shall implement measures to achieve complete avoidance of occurrences on the linear features* and at least 75 percent of the local population of this species. *The local population shall be measured by the number of individuals occurring on the Project site and within the immediate watershed of the project for wash-dependent species or species of unknown dispersal mechanism, or the within the local sand transport corridor for wind-dispersed species. Avoidance shall include protection of the ecosystem processes essential for maintenance of the protected plant occurrence. Isolated 'islands' of protected plants disconnected by the Project from natural fluvial or aeolian processes shall not be considered to be protected and shall not be credited as contributing to the 75% avoidance requirement because such isolated populations are not sustainable.* The Project owner shall provide compensatory mitigation *at a 3:1 mitigation ratio* as described below in Section D for Project impacts to CNDDB Rank 1 plants (impacts cannot exceed 25 percent of the local population) that could not be avoided.
- 2. Mitigation for CNDDB Rank 2 Plants (Imperiled) – 75% Avoidance Required Compensatory Avoidance on Linears, Off-site Compensatory Mitigation for Unavoidable Impacts:** If species with a CNDDB rank of 2 are detected within the Project Disturbance Area, the Project owner shall implement measures *where feasible to protect 75 percent of the local population of this species.* to achieve complete avoidance of all occurrences on linear Project features. The Project owner shall provide compensatory mitigation *at a 3:1 ratio* as described below in Section D for impacts to plants *in areas where they* could not be avoided.
- 3. Mitigation for CNDDB Rank 3 Plants (Vulnerable) – No On-Site Avoidance Required Unless Local or Regional Significance:** If species with a CNDDB rank of 3 are detected within the Project Disturbance Area, no onsite avoidance or compensatory mitigation shall be required unless the occurrence has local or regional significance, in which case the plant occurrence shall be treated as a CNDDB 2 ranked



plant. A plant occurrence would be considered to have local or regional significance if:

- a. It occurs at the outermost periphery of its range in California;
- b. It occurs in an atypical habitat, region, or elevation for the taxon that suggests that the occurrence may have genetic significance (e.g., that may increase its ability to survive future threats), or;
- c. It exhibits any unusual morphology that is not clearly attributable to environmental factors that may indicate a potential new variety or sub-species.

4. **Mitigation Pre-Construction Notification for State- or Federal-Listed Species, or BLM Sensitive Species.** If a state or federal-listed species or BLM Sensitive species is detected, the Project owner shall immediately notify the CDFG, USFWS, BLM, and the CPM.

5. **Preservation of the Germplasm of Affected Special-Status Plants.** For all significant impacts to special-status plants, regardless of whether compensatory mitigation is required, mitigation shall include seed collection from the affected special-status plants on-site prior to construction to conserve the germplasm and provide a seed source for restoration efforts. The seed shall be collected under the supervision or guidance of a reputable seed storage facility such as the Rancho Santa Ana Botanical Garden Seed Conservation Program, San Diego Natural History Museum, or the Missouri Botanical Garden. The costs associated with the long-term storage of the seed shall be the responsibility of the Project owner. Any efforts to propagate and reintroduce special-status plants from seeds in the wild shall be carried out under the direct supervision of specialists such as those listed above and as part of a Habitat Restoration/Enhancement Plan approved by the CPM.

#### Section D: Off-Site Compensatory Mitigation for Special-Status Plants

~~In addition to the avoidance measures described above~~ **Where compensatory mitigation is required under the terms of Section C, above,** the Project owner shall ~~offset~~ **mitigate** Project impacts to special-status plant occurrences (those with a CNDDDB rank 1 or 2) with compensatory mitigation. **Compensatory mitigation shall consist** of acquisition of habitat supporting the target species, **restoration/enhancement** of populations of the target species, or a combination of **acquisition and restoration/enhancement in accordance with the performance standards** ~~the two~~ as provided within this Condition. Compensatory mitigation shall be at a 3:1 ratio, with three acres of habitat acquired or restored/enhanced for every acre of **occupied** special-status plant habitat ~~directly or indirectly disturbed~~ **significantly impacted** by the final project footprint. **Project Disturbance Area.** The Project owner shall provide funding for the **acquisition and/or restoration/enhancement,**

initial improvement, and long-term maintenance and management of the acquired or restored lands. *The actual costs to comply with this condition will vary depending on the Project Disturbance Area, the actual costs of acquiring compensation habitat, the actual costs of initially improving the habitat, the actual costs of long-term management as determined by a Property Analysis Record (PAR) report, and other transactional costs related to the use of compensatory mitigation.*

