

**STAFF REBUTTAL: REVISED CONDITIONS OF CERTIFICATION
Noxious Weeds, Special-status Plants, Waters of the State, and
Groundwater-Dependent Ecosystems**

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INTRODUCTION

Staff reviewed the Applicant's proposed revisions to the following conditions of certification contained in the Applicant's Opening Testimony¹ for consistency with the analysis and conclusions in the FSA, and to assess whether impacts to these biological resources would be reduced to less than significant levels with adoption of the proposed revisions:

- BIO-18 (Weed Management Plan);
- BIO-19 (Special-status Plant Avoidance & Minimization Measures);
- BIO-20 (Special-Status Plant Compensatory Mitigation Plan);
- BIO-21 (Botanist Qualifications and Duties);
- BIO-22 (State Waters Compensatory Mitigation and Impact Avoidance & Minimization Measures); and
- BIO-23 (Groundwater-Dependent Vegetation Monitoring Plan)

A summary of the areas of agreement and disagreement was provided in Staff's Rebuttal Testimony². Staff's revised conditions of certification shown below were made to the applicant's strike-out version of the conditions, and indicate changes acceptable or unacceptable to staff as follows:

Staff's Revisions:

New text introduced by staff is shown below in red underline. New deletions made by staff are shown in ~~red, strike-through font~~.

Areas of Disagreement:

New text introduced by the Applicant that is *not* acceptable to staff is shown in ~~red, bold, underline strike-through font~~. Applicant deletions that are *not* acceptable to staff are indicated by red, bold, underlined font.

Areas of Agreement:

Applicant deletions acceptable to staff are shown with ~~blue bold underline strike-through font~~. New text introduced by the Applicant that is acceptable to staff is shown in blue, bold, underline.

¹ CH2M Hill 2013 - Applicant's Opening Testimony, Exhibit 71, pp. 97-128. Docketed January 22, 2103 (tn:99215). Online: http://www.energy.ca.gov/sitingcases/hiddenhills/documents/applicant/2013-01-22_Applicants_Opening_Testimony_Exhibit_71_TN-69215.pdf

² California Energy Commission (CEC) 2013 – CEC Staff's Rebuttal Testimony, pp. 13-27. Docketed February 12, 2013 (tn:96495). Online: http://www.energy.ca.gov/sitingcases/hiddenhills/documents/2013-02-11_CEC_Staffs_Rebuttal_Testimony_TN-69495.pdf

Staff's revised Conditions of Certification BIO-20 also reflect a consideration of the California Native Plant Society's (CNPS) concerns about the mitigation for gravel milkvetch (*Astragalus sabulonum*) in a comment letter received February 4, 2013³.

REVISED CONDITIONS OF CERTIFICATION BIO-18 TO BIO-23

BIO-18: WEED MANAGEMENT PLAN

~~This condition requires that the Applicant monitor and control weeds off-site. Changes to this condition have been made to clarify that weed control monitoring or weed control activities will not be performed offsite since the Applicant has no control over that property. Paragraph 6, requesting additional funding, has been struck entirely. As stated in page 19 of the Socioeconomics section of the FSA, "With the inclusion of Conditions of Certification as described in Biological Resources section requiring HHSEGS to develop and implement a weed management plan, it is expected that additional weed management by the County will not be necessary."~~

BIO-18 To minimize the potential indirect effects of weeds on biological resources adjacent to the project, the project owner shall submit a draft Weed Management Plan subject to review and approval by the Compliance Manager (CPM). The general objective of the Weed Management Plan shall be to: 1) manage or contain weed species of greatest environmental concern for the life of the project to prevent their spread into adjacent offsite habitat, and 2) prevent the accidental introduction of new weed species from contaminated vehicles and equipment entering the site during construction or soil disturbing activities.

"Target" weed species or weed populations for long-term management, and those that are infeasible to control or a low priority shall be determined through an ecological risk assessment such as *Criteria for Categorizing Invasive Non-Native Plants that Threaten Wildlands* (2003)⁴, California Exotic Pest Plant Council *An Invasive Species Assessment Protocol: Evaluating Non-Native Plants for Their Impact on Biodiversity* (The Nature Conservancy 2004)⁵, or weed risk assessment criteria developed by the Bureau of Land Management (BLM) or U.S. Forest Service. ~~for long to be included in the Weed Management Plan term containment~~ The term "weeds" as used in this condition includes weed species identified by: California Invasive Plant Council (Cal-IPC); California Department of Food and Agriculture; and BLM California. ~~shall include any weed occurring within the WMAs described above that meets the following definition: a) California Invasive Plant Council (Cal-IPC) "High"-rank weeds (excluding grass species such as red brome and~~

³ California Native Plant Society (CNPS) – Public Comment from California Native Plant Society regarding inadequacy of mitigation requirements for *Astragalus sabulonum* in the CEC Final Staff Assessment for Hidden Hills SEGs. Docketed February 4, 2013 (tn:69390). Online:

<http://www.energy.ca.gov/sitingcases/hiddenhills/documents/others/2013-02->

[04_California_Native_Plant_Societys_Comments_on_CEC_Final_Staff_Assessment_TN-69390.pdf](http://www.energy.ca.gov/sitingcases/hiddenhills/documents/others/2013-02-04_California_Native_Plant_Societys_Comments_on_CEC_Final_Staff_Assessment_TN-69390.pdf)

⁴ Warner, Peter J., Carla C. Bossard, Matthew L. Brooks, Joseph M. DiTomaso, John A. Hall, Ann M. Howald, Douglas W. Johnson, John M. Randall, Cynthia L. Roye, Maria M. Ryan, and Alison E. Stanton. 2003. *Criteria for Categorizing Invasive Non-Native Plants that Threaten Wildlands*. California Exotic Pest Plant Council and Southwest Vegetation Management Association. 24 pp. Online: <http://www.cal-ipc.org/ip/inventory/pdf/Criteria.pdf>

⁵ 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*. [v1]. The Nature Conservancy. Arlington, Va. Online:

<http://www.natureserve.org/library/invasiveSpeciesAssessmentProtocol.pdf>

~~cheatgrass that are ranked by Cal IPC as “High” but are so widespread that they are not feasibly controlled); b) California Department of Food & Agriculture (CDFA) and Nevada Department of Agriculture (NDA) “A” rated and “B” rated weeds, and c) all weeds on the Federal weed list.~~ Only the species of greatest environmental concern and/or limited distribution onsite shall be mandated for control and/or eradication. Weed management is not required for common and widespread weed species.

The draft weed management plan shall include the following:

1. Weed Plan Requirements. The draft plan shall include the following information: a) specific weed management objectives and measures for each target non-native weed species; b) description of the baseline conditions; c) maps of the weed management and monitoring areas showing locations of existing populations of target weeds or weed populations; d) weed risk assessment based on Cal-IPC⁶, Nature Conservancy⁷; BLM, or USFS ~~other acceptable~~ criteria, ~~and~~ e) measures that would be used to contain, manage, or monitor identified priority weed species; f) measures that would be used to prevent the introduction and spread of weeds on vehicles, equipment, and materials (e.g., infested seed, straw, gravel, etc.); g) measures to minimize the risk of unintended harm to wildlife and other plants from weed control activities; h) monitoring and surveying methods; and i) reporting requirements. Maps of all weeds found onsite contained in the botanical surveys⁸ shall be attached as an appendix to the Weed Plan.
2. Avoidance and Treatment of Dense Weed Populations. The draft plan shall include guidelines for avoiding or treating dense populations of the weed species identified as priorities for containment. If grading and construction cannot avoid the highest priority target weed species~~worst~~, they shall be contained by one of the following methods ~~to be selected by the project owner~~: a) requiring tires of vehicles and equipment operating in infested areas to be cleaned before leaving the infested area; or b) treating the infested areas in the season prior to construction and spraying the new crop of plants that emerge in early spring. c) removing the upper 2 inches of soil and disposing it offsite at a sanitary landfill or other site approved by the County Agricultural Commissioner, or d) burying the infested soil, e.g., under the solar facility or in a pit, and covering the infested soil with at least three feet of uncontaminated soil.
3. Cleaning Vehicles and Equipment. The draft plan shall include specifications and requirements for establishing a cleaning station for removal of weed seed and weed plant parts from vehicles and equipment entering and leaving the site during construction. Vehicles and equipment working in weed-infested areas (including previous job sites) shall be required to clean the equipment tires, tracks, and

⁶ Warner, Peter J., Carla C. Bossard, Matthew L. Brooks, Joseph M. DiTomaso, John A. Hall, Ann M. Howald, Douglas W. Johnson, John M. Randall, Cynthia L. Roye, Maria M. Ryan, and Alison E. Stanton. 2003. *Criteria for Categorizing Invasive Non-Native Plants that Threaten Wildlands*. California Exotic Pest Plant Council and Southwest Vegetation Management Association. 24 pp. Online: <http://www.cal-ipc.org/ip/inventory/pdf/Criteria.pdf>

⁷ 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*. [v1]. The Nature Conservancy. Arlington, Va. Online: <http://www.natureserve.org/library/invasiveSpeciesAssessmentProtocol.pdf>

⁸ CH2M Hill 2011. *Spring 2011 Botanical Resource Survey of the Hidden Hills Solar Electric Generating System Site*, Appendix A. Applicants Data Response Set 1B-2 (tn: 63262).

undercarriage before entering the project area. ~~and before moving from infested areas of the project site to uninfested areas.~~ The washing station shall be sized to accommodate large vehicles and construction equipment. Security or cleaning station staff will actively monitor vehicles and provide records in the monthly logs. Cleaning shall adequately remove all visible dirt and plant debris. ~~Cleaning using hand tools, such as brushes, brooms, rakes, or shovels, is preferred.~~ If water must be used to clean vehicles, the water/slurry shall be contained to prevent seeds and plant parts from washing into adjacent habitat offsite.