## **I. Compensatory Mitigation by Acquisition**

The requirements for the acquisition, *initial protection and habitat improvement*, and long-term maintenance and management of special-status plant compensation lands include all of the following:

1. Selection Criteria for Acquisition Lands. The compensation lands selected for acquisition may include any of the following three categories:
  - a. Occupied Habitat, No Habitat Threats: The compensation lands selected for acquisition shall be occupied by the target plant population and shall be characterized by *good to excellent site integrity and habitat quality that are required to support the target species, and shall be of equal or better habitat quality than that of the* affected occurrence. The occurrence of the target special-status plant on the proposed acquisition lands should be viable, stable or increasing (in size and reproduction).
  - b. Occupied Habitat, Habitat Threats. Occupied compensation lands characterized by habitat threats may also be acquired as long as the population could be reasonably expected to recover with minor restoration (e.g., OHV or grazing exclusion, pest plant removal) and is accompanied by a Habitat Enhancement/Restoration Plan as described *in Section D.II*, below.
  - c. Unoccupied but Adjacent. The Project owner may also acquire habitat for which occupancy by the target species has not been documented, if the proposed acquisition lands are adjacent to occupied habitat. The Project owner shall provide evidence that acquisitions of such unoccupied lands would improve the defensibility and long-term sustainability of the occupied habitat by providing a protective buffer around the occurrence and by enhancing connectivity with undisturbed habitat.
2. Review and Approval of Compensation Lands Prior to Acquisition. The Project owner shall submit a formal acquisition proposal to the CPM describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed



parcel(s) as compensation lands for special-status plants in relation to the criteria listed above, and must be approved by the CPM.

3. Management Plan. The Project owner or approved third party shall prepare a management plan for the compensation lands in consultation with the entity that will be managing the lands. The goal of the management plan shall be to support and enhance the long-term viability of the target special-status plant occurrences. The Management Plan shall be submitted for review and approval to the CPM.
4. Integrating Special-Status Plant Mitigation with Other Mitigation Lands. If all or any portion of the acquired Desert Tortoise, Waters of the State, Mohave fringe-toed lizard or other required compensation lands meets the criteria above for special-status plant compensation lands, the portion of the other species' or habitat compensation lands that meets any of the criteria above may be used to fulfill that portion of the obligation for special-status plant mitigation.
5. Compensation Lands Acquisition Requirements. The Project owner shall comply with the following requirements relating to acquisition of the compensation lands after the CPM, has approved the proposed compensation lands:
  - a. Preliminary Report. The Project owner, or an approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the CPM. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the CPM. **For conveyances to the State, approval may also be required from the California Department of General Services, the Fish and Game Commission and the Wildlife Conservation Board.**
  - b. Title/Conveyance. The Project owner shall acquire and transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement, as required by the CPM. Any transfer of a conservation easement or fee title must be to CDFG, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM or other public agency approved by the CPM. If an approved non-profit

organization holds fee title to the compensation lands, a conservation easement shall be recorded in favor of CDFG or another entity approved by the CPM. If an entity other than CDFG holds a conservation easement over the compensation lands, the CPM may require that CDFG or another entity approved by the CPM, in consultation with CDFG, be named a third party beneficiary of the conservation easement. The Project owner shall obtain approval of the CPM of the terms of any transfer of fee title or conservation easement to the compensation lands.

- c. Initial Protection and Habitat Improvement. The Project owner shall fund activities that the CPM requires for the initial protection and habitat improvement of the compensation lands. These activities will vary depending on the condition and location of the land acquired, but may include trash removal, construction and repair of fences, invasive plant removal, and similar measures to protect habitat and improve habitat quality on the compensation lands. **The costs of these activities are estimated to be \$990 per acre (\$330 per acre, using the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at a 3:1 ratio, but actual costs will vary depending on the measures that are required for the compensation lands as described in BIO-12).** A non-profit organization, CDFG or another public agency may hold and expend the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code section 65965), if it meets the approval of the CPM in consultation with CDFG, and if it is authorized to participate in implementing the required activities on the compensation lands. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee.
- d. Property Analysis Record. Upon identification of the compensation lands, the Project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate amount of the long-term maintenance and management fund to pay the in-perpetuity management of the compensation lands. The PAR or PAR-like analysis must be approved by the CPM before it can be used to

establish funding levels or management activities for the compensation lands.

**e. Long-term Maintenance and Management Funding.**

The Project owner shall provide money to establish an account with non-wasting capital that will be used to fund the long-term maintenance and management of the compensation lands. The amount of money to be paid will be determined through an approved PAR or PAR-like analysis conducted for the compensation lands. ***Until an approved PAR or PAR-like analysis is conducted for the compensation lands, the amount of required funding is initially estimated to be \$4,350 for every acre of compensation lands, using as the best available proxy the estimated cost of \$1,450 per acre for Desert Tortoise compensatory mitigation, at a 3:1 ratio. If compensation lands will not be identified and a PAR or PAR-like analysis completed within the time period specified for this payment (see the verification section at the end of this condition), the Project owner shall either: (i) provide initial payment equal to the amount of \$4,350 multiplied by the number of acres the Project owner proposes to acquire for compensatory mitigation; or (ii) provide security to the Energy Commission under subsection (g), "Mitigation Security," below, in an amount equal to \$4,350 multiplied by the number of acres the Project owner proposes to acquire for compensatory mitigation. The amount of the required initial payment or security for this item shall be adjusted for any change in the Project Disturbance Area as described above. If an initial payment is made based on the estimated per-acre costs, the Project owner shall deposit additional money as may be needed to provide the full amount of long-term maintenance and management funding indicated by a PAR or PAR-like analysis, once the analysis is completed and approved. If the approved analysis indicates less than \$4,350 per acquired acre (at a 3:1 ratio) will be required for long-term maintenance and management, the excess paid will be returned to the Project owner. The Project owner must obtain the CPM's approval of the entity that will receive and hold the long-term maintenance and management fund for the compensation lands.***



**The CPM will consult with CDFG before deciding whether to approve an entity to hold the Project's long-term maintenance and management funds.**

The Project owner shall ensure that an agreement is in place with the long-term maintenance and management fund holder/manager to ensure the following requirements are met:

- i. Interest. Interest generated from the initial capital long-term maintenance and management fund shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action that is approved by the CPM and is designed to protect or improve the habitat values of the compensation lands.
- ii. Withdrawal of Principal. The long-term maintenance and management fund principal shall not be drawn upon unless such withdrawal is deemed necessary by the CPM or by the approved third-party long-term maintenance and management fund manager, to ensure the continued viability of the species on the compensation lands.
- iii. Pooling Long-Term Maintenance and Management Funds. An entity approved to hold long-term maintenance and management funds for the Project may pool those funds with similar non-wasting funds that it holds from other projects for long-term maintenance and management of compensation lands for special-status plants. However, for reporting purposes, the long-term maintenance and management funds for this Project must be tracked and reported individually to the CPM.
- f. Other Expenses. In addition to the costs listed above, the Project owner shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to the title and document review costs incurred from other state agency reviews, overhead related to



providing compensation lands to CDFG or an approved third party, escrow fees or costs, environmental contaminants clearance, and other site cleanup measures.

- g. Mitigation Security. The Project owner shall provide financial assurances to the CPM to guarantee that an adequate level of funding is available to implement any of the mitigation measures required by this condition that are not completed prior to the start of ground-disturbing Project activities. Financial assurances shall be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") approved by the CPM. The amount of the Security shall be \$6,840 per acre (\$2,280 per acre, **using the estimated cost per acre for Desert Tortoise mitigation as a best available proxy**, at a 3:1 ratio) for every acre of habitat supporting the target special-status plant species which is ~~directly or indirectly~~ **significantly impacted** by the project. The actual costs to comply with this condition will vary depending on the actual costs of acquiring compensation habitat, the costs of initially improving the habitat, and the actual costs of long-term management as determined by a PAR report. Prior to submitting the Security to the CPM, the Project owner shall obtain the CPM's approval of the form of the Security. The CPM may draw on the Security if the CPM determines the Project owner has failed to comply with the requirements specified in this condition. The CPM may use money from the Security solely for implementation of the requirements of this condition. The CPM's use of the Security to implement measures in this condition may not fully satisfy the Project owner's obligations under this condition, **and the Project owner remains responsible for satisfying the obligations under this condition if the Security is insufficient**. The **unused** Security shall be returned to the Project owner in whole or in part upon successful completion of the associated requirements in this condition.
- h. The Project owner may elect to comply with the requirements in this condition for acquisition of compensation lands, initial protection and habitat improvement on the compensation lands, or long-term maintenance and management of the compensation