4. Treatment of Weed Populations near Special-status Plants. The draft plan shall include a requirement to prioritize the containment of invasive target non-native weeds onsite that occur onsite and within 100 feet of any of the nine offsite special-status plant occurrences immediately adjacent to the project boundary. Weeds that are located offsite will not be controlled. The draft plan shall also include measures for preventing accidental harm to the adjacent offsite occurrences during spraying or other weed management activities according to the guidelines in #6, below. The plan shall not include spraying or mechanical treatments of common and widespread weeds around the perimeter to avoid harming wildlife; the focus shall instead be on spot treatment of new outbreaks and small populations of the most invasive species, and according to the guidelines for wildlife-safe herbicide use described under #7 and #8, below.
5. Employee Weed Awareness Training. A program shall be developed and incorporated into the WEAP and BRMIMP to train construction and operation employees to recognize the most common and most invasive species in the area, how to avoid contaminating vehicles and equipment, how to avoid spreading weeds offsite or introducing new weed species onsite, and how to protect wildlife and adjacent offsite special-status plant occurrences from accidental harm during weed management activities. Employees shall be trained to understand the common vectors and conduits for spread, the economic and ecological impacts of weeds, and trained on procedures for reporting infestations.
6. Compensate Local Agencies for Increased Weed Monitoring and Abatement. The project owner and the Inyo/Mono Agricultural Commissioner shall establish an amount for a fee to be paid annually by the project owner to the local agency for increased offsite monitoring and abatement costs resulting from the construction and operation of the project. ~~A summary of California's weed laws is available online:~~ <http://www.cdfa.ca.gov/plant/ipc/encycloweedia/winfo_weedlaws.htm>
7. Safe Use of Herbicides. The draft plan shall include a list of herbicides and soil stabilizers that will be used on the project with manufacturer's guidance on appropriate use. The draft plan shall indicate under what circumstances herbicides will be used, and what techniques will be used to avoid chemical drift. Guidance for safe herbicide use is available in *Safe Herbicide Handling in Natural Areas* (Hillmer et al. 2003). Only weed control measures for target weeds with a demonstrated record of success shall be used, based on the best available information from sources such as The Global Invasive

Species Team “Invasipedia”⁹, Cal-IPC Invasive Plant Profiles¹⁰, and the California Department of Food & Agriculture Encycloweediea¹¹.

8. Weed Control Methods. The methods for weed control described in the draft plan shall meet the following criteria:
 - a. Manual: Seed heads and plants removed manually must be disposed of in accordance with guidelines from the Inyo County Agricultural Commissioner (or Clark or Nye County commissioners if disposed in Nevada).
 - b. Chemical: Herbicides known to have residual toxicity, such as soil fumigants ~~and certain pre-emergent herbicides~~ ~~pre-emergent herbicides~~ and pellets shall not be used. Only post- and pre-emergent herbicides known to have minimal toxicity to birds and other wildlife shall be used in weed control. This includes selective or non-selective types depending on target weed species. In sensitive areas immediately adjacent to offsite special-status plant occurrences, sprayers shall be operated at low pressure or with a shield attachment to control drift, and spraying conducted on windless days;
 - c. Biological: Biological methods, if used, shall be subject to agency review to avoid inadvertent naturalizing, hybridizing with native species;
 - d. Mechanical: Mechanical trimmers shall not be used during periods of high fire risk or shall only be implemented during early morning hours when the fire risk is lowest. Contact information for the local fire department and Cal-Fire shall be clearly posted at all times. A live water supply, shovels, and fire extinguishers shall be available at all times during mowing and other mechanical weed controls.

Verification: At least 90 days prior to the start of any project-ground disturbing activity, the project owner shall submit the draft Weed Management Plan to the CPM for review and approval. No less than 30 days prior to the start of any project-ground disturbing activity, the project owner shall provide the CPM with the final version of the Weed Management Plan. Any modifications to the approved plan shall be made only after approval by the CPM.

No less than 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM with a copy of an agreement between the project owner and local agricultural commissioner(s) regarding compensation for increased weed monitoring and abatement costs, and provide written evidence that the first annual fee has been paid.

Within 60 days after completion of project construction, the project owner shall provide to the CPM for review and approval a written report identifying which items of the Weed Management Plan have been completed, a summary of all modifications to mitigation measures made during the project’s construction phase, and which items are still outstanding.

⁹<http://wiki.bugwood.org/Invasipedia>

¹⁰http://www.cal-ipc.org/ip/management/plant_profiles/index.php

¹¹http://www.cdffa.ca.gov/plant/ipc/encycloweedia/encycloweedia_hp.htm

As part of the Annual Compliance Report, each year following construction the Designated Biologist shall provide a report to the CPM that includes: a) a summary of the results of noxious weed surveys and management activities for the year; b) discussion and documentation of progress in meeting management goals for target weed species; whether weed management goals and objectives for the year were met; c) documentation that weeds targeted for containment did not spread offsite (beyond existing background levels for species that also occur offsite); documentation that methods were employed to prevent accidental harm to adjacent sensitive resources, and d) recommendations for weed management activities for the upcoming year.

BIO-19: SPECIAL-STATUS PLANT IMPACT AVOIDANCE AND MINIMIZATION MEASURES

~~The Applicant requests that Condition BIO-19 be revised to clarify protection of special status plants located off-site. In addition, language in paragraph (a) on modification of construction methods is already discussed in BIO-8, General Impact Avoidance and Minimization Measures. To avoid redundancy, and possible discrepancies in mitigation language if measures are included in several different Conditions, BIO-19 should just reference BIO-8 rather than reiterate details here. The rest of the paragraph has therefore been removed. This approach is consistent with BIO-19 (d) which describes weed control measures (by referencing the original measure, and then this COC does not provide the details).~~

~~In the description of verification section, the requirement to monitor the temporary ESAs for the life of the project has been changed to “during construction”. A perimeter fence will be installed permanently demarking the project boundary and no construction equipment or personnel will be working outside the fence. Monitoring the temporary ESA signage for the life of the project for avoidance of construction impacts is unnecessary.~~

~~Paragraphs (a) and (f), requesting that spoil piles or laydown areas or other project construction elements be placed at least 100 feet from any offsite special status plants, and modify construction methods in these areas, would place excessive constraints to construction activities around a 100 foot wide swath within the entire project site for an offsite resource that will already be protected through an ESA designation. These paragraphs have therefore been deleted. Minor changes and clarifications to the condition language below have also been added.~~

BIO-19 The project owner shall prevent accidental impacts to known special-status plant occurrences offsite that are in close proximity (within 100 feet) to project activities through the measures described below. The project owner is not responsible for managing or monitoring special-status plant occurrences offsite. The project owner shall incorporate all measures for protecting offsite special-status plants in close proximity (within 100 feet) to the site into the BRMIMP (BIO-7). These measures shall include the following elements:

- a. ~~Modify construction techniques: Incorporate modifications to construction techniques to avoid accidental and indirect impacts to special status plants around the project perimeter. Examples include: limiting the width of the work area; adjusting the location of staging areas, lay downs, secondary access roads; and modifying the location of discharge points of any diverted channels to maintain existing surface drainage patterns.~~
- b. Establish Environmentally Sensitive Areas (ESAs). Prior to the start of any ground- or vegetation-disturbing activities, the Biological Monitor shall designate establish special-

~~status plants located outside of the project and adjacent to the project boundary as~~ temporary Environmentally Sensitive Areas (ESAs) to protect ~~the~~ offsite ~~special-status plant~~ occurrences within 100 feet of the project boundary from accidental impacts during construction and operation. The location of the adjacent offsite occurrences shall be marked at the project boundary with ~~temporary construction fencing and~~ temporary signage during construction ~~activities in close proximity to the offsite occurrences~~. The adjacent offsite occurrences shall also be clearly depicted on construction drawings as ESAs. As part of regular monitoring activities, the Biological Monitor will verify that ESA signage is in good repair and, by doing so, will verify that avoidance of offsite special-status plant occurrences is performed during construction.

- c. Worker Environmental Awareness Program (WEAP). The WEAP (BIO-6) shall include a requirement for informing employees and contractors about the presence of ~~the special-status plant ESAs adjacent offsite special-status plant occurrences~~ and components specific to protection avoidance of ~~ESAs special-status plants as outlined in this condition.~~
- d. Herbicide and Soil Stabilizer Drift Control Measures. Special-status plant occurrences offsite shall be protected from potential herbicide drift as described in the Weed Management Plan (BIO-18), and through implementation of standard air quality and dust control measures, they shall also be protected from fugitive dust and soil stabilizer drift.
- e. Avoid Weed Contaminated Erosion and Sediment Control Materials. Any seed mixes used for erosion control shall not include invasive plants. Erosion-control seed mixes, straw, and other mulches, if used, shall be certified weed-free. These specifications shall be incorporated in the Drainage, Erosion, and Sedimentation Control Plan required under SOIL-1.
- f. Locate Spoil Piles and Equipment Re-Fueling and Maintenance Staging, Parking, Spoils, and Storage Areas Away from Special-Status Plant Occurrences. Spoil piles and equipment re-fueling and maintenance areas, vehicles, and materials storage areas, parking areas, equipment and vehicle maintenance areas, and wash areas shall be placed at least 100 feet from any offsite special-status plant occurrences.
- g. Monitoring and Reporting Requirements. During construction, ~~t~~The Designated Biologist shall conduct regularly scheduled monitoring of the ESAs and other measures designed to protect avoid inadvertent trespass offsite where adjacent offsite special-status plant occurrences are located, ~~during construction activities in close proximity~~. The monitoring report shall include: a) dates of worker awareness training sessions and attendees; b) map showing the location of all special-status plant occurrences within 100 feet of the project boundary (including linears and access roads); c) location and description of the ESA signs, other avoidance measures implemented (e.g., dust control or relocation of spoils and refueling areas); d) description of the status, health, and threats to special-status plant occurrences adjacent to the project boundary; ed) location description of any ~~unanticipated or~~ unpermitted adverse impacts trespass into ESAs to occurrences and any remedial corrective action taken; and ~~ef)~~ outstanding follow-up items and recommendations for remedial action in the next year.

Verification: The Monthly Compliance Reports prepared by the Designated Biologist during construction shall include documentation that the special-status plant ESAs were designated on construction drawings, and temporary ESA signage was installed and is in operational condition special-status plant avoidance and minimization measures were implemented as described in this condition.

The project owner shall submit a monitoring report every year during construction for the life of the project according to the specifications listed above to monitor effectiveness of protection temporary during construction avoidance measures for all avoided the special-status plants s ESAs to the CPM.

BIO-20: SPECIAL-STATUS PLANT COMPENSATORY MITIGATION PLAN

~~BIO-20 describes compensatory mitigation for the special-status plants for which impacts are considered significant. Taking into account the 2:1 and 3:1 mitigation ratios proposed in BIO-20, acquisition of several parcels of private land would be required. Based on the Applicant's experience with special-status plant land acquisition, and the low percentage of private landownership in Inyo County, this amount of private land acquisition will be extremely difficult. First, access agreements and permission to survey must be obtained. Then, surveys performed on numerous properties (and this can be a multiple year effort, should drought conditions occur) to find the needed number of special-status plant occurrences with habitat conditions the same or better than those impacted. Next, after special-status plants are confirmed on a percentage of the properties surveyed, some small number of landowners would be expected to be willing to sell their land. Based on the experience with finding suitable lands for the ISEGS project, it may take three years to complete these tasks, particularly if there is a drought year when plants cannot be detected and surveys are delayed. For these reasons, language that adds other mitigation options to increase flexibility, and adjustments to the timeline to complete the mitigation process, have also been proposed.~~

~~As described in BIO-20, there is high potential for Torrey's joint-fir to be considerably more common than currently known. To address this, BIO-20 allows pre-construction surveys for Torrey's joint-fir. Compensatory mitigation for this species will be adjusted based on results of surveys. Gravel milkvetch, Preuss' milkvetch, and Wheeler's skeletonweed also have high potential to occur offsite in higher numbers than currently known. For example, Gravel milkvetch was not even added to the CNPS List until October 2011, after 2011 site surveys were completed. Additional offsite surveys were performed for these species in 2012, but the survey findings were strongly and negatively influenced by the drought conditions. Due to the drought in 2012, opportunities to find additional occurrences of the other special-status species were limited as well. Changes to BIO-20 have been made so that any new findings for these three special-status plants will be treated the same as Torrey's jointfir, and results of surveys will be incorporated into the final compensatory mitigation developed for the project.~~

~~In addition, BIO-20 has been revised to include mitigation flexibility to address local land tenure considerations in the project region and feasibility.~~

BIO-20 To mitigate for significant impacts to special-status plants that occur on the project site, the project owner shall implement mitigation to offset the impact as described below. Because the condition allows for future offsite surveys to identify new occurrences, and the adjustment of mitigation ratios if new offsite occurrences are found, a range of

options was provided with detailed performance standards for each option. Due to the resulting length of the condition, it has been subdivided into the following subsections:

- A. Mitigation through Acquisition and Preservation**
- B. Mitigation through Restoration and Enhancement**
- C. Mitigation through Avoidance**
- D. Other Provisions**

“Other Provisions” includes performance standards for future surveys and adjusting mitigation ratios, and seed collection. An in-lieu option for fulfilling mitigation through payments to an approved third-party land trust or public agency was also included as described below. One or more mitigation options may be could be implemented to fulfill the mitigation obligations. mitigation ratios and requirements described below. These options include: a) acquisition of mitigation lands containing viable occurrences that meet the criteria and performance standards described below, and protecting those occurrences in perpetuity under a conservation easement, or b) enhancement/restoration of at-risk occurrences, according to the criteria and performance standards described below, or c) avoidance of occurrences located on the project boundary. An in-lieu option for fulfilling acquisition and/or restoration through payments to an approved third party land trust or public agency are included as described below. The project owner shall provide funding for the acquisition and long term maintenance and management of the acquired lands as described below.

Subsection A: Mitigation through Acquisition and Preservation

- 1) Selection Criteria and ~~Compensatory~~ Mitigation Ratio for Compensation Lands. If the project owner elects to mitigate for sSignificant impacts to three of the four species (gravel milk-vetch, Wheeler’s skeletonweed, Torrey’s joint-fir, and Preuss’ milk-vetch) shall be mitigated by acquiring and preserving offsite occurrences under a permanent conservation easement, tThree offsite occurrences shall be protected for every S1 (“critically imperiled”) species affected and two offsite-occurrences protected for every S2 (“imperiled”) species affected. Range ranks (e.g., an S1S2 rank) shall defer to the more imperiled rank. Because impacts to gravel milk-vetch (an S2 rank species) will affect half (four occurrences) of all presumed extant occurrences statewide (eight total), a total of four offsite occurrences shall be protected through acquisition and preservation (see explanation in the Staff Rebuttal, page 14-15, tn-69495). The restoration option (subsection B) and the option for avoidance of perimeter occurrences (subsection C) may be used to fulfill this obligation if there are insufficient opportunities for acquisition. Acquisition lands containing more than one of the affected species shall be credited for both species. Integration of special-status plant mitigation land with other mitigation lands is described below.

The compensation lands selected for acquisition must meet the following selection criteria: a) the compensation lands selected for acquisition shall be occupied by the target plant population species and shall be characterized by site integrity and habitat quality adequate to sustain the population, and b) shall be of equal or better habitat quality than that of the affected occurrence: unless restoration/enhancement actions are proposed to the acquisition property. The occurrence of the target special-status

plant on the proposed acquisition lands should be viable, stable or increasing, or be made so, with implementation of restoration/enhancement actions.

- 2) Review and Approval of Compensation Lands Prior to Acquisition. A Draft Special-status Plant Mitigation Plan (Plan) shall be prepared subject to review and approval of the CPM prior to acquisition. The Draft Plan shall discuss the suitability of the proposed parcel(s) as compensation lands for special-status plants in relation to the criteria listed above. The project owner shall submit the final Plan and formal acquisition proposal to the CPM describing the parcel(s) intended for purchase, and must be approved by the CPM.
- 3) Management Plan. The project owner, or approved third party as described below under “Title and Conveyance”, 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 maintain the long-term viability of the target special-status plant occurrences to be viable, stable, or increasing. The management plan shall also include long-term monitoring and reporting on the implementation, effectiveness and compliance with the conservation goals and objectives of the mitigation. 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, 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. Mitigation obligations for special-status plants shall not be fulfilled by nesting with other mitigation lands if the lands do not meet all the criteria and performance standards described in this condition. Potential mitigation lands containing more than one of the significantly affected species would be credited for both species, i.e., one parcel could be used to fulfill the mitigation obligations for more than one special-status plant species providing the parcel met all the selection criteria. If mitigation lands contain more than one special-status plant occurrence or multiple special-status plant species then credit will be given for multiple occurrences.
- 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, 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.
 - 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 a non-profit organization qualified to hold title to

and manage compensation lands (pursuant to California Government Code section 65965), or to CDFG 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 the deed holder approved by the CPM. The CPM may require that another entity approved by the CPM 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, if habitat improvement is necessary. These activities will vary depending on the condition and location of the land acquired, but may include: initial enhancement (e.g., signs, fencing, protection from off-road vehicles); restoration actions needed to maintain the viability of the occurrences (e.g., removal of invasive species, barricading and decommissioning off-road vehicle trails, protection from herbivores, managing public access, enforcement); and monitoring and reporting on implementation, effectiveness and compliance with the conservation goals and objectives of the mitigation. For determining the amount of security, the cost of these activities ~~would~~may use the estimated cost per acre for Desert Tortoise mitigation as a best available proxy or other estimates proposed by the project owner and approved by the CPM. The actual costs will vary depending on the measures that are required for the compensation lands and shall be determined by a Property Analysis Record (PAR) or similar analysis. A non-profit organization 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), and if it meets the approval of the CPM.
- 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 deposit into an account managed by a land trust or other non-profit organization to fund a capital long-term maintenance and management fee (endowment) in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis conducted for the compensation lands. The CPM may designate another non-profit organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity.
- f. Interest, Principal, and Pooling of Funds. The project owner shall ensure that an agreement is in place with the long-term maintenance and management fund (endowment) 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 related to the special-status plants.
- 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 target 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 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.
- g. 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 an approved third party, escrow fees or costs, and environmental contaminants clearance, ~~and other site cleanup measures.~~
- h. 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 financial security ("Security") approved by the CPM. The estimated acquisition costs and amount of the security ~~shall~~may be calculated based on the estimated cost per acre for Desert Tortoise mitigation or other estimate as approved by the CPM as a best available proxy. 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.

- i. Conservation Easements and Other Deed Restrictions. If acquisition and preservation is accomplished through conservation easements or other deed restrictions that go with the land, as an alternative to fee title, the easement shall meet the following performance standards: 1) the easement shall be large enough to maintain the viability of the occurrence and protect it from edge effects; 2) stewardship fees shall be adequate to manage and defend the easement; and 3) ongoing oversight and accountability shall be ensured through monitoring and reporting requirements of the easement holder. Conservation easements held by a third party land trust or public agency, and other deed restrictions shall be obligated to fulfill all performance standards described above. The approved third party shall submit an annual report to the CPM on the health and status of the protected occurrence as described below.

Other deed restrictions, such as restrictive covenants, are acceptable only if the project owner demonstrates that no third party land trust or public agency was available to accept the easement. Under these circumstances, the project owner shall be responsible for managing the occurrence under deed restrictions according to the performance standards described above for initial protection and enhancement and long-term management until transferred to an approved third party under a conservation easement. The project owner shall monitor the occurrence(s) and submit an annual report to the CPM that includes a qualitative and quantitative report on the occurrence health and status, actions taken to enhance and protect the occurrence, a description of remedial actions taken or proposed, and contact information for the responsible parties.