lands by funding, or any combination of these three requirements, by providing funds to implement those measures into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF). To use this option, the Project owner must make an initial deposit to the REAT Account in an amount equal to the estimated costs (as set forth in the Security section of this condition) of implementing the requirement. If the actual cost of the acquisition, initial protection and habitat improvements, or long-term funding is more than the estimated amount initially paid by the Project owner, the Project owner shall make an additional deposit into the REAT Account sufficient to cover the actual acquisition costs, the actual costs of initial protection and habitat improvement on the compensation lands, and the long-term funding requirements as established in an approved PAR or PAR-like analysis. If those actual costs or PAR projections are less than the amount initially transferred by the applicant, the remaining balance shall be returned to the Project owner.

The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the Energy Commission. Such delegation shall be subject to approval by the CPM, in consultation with CDFG, BLM and USFWS, prior to land acquisition, enhancement or management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, shall be executed and implemented within 18 months of the Energy Commission's certification of the Project.

**II. Compensatory Mitigation with *by* Habitat Enhancement/Restoration:** As an alternative or adjunct to land acquisition for compensatory mitigation the Project owner may undertake habitat enhancement or restoration for the target special-status plant species species ***if the enhancement/restoration meets the performance standards below for rescue of an existing off-site population..*** Habitat enhancement or restoration activities must achieve protection at a 3:1 ratio, with improvements applied to three acres of habitat for every acre special-status plant habitat directly or indirectly disturbed by the final Project footprint ***Project Disturbance Area.*** Examples of suitable enhancement projects include but are not limited to

the following: i) control unauthorized vehicle use into an occurrence (or pedestrian use if clearly damaging to the species); ii) control noxious weeds that infest or pose an immediate threat to an occurrence; iii) exclude grazing by wild burros or livestock from an occurrence; or iv) restore lost or degraded hydrologic or geomorphic functions critical to the species by restoring previously diverted flows, removing obstructions to the wind sand transport corridor above an occurrence, or increasing groundwater availability for dependent species.

**If the Project owner elects to undertake a habitat enhancement project for mitigation, the project must meet the following performance standards: The proposed enhancement project shall achieve rescue of an off-site occurrence that is currently assessed, based on the NatureServe threat ranking system<sup>5</sup> with one of the following threat ranks: a) long-term decline >30%; b) an immediate threat that affects >30% of the population, or c) has an overall threat impact that is High to Very High. "Rescue" would be considered successful if it achieves an improvement in the occurrence trend to "stable" or "increasing" status, or downgrading of the overall threat rank to slight or low (from "High" to "Very High").**

If the Project owner elects to undertake a habitat enhancement project for mitigation, they shall submit a Habitat Enhancement/Restoration Plan to the CPM for review and approval, and shall provide sufficient funding for implementation and monitoring of the Plan. The amount of the Security shall be \$6,840 per acre (\$2,280 per acre, **using the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at a 3:1 ratio as described in BIO-12**) for every acre of habitat supporting the target special-status plant species which is directly or indirectly impacted by the project. The amount of the security may be adjusted based on the actual costs of implementing the enhancement, restoration and monitoring. The implementation and monitoring of the enhancement/restoration may be undertaken by an appropriate third party such as NFWF, subject to approval by the CPM. The Habitat Enhancement/Restoration Plan shall include **each of the** following:

1. **Goals and Objectives.** Define the goals of the restoration or enhancement project and a measurable course of action developed to achieve those goals. ~~The objective of the proposed habitat~~

---

<sup>5</sup> Master, L., D. Faber-Langendoen, R. Bittman, G. A., Hammerson, B. Heidel, J. Nichols, L. Ramsay, and A. Tomaino. 2009. *NatureServe Conservation Status Assessments: Factors for Assessing Extinction Risk*. NatureServe, Arlington, VA. Online: [http://www.natureserve.org/publications/ConsStatusAssess\\_StatusFactors.pdf](http://www.natureserve.org/publications/ConsStatusAssess_StatusFactors.pdf), "Threats". See also: Morse, L.E., J.M. Randall, N. Benton, R. Hiebert, and S. Lu. 2004. *An Invasive Species Assessment Protocol: Evaluating Non-Native Plants for Their Impact on Biodiversity*. Version 1. NatureServe, Arlington, Virginia. Online: <http://www.natureserve.org/publications/pubs/invasiveSpecies.pdf>



~~enhancement plan shall include restoration of a target special status plant occurrence that is currently threatened with a long term decline.~~  
The proposed enhancement plan shall achieve an improvement in the occurrence trend to “stable” or “increasing” status, or downgrading of the overall threat rank to slight or low (from “High” to “Very High”).

2. Historical Conditions. Provide a description of the pre-impact or historical conditions (before the site was degraded by weeds or grazing or ORV, etc.), and the desired conditions.
3. Site Characteristics. Describe other site characteristics relevant to the restoration or enhancement project (e.g., composition of native and pest plants, topography and drainage patterns, soil types, geomorphic and hydrologic processes important to the site or species).
4. Ecological Factors. Describe other important ecological factors of the species being protected, restored, or enhanced such as total population, reproduction, distribution, pollinators, etc.
5. Methods. Describe the restoration methods that will be used (e.g., invasive exotics control, site protection, seedling protection, propagation techniques, etc.) and the long-term maintenance required. The implementation phase of the enhancement must be completed within five years.
6. Budget. Provide a detailed budget and time-line, develop clear, measurable, objective-driven annual success criteria.
7. Monitoring. Develop clear, measurable monitoring methods that can be used to evaluate the effectiveness of the restoration and the benefit to the affected species. The Plan shall include a minimum of five years of quarterly monitoring, and then annual monitoring for the remainder of the enhancement project, and until the performance standards for rescue of a threatened occurrence are met. At a minimum the progress reports shall include: quantitative measurements of the projects progress in meeting the enhancement project success criteria, detailed description of remedial actions taken or proposed, and contact information for the responsible parties.
8. Reporting Program. The Plan shall ensure accountability with a reporting program that includes progress toward goals and success criteria. Include names of responsible parties.
9. Contingency Plan. Describe the contingency plan for failure to meet annual goals.
10. Long-term Protection. Include proof of long-term protection for the restoration site. For private lands this would include conservations easements or other deed restrictions; projects on public lands must be contained in a Desert Wildlife Management Area, Wildlife Habitat Management Area, or other land use protections that will protect the mitigation site and target species.

**Verification:** *The Special-Status Plant Impact Avoidance and Minimization Measures shall be incorporated into the BRMIMP as required under Condition of Certification BIO-7.*

*Raw GPS data, metadata, and CNDDDB field forms shall be submitted to the CPM within two weeks of the completion of each survey.* A preliminary summary of results for the late summer/fall botanical surveys shall **also** be submitted to the CPM and BLM's State Botanist within ~~one~~ **two weeks** following the completion of the surveys. If surveys are split into more than one period, then a summary letter shall be submitted following each survey period. The Final Summer-Fall Botanical Survey Report, GIS shape files and metadata shall be submitted to the BLM State Botanist and the CPM no less than 30 days prior to the start of ground-disturbing activities. The Final Report shall include a detailed accounting of the acreage of direct and indirect Project impacts to special-status plant occurrences.

*The Project owner shall immediately provide written notification to the CPM, CDFG, USFWS, and BLM if it detects a State- or Federal-Listed Species, or BLM Sensitive Species at any time during its late summer/fall botanical surveys or at any time thereafter through the life of the Project, including conclusion of Project decommissioning.*

No less than 30 days prior to the start of ground-disturbing activities the Project owner shall submit grading plans and construction drawings to the CPM which depict the location of Environmentally Sensitive Areas and the Avoidance and Minimization Measures contained in Section A of this Condition.