Subsection B: Mitigation through Restoration and Enhancement

1. Criteria for Mitigation~~compensation~~through Enhancement/Restoration of At-Risk Occurrences. As an alternative or adjunct to acquisition of compensation lands, the project owner may undertake or fund habitat enhancement or restoration for at-risk occurrences of the target special-status plant species. Examples of suitable restoration projects include but are not limited to the following: a) control of unauthorized vehicle use into an occurrence; b) control of invasive non-native plants that pose an immediate threat to an occurrence; c) fencing to exclude grazing by wild burros or livestock from an occurrence; d) protection from other herbivores (e.g. lagomorphs) if damaging to the occurrence, or e) restore lost or degraded hydrologic or geomorphic functions critical to the species (e.g., restoring previously diverted stream flows, removing obstructions to the wind sand transport corridor above an occurrence, or increasing groundwater availability for dependent species). Ex-situ mitigation through transplanting or replacement planting is not an acceptable mitigation option due to the high rate of failure.
2. Performance Standards. 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 rescueenhancement/restoration of an off-site occurrence that is currently in decline to a stable or increasing status. The NatureServe threat ranking system, or another equivalent system approved by the CPM, may be used to evaluate threats to the occurrence.that is currently assessed, based on the NatureServe threat ranking system, with one or more of the following: 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. RescueEnhancement/rRestoration would be considered successful if it achieves an improvement in the occurrence trend as measured using the NatureServe ranking system, or other approvedequivalent threat-ranking system to a stable or increasing status, as defined by the approved threat-ranking system. to “stable” or “increasing” status, or downgrading of the overall threat rank to slight or low (from “High” to “Very High”).

3. Mitigation Security. The project owner shall provide financial assurances to the CPM to guarantee that an adequate level of funding is available to implement the restoration/enhancement project. 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 financial security (“Security”) approved by the CPM. The amount of the security shall be based on the estimated total cost for the restoration project, including implementation, monitoring, and contingency measures. The implementation and monitoring of the restoration may be undertaken by an appropriate third party, or the project owner may fund an agency to implement the restoration, subject to approval by the CPM. Any restoration undertaken on private lands must be protected in perpetuity under a conservation easement.
4. Prepare Enhancement/Restoration Plan. If the project owner elects to undertake an enhancement/restoration project for mitigation, they shall submit an Enhancement/Restoration Plan to the CPM for review and approval. The Enhancement/Restoration Plan shall include each of the following components:
 - a. Goals, Objectives, and Performance Standards. 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 enhancement plan shall include enhancement/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 threat trend compared to pre-enhancement/restoration conditions using NatureServe or other threat-ranking system.to “stable” or “increasing” status, or downgrading of the overall threat rank to slight or low (from “High” to “Very High”).
 - b. Baseline, Historical, and Desired Conditions. Provide a description of the pre-project baseline conditions (prior to the start of restoration), an estimate of the pre-impact historical conditions (before the site was degraded by weeds or grazing or ORV, etc.), and the desired conditions.
 - c. 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).

- d. Ecological Factors. Describe other important ecological factors of the species being protected, restored, or enhanced such as total population, reproduction, distribution, pollinators, etc.
- e. 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/restoration project must be completed within five years of the start of construction-of the completion of construction.
- f. Budget. Provide a detailed budget and time-line, and develop clear, measurable, objective-driven annual success criteria.
- g. Monitoring. Develop clear, measurable monitoring methods that can be used to evaluate the effectiveness of the enhancement/restoration and the benefit to the affected species. The Plan shall include a minimum of five years of quarterly monitoring, ~~and then a longer term annual monitoring component for the remainder of the enhancement/restoration project, and~~ until the performance standards ~~for rescue of a threatened occurrence for restoration of the threatened occurrence~~ are met. ~~At a minimum the progress reports shall include: quantitative measurements of the projects' progress in meeting the enhancement/restoration project success criteria, detailed description of remedial actions taken or proposed, and contact information for the responsible parties.~~
- h. Reporting Program. ~~The Plan shall ensure accountability with a reporting program that includes progress toward goals and success criteria. Include names of responsible parties.~~ The project owner shall submit annual ~~At a minimum the progress reports that shall~~ include: quantitative measurements of the projects' progress in meeting the enhancement/restoration project success criteria, detailed description of remedial actions taken or proposed, and contact information for the responsible parties.
- i. Contingency Plan. Describe the contingency plan for failure to meet ~~annual success criteriagoals~~.
- j. Long-term Protection. Include proof of long-term protection for the restoration site. For private lands this ~~would could~~ include conservations easements or other deed restrictions. ~~;~~ Projects on public lands must be protected under a Wilderness designation, Bureau of Land Management (BLM), BLM Area of Critical Environmental Concern (ACEC), BLM Desert Wildlife Management Area (DWMA), BLM or other agency Research Natural Area, National Park lands, or State Park lands, or under a conservation easement or equivalent protection on Department of Defense lands.

Subsection C: Mitigation through Avoidance

1. Mitigation through Avoidance of Perimeter Occurrences. The project may elect to mitigate impacts to gravel milk-vetch in part through avoidance of occurrences located along the project boundary under the following conditions: a) the avoidance includes a buffer surrounding the occurrence that is adequate, subject to approval by the CPM, for maintaining the long-term viability of the occurrence, and b) the avoided occurrence and its buffer are placed under a permanent conservation easement and protected and managed as described for mitigation through acquisition in subsection A, above. An “adequate buffer” shall ensure protection from the edge effects of the project (no less than a 100-foot setback from the project development) and can protect the ecosystem processes necessary for maintaining the habitat.

Subsection D: Other Provisions

1. Preservation of the Germplasm of Affected Special-Status Plants. This is not an alternative to mitigation by acquisition or restoration, but is a required contingency measure for all significantly affected special-status plants as a contingency in the event of mitigation failure. ~~Mitigation by acquisition or restoration shall also include s~~ Seeds or propagule will shall be collection collected from the affected special-status plants ~~occurrences population~~ onsite 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 ~~p~~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 Restoration Plan approved by the CPM.~~
2. Criteria for Adjusting Mitigation Ratio for New S special-status P plant O occurrences found during 2013 surveys. ~~Torrey’s joint fir.~~ Due to the ~~uniquely~~ high potential for finding ~~many~~ additional offsite occurrences of Torrey’s joint-fir, gravel milk-vetch, Wheeler’s skeletonweed, and Preuss’ milk-vetch ~~Torrey’s joint-fir occurrences (see explanation in Staff Rebuttal, page 17, tn-69495) Special-status Plant Impacts subsection for explanation).~~ the project owner may conduct pre-construction surveys ~~in 2013 before June 1, 2013, focused on Torrey’s joint fir. Surveys must be conducted onsite as well as offsite.~~ If the discovery of new occurrences ~~in fall 2012 or spring 2013~~ results in a downgrading ~~by the California Natural Diversity Database (CNDDDB) of the CNDDDB Element Rank by the from an S1 to S2, the species will be mitigated as an S2 species (see subparagraph #1).~~ If the new occurrences result in a downgrading from S1 to S3 (“vulnerable but not under immediate threat of extinction”), ~~AND~~ or the proportion of the statewide distribution affected by the project is less than 10 percent, then mitigation ~~for that species Torrey’s joint-fir~~ shall no longer be required.

[The applicant’s proposal for 2013 surveys accepted and incorporated under subparagraph 2, immediately above] Criteria for Adjusting Mitigation Ratio for Wheeler’s skeletonweed, gravel milkvetch, and Preuss’ milkvetch. Conditions in spring 2012 were

~~unusually dry and rainfall conditions severely and adversely impacted survey efforts to determine if additional Wheeler's skeletonweed, gravel milkvetch, and Preuss' milkvetch special-status plant occurrences exist beyond those located and documented in 2011. The region is botanically under surveyed. In the case of gravel milkvetch, this species was added to the CNPS Inventory following completion of the 2011 surveys. For these reasons, the project owner may elect to conduct surveys focused on Wheeler's skeletonweed, gravel milkvetch, and Preuss' milkvetch. If the discovery of new occurrences results in a downgrading of the CNDDDB Element Rank from an S1 to S2, the species will be mitigated as an S2 species (see subparagraph #1). If the new occurrences result in a downgrading from S1 to S3 ("vulnerable but not under immediate threat of extinction"), or the proportion of the statewide distribution affected by the project is less than 10 percent, then mitigation for these species shall no longer be required.~~

3. In-Lieu Mitigation. Compensatory special-status plant mitigation requirements may be fulfilled at the election of the project owner by using an in-lieu funding option for acquisition or enhancement/restoration of special-status plant occurrences. The in-lieu mitigation approach would be consistent with the provisions included in BIO-25 (In-Lieu Fee and Advanced Mitigation Option) with the exception that the in-lieu option may also be exercised for approved special-status plant restoration/enhancement projects. In-lieu payments for special-status plant mitigation shall only be approved for land trusts in existence for a minimum of three years. Stewardship fees shall be adequate for the long-term management and legal defense of the acquired lands or easement. Any proposals to exercise the in-lieu option would be subject to review and approval by the CPM.

Verification: No fewer than 90 days prior to the start of project ground-disturbing activities, the project owner shall submit to the CPM for review and approval a conceptual proposal for mitigation ~~by one or both of the two methods described in this condition (acquisition and enhancement/restoration)~~ that meets the criteria and performance standards described above, ~~and according to the mitigation ratios described above.~~

The project owner shall provide the CPM, no less than 30 days prior to the start of any project related ground-disturbing activities, written verification that an approved financial security in accordance with this condition of certification has been established.

No later than June 15 of the first summer following the Final Decision, the project owner shall provide the CPM documentation that seed ~~or other propagules have has~~ been collected for all the affected species and submitted to either Rancho Santa Ana Botanical Garden Seed Conservation Program, San Diego Natural History Museum, or the Missouri Botanical Garden.

No later than 30 days following the discovery of any new occurrences of Torrey's joint-fir, Wheeler's skeletonweed, gravel milkvetch, or Preuss' milkvetch, the project owner shall submit raw GPS data, metadata, and CNDDDB field forms to the CPM. The project owner shall immediately provide written notification to the CPM, ~~CDFG and/or USFWS and BLM~~ if it detects a state- or federal-listed plant species.