If compensatory mitigation is required, no less than 30 days prior to the start of ground-disturbing activities, the Project owner shall submit **to the CPM** Security adequate to acquire compensatory mitigation lands and/or undertake habitat enhancement or restoration activities, as described in this condition.

No fewer than 90 days prior to acquisition of compensatory mitigation lands, the Project owner shall submit a formal acquisition proposal and draft Management Plan for the proposed lands to the CPM, **with copies to CDFG, USFWS, and BLM**, describing the parcels intended for purchase and shall obtain approval from the CPM prior to the acquisition. **No fewer than 90 days prior to acquisition of compensatory mitigation lands, the Project owner shall submit to the CPM and obtain CPM approval of any agreements to delegate land acquisition to an approved third party, or to manage compensation lands; such agreement shall be executed and implemented within 18 months of the Energy Commission's certification of the Project.**

The Project owner or an approved third party shall complete the acquisition and all required transfers of the compensation lands, and provide written verification to the CPM of such completion no later than 18 months after the start of Project ground-disturbing activities. If NFWF or another approved third party is being

used for the acquisition, the Project owner shall ensure that funds needed to accomplish the acquisition are transferred in timely manner to facilitate the planned acquisition and to ensure the land can be acquired and transferred prior to the 18-month deadline.

If habitat enhancement is proposed, **no later than six months following the start of ground-disturbing activities, the Project owner shall obtain CPM approval** of the final Habitat Enhancement/Restoration Plan, prepared in accordance with Section D shall be submitted to the CPM or a third party approved by the CPM, and submit to the CPM or a third party approved by the CPM **Security adequate for long-term implementation and monitoring of the Habitat Enhancement/Restoration Plan.**

Enhancement/restoration activities shall be initiated no later than 12 months from the start of construction. The implementation phase of the enhancement project shall be completed within five years of initiation. Until completion of the five-year implementation portion of the enhancement action, a report shall be prepared and submitted as part of the Annual Compliance Report. This report shall provide, at a minimum: a summary of activities for the preceding year and a summary of activities for the following year; quantitative measurements of the Project's progress in meeting the enhancement project success criteria; detailed description of remedial actions taken or proposed; and contact information for the responsible parties.

**Within 18 months of ground-disturbing activities, the Project owner shall transfer to the CPM or an approved third party the difference between the Security paid and the actual costs of (1) acquiring compensatory mitigation lands, completing initial protection and habitat improvement, and funding the long-term maintenance and management of compensatory mitigation lands; and/or (2) implementing and providing for the long-term protection and monitoring of habitat enhancement or restoration activities.**

Implementation of the special-status plant impact avoidance and minimization measures shall be reported in the Monthly Compliance Reports prepared by the Designated Botanist. Within 30 days after completion of Project construction, the Project owner shall provide to the CPM, for review and approval, in consultation with the BLM State Botanist, a written construction termination report identifying how measures have been completed.

The Project owner shall submit a monitoring report every year for the life of the project to monitor effectiveness of protection measures for all avoided special-status plants to the CPM and BLM State Botanist. The monitoring report shall include: dates of worker awareness training sessions and attendees, completed CNDDDB field forms for each avoided occurrence on-site and within 100 feet of the Project boundary off-site, and description of the remedial action, if warranted and planned for the upcoming year. The completed forms shall include an



inventory of the special-status plant occurrences and description of the habitat conditions, an indication of population and habitat quality trends.

## SAND DUNES/MOJAVE FRINGE-TOED LIZARD MITIGATION

NOTE: In the Supplemental Revised Staff Assessment (RSA) published on July 2, 2010 staff revised the mitigation obligation in **BIO-20** to reflect increased direct impacts to sand dune habitat as described in the Applicant's June 18, 2010 submittal (*Tetra Tech/T. Bernhardt [fn:57263] Supplemental Information for the GSEP, June 18 2010. 42 p*). The document discussed the impacts of a newly-proposed six-pole transmission line extension to tie into the proposed Colorado River Substation and other minor changes to the Project Table 2 summarizes the basis for the sand dune mitigation requirement described in the Supplemental RSA.

**Table 2. Direct and Indirect Impacts to Mojave Fringe-toed Lizard Habitat and Recommended Mitigation (from the Supplemental RSA)**

Resource	Acres Impacted	Ratio	Recommended Mitigation Acreage
<b>Stabilized/Partially Stabilized Sand Dunes – Direct Impacts</b>			
Direct Impacts	7.5	3:1	22
<b>Playa and Sand Drifts Over Playa</b>			
Direct Impacts	38	3:1	114
Indirect Impacts to MFTL Habitat	151	0.5:1	76
<b>Total Mojave Fringe-toed Lizard Mitigation</b>			212

The changes below are revised from the text for **BIO-20** that was in the Supplemental RSA, and reflect subtraction of the 76 acres of mitigation for indirect impacts to Mojave fringe-toed lizard habitat.

**BIO-20** The Project owner shall mitigate for direct and indirect impacts to stabilized and partially stabilized sand dunes and other Mojave fringe-toed lizard habitat by acquisition of **136** 212 acres of Mojave fringe-toed lizard habitat. The Project owner shall provide funding for the acquisition, initial habitat improvements and long-term management of the compensation lands. The 212 **136**-acre acquisition requirement, and associated funding requirements based on that acreage....

The requirements for acquisition, initial improvement and long-term management of compensation lands include all of the following:

1. Criteria for Compensation Lands: The compensation lands selected for acquisition shall:

- a. Provide suitable habitat for Mojave fringe-toed lizards **that is equal to or better than that found in the Project disturbance area**, and may include stabilized and partially stabilized desert dunes or sand drifts over playas or Sonoran creosote bush scrub;
- b. Be within the Chuckwalla Valley with potential to contribute to Mojave fringe-toed lizard habitat connectivity and build linkages between known populations of Mojave fringe-toed lizards and preserve lands with suitable habitat;
- c. Be connected to lands that are either currently occupied or have high potential to be occupied by Mojave fringe-toed lizard based on patch size and habitat quality;
- d. Be near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;
- e. Not have a history of intensive recreational use or other disturbance that might make habitat recovery and restoration infeasible;
- f. Not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;
- g. Not contain hazardous wastes;
- h. Not be subject to property constraints (i.e. mineral leases, cultural resources); and
- i. Be on land for which long-term management is feasible.

## **GROUNDWATER DEPENDENT VEGETATION MONITORING**

**BIO-25** ***If the Project uses wet cooling,*** The Applicant shall prepare and implement a Draft Groundwater-Dependent Vegetation Monitoring Plan (Vegetation Monitoring Plan).

## **GOLDEN EAGLE INVENTORY AND MONITORING**

**BIO-28** The Project owner shall implement the following measures to avoid or minimize Project-related construction impacts to golden eagles.



1. Annual Inventory During Construction. For each calendar year during which construction will occur an inventory shall be conducted to determine if golden eagle territories occur within ~~40~~ **one** miles of the Project boundaries. Survey methods for the inventory shall be as described in the Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations (Pagel et al. 2010) or more current guidance from the USFWS.
  
3. Determination of Unoccupied Territory Status: A nesting territory or inventoried habitat shall be considered unoccupied by golden eagles ONLY after completing at least 2 full **aerial** surveys in a single breeding season.
  
4. Monitoring and Adaptive Management Plan: If an occupied nest is detected within **one 10 miles** of the Project boundaries, the Project owner shall prepare and implement a Golden Eagle Monitoring and Management Plan for the duration of construction to ensure that Project construction activities do not result in injury or disturbance to golden eagles.

**Verification:** No fewer than 30 days from completion of the golden eagle inventory the project owner shall submit a report to the CPM, CDFG, and USFWS documenting the results of the inventory.

If an occupied nest is detected within ~~40~~ **one** miles of the Project boundary during the inventory the Project shall contact staff at the USFWS Carlsbad Office and CDFG within one working day of detection of the nest for interim guidance on monitoring and nest protection. ~~at least 30 days prior to the start of any pre-construction site mobilization~~ **The** project owner shall provide the CPM, **CDFG**, and USFWS with the final version of the Golden Eagle Monitoring and Management Plan within 30 days after detection of the nest. This final Plan shall have been reviewed and approved by the CPM in consultation with USFWS and **CDFG**. ~~If no occupied nests are detected during the inventory and a Plan is not warranted, a letter from USFWS documenting this determination shall be submitted to the CPM at least 10 days prior to the start of any pre-construction site mobilization.~~