~~No later than 18 months following project approval, the project owner shall submit a draft formal acquisition proposal to the CPM describing the parcels intended for purchase, and a conceptual management and enhancement plan for the acquired lands according to the minimum requirements described under subsection A (Mitigation through Acquisition and Preservation) of this condition.~~

~~If the project elects to fulfill mitigation obligations through enhancement/restoration, the project owner shall submit a draft final enhancement/restoration plan, according to the minimum requirements described under subsection B (Mitigation through Restoration/Enhancement) for a plan described above, no later than 18 months following project approval.~~

The project owner, or an approved third party, shall complete and provide written verification of the completion of the approved acquisition, ~~proposed compensation lands for acquisition~~ and/or the start of an approved enhancement/restoration project, no later than 18 36 months following project approval. the start of project ground disturbing activities. Within 180 days of the land or easement purchase, as determined by the date on the title, the project owner, or an approved third party, shall ~~provide the CPM, with a management plan for the compensation lands and associated funds. The CPM shall review and approve the management plan.~~

~~No fewer than 30 days after acquisition of the property the project owner shall deposit the funds required for long term management, as described above, and provide proof of the deposit to the CPM.~~

~~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 12 36 months after the start of Project ground-disturbing activities. If NFWF or another approved third party is being used for the acquisition or enhancement/restoration through the in-lieu mitigation option, the project owner shall ensure that funds needed to accomplish the mitigation acquisition are transferred in timely manner to ensure that completion of acquisition or the start of enhancement/restoration project facilitate the planned acquisition and to ensure the land can be acquired and transferred prior to the 18 36-month deadline.~~

~~No fewer than 30 days after acquisition of the property the project owner shall deposit the funds required for long term management, as described above, and provide proof of the deposit to the CPM.~~

~~If habitat enhancement/restoration is proposed, no later than six 36 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, 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/rRestoration project activities shall be initiated no later than 12 36 months following projethe start of construction. The implementation phase of the an approved enhancement/restoration project shall be completed within five years of initiation. Until completion of the five year implementation portion of the enhancement action, a report The annual report describing the progress of the enhancement/restoration shall be prepared according to requirements under subsection B ("Monitoring" and "Reporting Requirements") ~~the~~ 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 forecast for the following year; quantitative measurements of the Project's progress in meeting the enhancement/restoration project success criteria; detailed description of remedial actions taken or proposed; and contact information for the responsible parties.~~

~~In lieu fee payments to compensate for all or a portion of the project's impacts to special status plants shall be subject to the notice and other provisions of BIO-25.~~

BIO-21: BOTANIST QUALIFICATIONS AND DUTIES

~~The Applicant requests that Condition BIO-21 be revised to reflect that with specialized training, the Designated Biologist may implement the duties of the Designated Botanist. General impact avoidance and minimization measures included in the verification paragraph of this measure have been deleted because these are already described in BIO-8 and BIO-19 and they are redundant.~~

BIO-21 The project owner's approved Designated Biologist shall oversee the selection and hiring of qualified botanist(s) to implement ~~the specific tasks specified below; a full-time Designated Botanist position is not required. tasks in BIO-18 (Weed Management Plan), BIO-19 (Special-status Plant Avoidance and Minimization Measures), BIO-20 (Special-status Plant Compensatory Mitigation), and BIO-23 (Groundwater-dependent Vegetation Monitoring) specified below that must be accomplished by a qualified botanist. All other tasks described in these measures not contained in the list below may be accomplished by the Designated Biologist.~~ The Designated Biologist shall submit to the CPM for approval the resume, at least three references, and contact information for the qualified botanist(s) to fulfill the tasks below. The resume(s) shall demonstrate, to the satisfaction of the CPM the appropriate education and experience to accomplish the assigned botanical resource tasks. ~~The tasks listed below may be performed by the~~ **If the Designated Biologist** if he/she meets the minimum qualifications described below. ~~possesses these qualifications, the Designated Biologist may perform these duties and a sepa-~~

Botanist(s) must meet the following minimum qualifications:

- 1) Demonstrated knowledge of: a) general plant taxonomy and natural community ecology; b) familiarity with the plants of the area, including special status species; and c) familiarity with natural communities of the project area;
- 2) At least five years experience conducting floristic field surveys;
- 3) At least five years experience working in the California Desert region;
- 4) Familiarity with the appropriate state and federal statutes related to plants and protocols or guidelines for conducting botanical inventories; and
- 5) At least five years experience analyzing the impacts of development on native plant species and natural communities.

Tasks requiring a qualified botanist shall include the following:

- 1) Advise the project owner's construction and operation managers, and the Designated Biologist on the implementation of botanical resource conditions of certification;
- 2) Conduct and/or train, supervise and coordinate botanical resources compliance efforts ~~in close proximity to special status plant occurrences~~ as described in **BIO-18** (Weed Management Plan) and **BIO-19** (Special-status Plant Avoidance and Minimization Measures);
- 3) **Conduct and/or train, supervise, and coordinate marking** ~~Mark any~~ **offsite** special-status plant ~~Environmentally Sensitive Areas (ESAs) occurrences~~ **that occur within 100**

feet of the project boundary and inspect ~~these~~ the integrity of the ESA signage areas at appropriate intervals for compliance with conditions of certification affecting or relating to special-status plants as described in **BIO-19**;

- 4) Prepare the Weed Management Plan as described in **BIO-18** and conduct and/or train, supervise, and coordinate the surveying and annual monitoring required in the plan;
- 5) Consult and/or prepare the Special-status Plant Compensatory Mitigation plans for enhancement/restoration and/or proposals for acquiring compensation lands, and conduct and/or train, supervise, and coordinate annual monitoring required in the plans; and Conduct and/or train and supervise the Designated Biologist in the implementation of **BIO-23** (Groundwater-dependent Vegetation Monitoring).

Verification: At least 60 days prior to construction-related ground disturbance, the project owner shall submit the resume to the CPM for a botanist to conduct the tasks described above. ~~under tasks #1 and #2.~~ Once approved, the project owner shall provide written verification to the CPM that the qualified botanist is available to implement the required mitigation measures during construction. No construction related ground disturbance, site mobilization, grading, boring, trenching, chemical spraying, or weed management within 100 feet of a special status plant occurrence shall commence until an approved botanist has surveyed and marked the special status plant occurrences adjacent to the project as Environmentally Sensitive Areas as described in BIO-19 (Special status Plant Avoidance and Minimization Measures).

BIO-22: STATE WATERS COMPENSATORY MITIGATION AND IMPACT AVOIDANCE & MINIMIZATION MEASURES

~~Proposed revisions to Condition BIO-22 are discussed in the following paragraphs and incorporated into the Condition text in either underlined new text or and strikethrough formats. Below is an explanation of the proposed revisions. A complete redline/strikeout of the condition follows.~~

~~Page 4.2-271 Section 1600 Notification Form and Fees. Applicant has already submitted to CDFG the 1600 Notification and Fees together with updated information and maps of state waters; therefore, Item 1 of the condition should be deleted.~~

~~Page 4.2-271 Compensatory Mitigation. For item 2, first sentence, consistent with the mitigation ratio discussion above for other large scale solar projects, the mitigation ratio has been revised to reflect the 1:1 mitigation ratio required for impacts to similar ephemeral washes in other CEC approved projects.~~

~~Page 4.2-272 b. Integrating Special Status Plant Mitigation with Other Mitigation Lands. A type correction has been made to the condition language.~~

~~Page 4.2-273 Avoidance and Minimization Measures. For subsection 3.c, "Documentation at the Site and Project Entry," the CPM on behalf of the Commission has the right to issue a stop work order if non-compliance with a Condition occurs. There is no need to re-state this authority in the Condition. The CPM cannot stop work "for other reasons" unrelated to compliance. Moreover, the CPM acting for the Commission has sole authority over State law matters and cannot "allow CDFG" or any other~~

~~entity to issue a stop work order. The simplest fix would be to delete the third sentence and all that follows in its entirety (as noted below if Applicant's edits to the full condition). Otherwise, the language should be revised as follows:~~

~~***“The CPM reserves the right to issue a stop work order or allow CDFG to issue a stop work order after giving notice to the project owner and the CPM, if the CPM in consultation with CDFG, determines that the project owner has breached any of the terms or conditions or for other reasons, including but not limited to the following:~~

~~i) The information provided by the project regarding impacts to waters of the state is incomplete or inaccurate in some materials manner;~~

~~ii) New materials information becomes available that was not known in preparing the terms and conditions; or~~

~~iii) The project or project activities as described in the Staff Assessment the Commission’s Final Decision have changed.~~

~~Page 4.2-273 b) Diffuser Design. Replace “volume” with “rate” because retention area is designed to maintain peak flow rates.~~

~~Page 4.2-274 d) Best Management Practices. Revise language to be consistent with the requirements of the Construction General Permit.~~

~~Page 4.2-274 Delete section d)iii) in its entirety because the CGP contains requirements for construction activities based on storm probabilities, which differ from condition iii). Compliance with the CGP should constitute compliance with CWA, and more prescriptive requirements from the Commission are unwarranted.~~

~~Page 4.2-275 e) Changes of Conditions. Changes are recommended to make it clear that physical changes that are common with streams on alluvial fan systems, and changes that are part of the project description (e.g., vegetation removal or trimming) do not qualify as physical changes that require formal notification.~~

~~Page 4.2-276 Revisions to Verification are recommended to conform to other recommended changes to BIO-22.~~

BIO-22 To satisfy requirements of California Fish and Game Code sections 1600 and 1607, the project owner shall implement measures contained herein for: 1) compensating unavoidable impacts to all ~~w~~Waters of the ~~s~~State located within the project footprint, and 2) for avoiding and minimizing accidental, incidental and indirect impacts to state waters located outside the project footprint. For purposes of this condition, “project footprint” means all lands contained within the boundaries of the project components, including access roads, utility and transmission alignments, staging areas, and temporary construction areas. Avoidance and minimization measures for work within or adjacent to waters shall be implemented during construction, operation, and decommissioning, including site mobilization.

~~1. Complete and Submit Section 1600 Notification Form and Fees. Coordinate with CDFG to submit a formal 1600 application and associated fees. Submit a final revised state~~

~~waters delineation report to include additional features identified during the field verification of the state waters delineation.~~

2. Compensatory Mitigation. The project owner shall acquire and preserve under a permanent conservation easement a parcel or parcels of land that contain jurisdictional state waters in an amount equal to the area of state waters delineated within the project footprint and mitigated at a ratio of 24:1 (~~two-one~~ acres for every acre of state waters onsite) for permanent impacts to habitat functions and values. This ratio assumes that impacts to the hydrologic and geomorphic functions will be minimized by not diverting streams around the site in artificial channels. If the channels are diverted around the site, the mitigation ratio shall increase to a ratio of 3:1. The project owner shall provide associated funding for the long-term stewardship of the acquired lands, as specified below.
 - a. Selection Criteria. Compensation lands for impacts to state waters shall meet the following criteria:
 - i. Located in California and within the Pahrump Valley Hydrologic Unit. If the project owner demonstrates that suitable compensation lands are not available within Pahrump Valley, lands may be acquired in California Valley, or the California portions of Sandy (Mesquite) Valley and Stewart Valley or other adjacent watersheds.
 - ii. Contain waters in a general physiographic setting similar to the affected waters (i.e., alluvial fan washes) or that provide similar habitat function and values. Proposed mitigation sites shall be described in terms of habitat function and values, in the context of the habitat function and values that were impacted at the project site, in a proposal subject to approval by the CPM in consultation with CDFG;
 - iii. Contain waters of a similar or better quality than the affected waters. Subject to review and approval of the CPM in consultation with CDFG, lands degraded by unauthorized off-road vehicles (ORV) may be considered if the project owner can demonstrate that the unauthorized ORV can be excluded and controlled with road decommissioning and signage;
 - iv. Contain waters that are hydrologically unimpaired upstream by dams or diversions. Subject to review and approval of the CPM in consultation with CDFG, impaired waters may be considered if it can be demonstrated that the hydrologic functions can be restored and are accompanied by a restoration proposal;
 - v. Do not contain hazardous wastes that cannot be removed; and
 - vi. Contain water and mineral rights as part of the acquisition, unless the CPM, in consultation with CDFG, agrees in writing to the acceptability of the land.
 - b. Integrating Special-Status Plant Mitigation with Other Mitigation Lands. Any portion of the acquired Desert Tortoise or other required compensation lands that meets

the criteria above for state waters may be used to fulfill that portion of the obligation for state waters mitigation.

- c. Security for Implementation of Mitigation: The project owner shall provide financial assurances to the CPM to guarantee that an adequate level of funding is available to implement the acquisitions and enhancement of state waters as described in this condition. These funds shall be used solely for implementation of the measures associated with the project. Financial assurance can be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or security prior to initiating ground-disturbing project activities. Prior to submittal to the CPM, the mitigation security shall be approved by the CPM, in consultation with CDFG. The final amount due shall be determined by updated appraisals and the PAR analysis conducted pursuant to **BIO-12** (Desert Tortoise Compensatory Mitigation).
 - d. Prepare Management Plan for Stewardship of Acquired Lands: The project owner shall submit a draft State Waters Mitigation Management Plan subject to review and approval by the CPM in consultation with CDFG. The goal of the plan is to protect the integrity of the washes and their habitat functions and values from unauthorized ORV and other threats, or to restore degraded functions and values as described in #2 (a) above. Acquired lands must be protected in perpetuity under a conservation easement as described in **BIO-12** (Desert Tortoise Compensatory Mitigation).
 - e. Compensation Lands Acquisition Requirements. The project owner shall comply with the requirements relating to acquisition of the compensation lands described in **BIO-12** (Desert Tortoise Compensatory Mitigation).
- 3) Avoidance and Minimization Measures. The measures described below shall be implemented during construction, operation, and closure for any project-related activity that may directly or indirectly affect offsite waters adjacent to the project boundary, and to minimize impacts to the hydrologic and geomorphic functions of waters onsite, including water quality. Such activities include ground or vegetation disturbing activities, weed and vegetation management activities, and pre-construction mobilization. The project owner shall provide a discussion of work in or adjacent to ~~ww~~aters of the ~~ss~~tate, and the avoidance and minimization measures employed to protect offsite waters from accidental or indirect effects in the Annual Compliance Reports.
- a) Guidelines for Stream Crossings. The project owner shall minimize disturbance to surface drainage patterns and sediment transport in watercourses downstream of the project. Arizona crossings shall be employed for improvements to project access roads wherever such crossings do not present a safety hazard and where the roadbed elevation allows the construction of such crossings. Crossings shall be constructed to accommodate the full natural width of the channel (bank-to-bank) for single-thread channels, and the full width of the floodplain for braided distributary channels. Streams that have been graded for temporary construction access shall be restored to original contours and surface drainage patterns and shall be stabilized according to specifications in **SOIL-1**.

- b) Diffuser Design. For any diverted watercourse, the project owner shall maintain pre-development surface drainage patterns downstream of the project, in location and approximate ~~volume~~ rate of flows. Flows shall not be discharged indiscriminately as sheet flow across the entire length of the diffusers, irrespective of the natural surface drainage patterns, but shall instead be designed to discharge within existing watercourse boundaries downstream, or within the active floodplain of braided distributary stream types.
- c) Documentation at the Site and Project Entry. The project owner shall provide a copy of this condition from the Energy Commission Final Decision to all contractors, subcontractors, and the owner's project supervisors and Designated Biologist. Copies shall be readily available at work sites at all times during periods of active work and must be presented to any Energy Commission (CEC) CDFG personnel upon demand. ~~The CPM reserves the right to issue a stop work order or allow CDFG to issue a stop work order after giving notice to the project owner and the CPM, if the CPM in consultation with CDFG, determines that the project owner has breached any of the terms or conditions or for other reasons, including but not limited to the following:~~
- ~~i) The information provided by the project regarding impacts to waters of the state is incomplete or inaccurate;~~
 - ~~ii) New information becomes available that was not known in preparing the terms and conditions; or~~
 - ~~iii) The project or project activities as described in the Staff Assessment have changed.~~
- d) Best Management Practices (BMPs). A site-specific SWPPP will be implemented in accordance with requirements of the Construction General Permit (CGP). The SWPPP will identify appropriate BMPs, as well as monitoring, sampling and inspections consistent with the project's calculated risk level. During construction, operation, closure, and pre-construction mobilization, the following BMPs shall be implemented to avoid accidental impact during construction or indirect effects to state waters:
- i) During the pre-construction planning stage identify gravel storage areas, staging areas, access roads, parking, turnarounds, and equipment refueling & maintenance areas to minimize impacts to any delineated state waters outside of the permitted work area. Staging, storage, equipment maintenance and re-fueling shall be located a minimum of 30 feet from the uphill side of streams and their active floodplain to protect water quality downstream. The boundaries of those work areas shall be clearly marked on all final site plan and construction drawings.
 - ii) Prior to the start of construction, establish the stream zones offsite or outside the permitted work area that are adjacent to work activities as Environmentally Sensitive Areas (ESAs). No earth-moving activities, vegetation removal, vehicles, heavy equipment, material storage, equipment maintenance or re-fueling, or

other construction activities shall be permitted within the ESAs. Work shall not begin until the boundaries of the ESAs are delineated on the ground with orange safety netting where they occur adjacent to work activities (e.g., along the project boundary) under supervision of the Biological Monitor. The ESAs shall be depicted on all final maps and specifications.

- iii) Construction activities shall be timed with awareness of precipitation forecasts, and shall be started only if the local weather forecast predicts no probability of rain for a period of 72 24 hours. Construction activities shall cease and water quality, erosion and sediment control measures shall be implemented prior to storm events to prevent erosion and sedimentation, and contamination of stormwater runoff. Activities outside of the sensitive areas described above are not confined to this time period, but at no time shall heavy equipment operate during wet weather. Extra sediment, pollutant, and erosion control materials shall be stockpiled onsite to address any unanticipated rain events.
- iv) The project owner shall minimize road building, construction activities and vegetation clearing on streams within the site wherever possible by limiting the width of the work area. Access to the site shall be on existing access roads.
- v) In the event of wet weather, the project owner shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter streams outside the permitted work area, or be placed in locations that may be subjected to storm runoff. Prior to the start of work, including any equipment move-on or materials storage, install silt-fencing, straw bales, sediment catch basins, straw or coir logs or rolls, or other sediment barriers to keep erodible soils and other pollutants from entering state waters outside the permitted work area. ~~Extra sediment, pollutant, and erosion control materials shall be stockpiled onsite to address any unanticipated rain events, problems and emergencies.~~ [moved to subparagraph iii), above]
- vi) No broken concrete, debris, soil, silt, sand, gravel, rubbish, cement or concrete wash water, oil or petroleum products, or other contaminants shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into waters of the state outside the permitted work area. The contractor shall immediately contain and clean up any petroleum or other chemical spills with absorbent materials such as sawdust or cat litter. For other hazardous materials, follow cleanup instructions on the package.
- e) Changes of Conditions. A formal notification shall be provided to the CPM and CDFG if a change of conditions is identified. As used here, change of condition refers to the process, procedures, and methods of operation of a project; the biological and physical characteristics of a project area; or the laws or regulations pertinent to the project as defined below. A copy of the change of conditions notification shall be included in the annual reports or until it is deemed unnecessary by the CPM, in consultation with CDFG. A change in biological conditions includes, but is not limited to, the following: the presence of biological resources within or adjacent to

the project area, whether native or non-native, not previously known to occur in the area; or the presence of biological resources within or adjacent to the project area, whether native or non-native, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations. A change in physical conditions includes unexpected, substantial physical changes that result from project implementation, and do not include the types of changes that are typical of alluvial fan stream systems; such changes include, but is are not limited to, the following: an adverse, substantial change in the morphology of a river, stream, channel or lake, such as the lowering of a bed or scouring of a bank, or substantial changes in stream form and configuration caused by storm events; the substantial movement of a river or stream channel to a different location; a substantial reduction of or other change in vegetation on the bed, channel, or bank of a drainage that is outside of approved vegetation management; or substantial changes to the hydrologic regime such as fluctuations in the timing or volume of water flows in a river or stream.

- f) Legal Conditions: a change in legal conditions includes, but is not limited to, a change in Regulations, Statutory Law, a Judicial or Court decision, or the listing of a species, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.

Verification: No less than 60 days prior to beginning project ground-disturbing activities, the project owner shall provide to the CPM design drawings of drainage diffusers or other discharge points depicting how these structures restore pre-development drainage patterns (location and volume rate of flows) to any watercourses located downstream of the project boundaries. At the same time the project owner shall provide design drawings for temporary and permanent stream crossings.

No less than 30 days prior to the start of construction-related ground disturbance activities, the project owner shall provide written verification (i.e., through incorporation into the BRMIMP) to the CPM that the above BMPs will be implemented. No later than 60 days prior to beginning ground-disturbing activities, a formal 1600 application and fees shall be submitted to CDFG, and the project owner shall provide the CPM a copy of the 1600 application and verification of payment of CDFG 1600 fees. A copy of the final state waters delineation shall be incorporated into the BMIMP.

The project owner shall provide the CPM, no less than 30 days prior to the start of any project related ground-disturbing activities, written verification that an approved security for compensatory mitigation in accordance with this condition of certification has been established. The financial security shall be in place will be used to purchase compensatory habitat for impacts to state waters and must be accomplished no later than 18 24 months following project approval. from after the start of any on-site project-related construction activities

Acquisition shall be completed within 36 months following project approval and—As evidenced by aA copy of the final recorded deed showing transfer of mitigation land or documentation of other approved mitigation transaction as approved by the CPM.

No less than 90 days prior to the acquisition of the compensation lands, the project owner shall submit a formal draft acquisition proposal, including Property Analysis Record (PAR), to the CPM and CDFG. AThe draft management plan for the acquired lands State Waters Mitigation Management Plan shall be submitted to the CDFG and CPM no less than 60 days after acquisition of the compensation lands.

BIO-23: GROUNDWATER-DEPENDENT VEGETATION MONITORING PLAN^{12,13}

BIO-23 The project owner shall prepare and implement a draft and final Groundwater-dependent Vegetation Monitoring Plan (GDVMP~~Vegetation Monitoring Plan~~) according to the performance standards described below. The GDVMP, in conjunction with the Groundwater Monitoring, Mitigation, and Reporting Plan (**WATER SUPPLY-4**), is designed to avoid potential impacts to will protect groundwater-dependent ecosystems (GDEs) located near the project ~~influence of the project pumping wells~~ from ~~the impacts of~~ project-related groundwater drawdown. The GDVMP shall employ a “Before-After, Control-Impact” (BACI) study design (baseline data and controls) to ensure the project is not responsible for effects that fall within normal inter- and intra-annual variability in of plant moisture stress, or the influence of climate factors or area pumping wells. The GDVMP requires the use of standardized, objective, sensitive, and quantitative field measurements that: 1) are routinely made by plant physiological ecologists and agriculturists to determine plant moisture stress, and 2) protect the nearby GDEs by providing early warning signs of impending adverse effects. ~~the use of The plans require monitoring in the GDEs to track the impacts of pumping to groundwater levels as they develop during the life of the project, and define~~ **WATER SUPPLY-4** defines triggers for adaptive management to be implemented if groundwater level data indicate an impending drawdown at the nearby GDEs.adverse effects. The GDVMP also defines minimum standards for evidence that would be considered for adjusting the project-related drawdown trigger at the project boundary in 0.5 ft increments if data demonstrate no adverse effects to the GDEs. The CPM shall consult the BLM Nevada and BLM California State Lead for Soil, Water, Air and Riparian Programs, the BLM Southern Nevada District and Barstow District Hydrologist and Botanist, and Inyo County Water Department in the review of the draft GDVMP and annual monitoring reports. ~~The project owner shall submit a draft GDVMPVegetation Monitoring Plan to the CPM for review and approval by the CPM, in consultation with the BLM Nevada and BLM California State Lead for Soil, Water, Air and Riparian Programs, the BLM Southern Nevada District and Barstow District Hydrologist and Botanist, and Inyo County Water Department.~~ The GDVMP Vegetation Monitoring Plan and shall meet the performance standards, monitoring objectives, monitoring methods, and guidelines for content of the plan specified in this condition.

~~If water level monitoring, as described in WATER SUPPLY-4, identifies a projected 0.5 foot or greater water level decline at the property boundary due to project pumping, the project owner shall cease pumping, and reduce or modify pumping to restore water levels to pre-threshold levels unless evidence, subject to review and approval by the CPM, in consultation with the parties listed above, demonstrates the drawdown trigger was exceeded due to factors~~

¹² The applicant proposed major revisions to BIO-23 but did not provide a strike-out version in their testimony (see citation below). Staff rejected all but the few edits shown in blue font. The edits shown in red underlined and red strike-through font represent staff's own proposed edits and are intended to provide: 1) clarifications of concerns expressed by the applicant or others in workshops or testimony; 2) consistency with staff's revised **WATER SUPPLY-4**, or 3) eliminate any redundancy.

¹³ (CH2M Hill 2013 - Applicant's Opening Testimony, Exhibit 71, pp. 97-128. Docketed January 22, 2103 (tn:99215). Online: http://www.energy.ca.gov/sitingcases/hiddenhills/documents/applicant/2013-01-22_Applicants_Opening_Testimony_Exhibit_71_TN-69215.pdf

~~other than the project pumping and the project did not contribute to the drawdown. Alternatively, the project may provide evidence through vegetation monitoring and soil coring described in this condition, and through updated predictive hydrologic trend analysis described in **WATER SUPPLY-4**, that a greater drawdown will meet all performance standards contained in this condition for avoiding significant adverse impacts to groundwater-dependent vegetation.~~

1. Trigger for Adaptive Management. If water levels in either of the Power Block 1 or Power Block 2 Onsite Monitoring Wells identify a ~~projected 0.5 foot or greater~~ water level decline at the property boundary due to project pumping during construction or operation, as described in **WATER SUPPLY-4**, the project owner shall stop project pumping until the project owner provides evidence, subject to approval by the CPM, that demonstrates:

- a) the pumping can be reduced or modified to maintain groundwater levels above the 0.5 ft drawdown trigger at the project boundary; or
- b) the drawdown trigger was exceeded due to factors other than the project pumping and the project did not contribute to the drawdown; or
- c) through vegetation monitoring ~~and soil coring~~ described in this condition, and predictive water level trend analysis described in **WATER SUPPLY-4**, ~~subsection C-2~~, that a greater groundwater drawdown will not result in significant adverse impacts to the groundwater dependent vegetation.

2. Peer Review. The draft Vegetation Monitoring Plan shall undergo a peer review by three or more recognized experts in ~~the development of~~ sampling and monitoring ~~plans for~~ plant populations; responses of desert phreatophytes (groundwater-dependent plants) to drought stress or ~~a declining~~ groundwater table ~~depletion~~; and biostatistics. The peer reviewers shall be selected and organized by the CPM, in consultation with the BLM and Inyo County parties listed above. ~~Nevada and BLM California state leads for Soil, Water, Air and Riparian Programs, and the BLM Southern Nevada District and BLM Barstow District Hydrologist and Botanist, and Inyo County Water Department.~~ The cost of the peer review shall be paid by the project owner. The peer review panel described above is required only for the review of the draft GDVMP Vegetation Monitoring Plan; all other approvals shall be made by the CPM, in consultation with BLM and Inyo County as described in this condition.

3. Monitoring Objectives and Performance Standards. The goal of the monitoring is to avoid impacts to the mesquite habitats and other nearby GDEs from project groundwater pumping before it results in any plant mortality or any drawdown-related stress from which the GDEs cannot recover fully within one season following detection. The objectives of the GDVMP Vegetation Monitoring Plan shall be to monitor the project effects of groundwater pumping on GDEs at a level of detail necessary for: a) avoiding significant adverse effects to the GDEs; ~~and~~ b) distinguishing project effects from the effects of background trends or normal inter- and intra-annual variability in plant

~~moisture stress indicators, seasonal variation; and c) distinguishing project effects from natural variability between populations or monitoring plots.~~

Distinguishing project water level effects from background effects or the effects of nearby wells shall be accomplished through the monitoring plan described in **WATER SUPPLY-4**.

4. Definitions. "Sampling", as used in this condition, is the process

of selecting a part of something with the intent of showing the quality or nature of the whole. "Baseline monitoring" is the assessment of existing (pre-pumping) conditions to provide a standard, or baseline against which future change is measured. "Normal seasonal variation" ~~in plant moisture stress indicators~~vegetation attributes, shall be established by collecting baseline measurements that encompass the range of inter and intra-annual variation. collected attributes between the peak growing season and the hottest and driest time of year. "Variability within the population" shall be established by measuring differences in the ~~stress indicators~~vegetation attributes between plots. "GDEs" shall include any plant communities dominated by obligate or facultative "phreatophytes" (groundwater-dependent plants). GDEs also include aquatic habitats that are groundwater-supported, such as seeps and springs. A "significant adverse effect to the GDEs" shall be defined as the level of ~~plant moisture drought~~ stress from which a groundwater-dependent species or habitat cannot fully recover in one season following detection.

5. Minimum Standards for Revising Drawdown Trigger. ~~As~~

~~described **WATER SUPPLY-4** subsection C.5, and in this condition under "Trigger for Adaptive Management", t~~The water level-based trigger for adaptive action, described in **WATER SUPPLY-4**, may be revised in 0.5-foot increments if the project owner can demonstrate that a groundwater drawdown greater than 0.5 feet will not result in significant adverse impacts to the groundwater-dependent vegetation. Modification of the drawdown trigger requires consideration of the following evidence: a) observed water level changes in monitoring wells; b) quantitative field measures of groundwater-dependent vegetation response to lowering water tables as described in this condition; ~~e) observations of rooting depths from soil cores, as described in this condition;~~ d) updated predictive hydrologic trend analyses from well data collected during project operation, as described in **WATER SUPPLY-4**; and d) the range of normal inter- and intra-annual variation, and background trends in plant moisture stress indicators as described under "Field Techniques"., and e) hydrogeologic variability between populations or monitoring plots.; and e). Soil cores, as described in this condition, may be used in conjunction with the vegetation monitoring to demonstrate maximum effective rooting depths. BLM and Inyo County shall be consulted regarding the resetting of the adaptive action trigger.

Alternately, the pumping can be reduced or modified to maintain groundwater levels above the 0.5 ft. drawdown trigger described in **WATER SUPPLY-4** at the

project boundary. Using methods described in **WATER SUPPLY-4** for statistical trend analysis of monitoring well data, the project must provide evidence, subject to approval by the CPM in consultation with BLM and Inyo County, that the maximum pumping rate will not exceed the maximum drawdown indicated by the data for the life of the project.

6. Prepare an Updated Inventory and Map of Groundwater-dependent Species and Ecosystems (GDEs). The map of GDEs prepared for this project (CH2 2011c, Data Response Set 1A, Figure D48-1), shall be amended to include seeps and springs identified by BLM or through ground surveys and any plant community dominated by obligate or facultative phreatophytes within the predicted cone of depression. The map shall be accompanied by a list of all obligate and facultative phreatophytes contained in each GDE. Phreatophytes observed in the project botanical resource study area include (but are not limited to): honey mesquite (*Prosopis glandulosa*); four-wing saltbush (*Atriplex canescens*); allscale (*A. polycarpa*); spiny saltbush (*A. spinifera* ~~*escens*~~); bush seep-weed (*Suaeda moquinii*); desert baccharis (*Baccharis sergiloides*); alkali goldenbush (*Isocoma acradenia*); the non-native salt cedar (*Tamarix* spp.).
 7. Permanent Monitoring Plots. The vegetation monitoring shall be conducted within GDEs located: a) east of the project and nearest to the project boundary, as depicted in HHSEGS Data Response Set 1A, Figure D48-1 (CH2 2011c); ~~and b) beyond the project's influence ("controls"). within the BLM Stump Spring ACEC between the ACEC and the project pumping wells.~~ No GDEs occur within the project boundary and monitoring plots shall not be located in upland plant communities that are not groundwater-dependent.
 8. Baseline and Long-term Data Collection. Baseline data may be ~~shall be~~ collected at all vegetation monitoring sites beginning as soon as feasible upon project approval to determine normal seasonal variation in vegetation attributes and background trends and facilitate the determination of background trends (decline) in plant moisture stress indicators from other sources, including climate conditions. At a minimum, baseline data collection shall begin immediately upon approval of the final GDVMP. Baseline data may continue after the start of project pumping as long as no project-related drawdown is detected (see WATER SUPPLY-4), or collected from the reference plots located just beyond the project's actual cone of depression. ~~Data on existing or baseline conditions shall be updated each year until a drawdown is detected at the project boundary to establish any background trends. Any future change detected shall be adjusted for normal seasonal variation and background trends from other sources. is compared against the baseline, and adjusted for any background decline, such as a regional drop in water levels or vegetation decline from climate conditions established in the baseline trend.~~ Data collection shall continue for the life of the project unless the CPM determines, in consultation with BLM and Inyo County, Nevada and BLM California state leads for Soil, Water, Air and Riparian Programs, BLM Southern Nevada District and BLM Barstow District Hydrologist and Botanist, and Inyo County Water Department, that
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if no project-related drawdown is detected at the project boundary and not expected based on refined hydrologic trend analysis, or pumping ceases and groundwater levels have returned to baseline levels, the project may stop or reduce its monitoring obligation.

9. Timing. Vegetation monitoring shall be conducted twice annually during the same two week time period during the peak growing period and during the hottest and driest time of year locally. Intra-annual variability shall be established from measurements made during the same 2-week window during the summer dry season. Timing of well monitoring shall be conducted as described in **WATER SUPPLY-4**.
10. Monitoring Controls. The GDVMP shall employ a BACI study design using reference monitoring sites located just outside of the project's zone of influence to compare differences between the control and impact sites (near-project plots within the project's influence) before the project begins and after the project begins. This controls both for natural variability between plots, temporal variability associated with annual weather differences, and any regional background decline in water levels. If the differences through the years remain the same then it is assumed the project has not affected the GDEs. The control sites would be paired in space, not in time; each monitoring site in the impact area shall be paired with a site in the control area. The control and impact sites shall a) have an equal number of monitoring plots, and b) paired based on vegetation and other environmental factors being similar. Control and treatment sites shall be positioned relative to the monitoring wells. Additionally, data from the control and treatment sites shall be averaged and the difference over time compared (see description of repeated measures analysis of variance in Chapter 6, "Impact Assessment" of *Statistics for Environmental Science and Management* (Manly 2008)¹⁴.
11. Field Techniques for Measuring Plant Moisture Stress. Vegetation Response to Drought Stress. Vegetation monitoring shall employ only sensitive, reliable, and objective field measures of moisture stress~~drought stress~~ that can detect the earliest warning signs of an adverse effect. These include: 1) xylem (stem) water potential; 2) gas exchange rate, and 3) transpiration rate.~~Ecophysiological thresholds shall be established only after field calibrating the measurements to establish normal seasonal variation, and variability between plots or populations. Field techniques that rely on visual estimates, die-back, or photo monitoring shall not be used.~~ Photo monitoring may be used to supplement – not replace – the quantitative measures described above. The GDVMP~~Vegetation Monitoring Plan~~ must demonstrate knowledge of the biology of the GDE species and their physiological and morphological responses to stress. ~~shall not be considered~~

¹⁴ Manly 2008 – Manly, B., *Statistics for Environmental Science and Management* (2nd ed), CRC Press/Chapman and Hall, 292 pp.

~~an acceptable monitoring method but may be useful to aid in the presentation of monitoring results. Field techniques that rely on visual estimates shall not be used.~~ The draft Plan shall describe how the data will be recorded in the field, processed and stored.

12. Minimum Standards for Sampling Design. The sample size and sampling design shall be sufficient to achieve adequate statistical power of 90 percent or better, with a Type I error rate (false-change error rate) of 10 percent or less. ~~The minimum detectable change, or biologically significant change in vegetative measurements of drought stress, shall be established by conducting measurements in the field as described under "Field techniques" in this condition, and calibrated or adjusted for normal seasonal variation and variability between plots.~~

Following collection of the first year baseline data, statistical analysis shall be conducted to refine the power analysis and evaluate the adequacy of the sampling design. If the analysis of baseline data (at the near-project plots and reference plots) indicates that the sampling design is insufficient to achieve adequate statistical power, the design shall be modified (for example, by adding additional monitoring sites or reducing the deviation among sampling units) to attain the desired level of precision. The sampling design shall be informed by Statistics for Environmental Science and Management (Manly 2008), Chapter 6 "Impact Assessment", and from *Measuring and Monitoring Plant Populations* (Elzinga et al. 1998)¹⁵ and *Sampling Vegetation Attributes* (Coulloudon et al. 1999)¹⁶. ~~The draft Vegetation Monitoring Plan shall also describe how groundwater elevation monitoring data collected pursuant to **WATER SUPPLY 4** would be used to interpret the vegetation data.~~

13. Soil Core Sampling. Subject to approval by BLM and any other local, state, or federal permit requirements, soil core samples may be collected from the GDEs on BLM lands offsite to establish the maximum effective rooting depth of the mesquite and other co-dominant phreatophytes. The coring method must provide a continuous core that will provide visual examination of roots and root nodules, soil profile, and soil moisture.
14. Parties Responsible for Monitoring. All data collection shall be conducted or supervised by a qualified botanist (**BIO-21**). The Designated Biologist may conduct monitoring under the training and supervision of a qualified botanist. Monitoring data shall be quality-checked annually by the CPM, in consultation with BLM and Inyo County, Nevada and BLM California, and the Inyo County Water Department.

15. Access to Monitoring Data. Copies of monitoring reports and data

¹⁵ Elzinga et al 1998 – Elzinga, C.L., D.W. Salzer, and J.W. Willoughby. 1998. *Measuring and monitoring plant populations*. BLM Technical Reference 1730-1, Denver, CO. 477 pp.

¹⁶ Coulloudon 1999– Coulloudon, B., *Sampling Vegetation Attributes*. BLM Technical Reference 1734-4. National Business Center, Denver, CO. 158 pp.

shall be available to the CPM and BLM at all times. The CPM reserves the right to issue ~~an order to stop, reduce, or modify pumping-stop pumping order~~ after giving notice to the project owner if the CPM determines the monitoring data provided is incomplete or inaccurate.

16. Semi-Annual Monitoring Report. Monitoring Reports shall be submitted to the CPM, BLM, ~~and Inyo County Nevada and BLM California state leads for Soil, Water, Air and Riparian Programs, the BLM Southern Nevada District and BLM Barstow District Hydrologist and Botanist, and Inyo County Water Department~~ twice annually and shall include: names and contact information for the responsible parties and monitoring personnel; description of sampling and monitoring techniques used for each attribute; quantitative results of the vegetation and groundwater level monitoring; comparison of predicted versus actual water table declines; trends and other analyses based on the statistical tests and methods described in this condition and in **WATER SUPPLY-4**; ~~the final Vegetation Monitoring Plan~~; photos of the monitoring plots and controls; conclusions and recommendations. The first and second annual monitoring reports shall also include an appropriate statistical analysis of baseline monitoring data to assess whether the sampling design was adequate to attain sampling precision as described above, and how the study design was adjusted to ensure performance standards were met.

Verification: No less than 90 days prior to start of any project-related groundwater pumping, the project owner shall provide a draft GDVMP ~~Groundwater-dependent Vegetation Monitoring Plan~~ to the CPM for peer review, as described in this condition.

The CPM shall organize the peer review and comments shall be received no later than 45 days from receipt of the draft GDVMP. The CPM shall also consult BLM Nevada and BLM California state leads for Soil, Water, Air and Riparian Programs, and the BLM Southern Nevada District and BLM Barstow District Hydrologist and Botanist, and Inyo County Water Department. If comments are not received from the interested parties within 45 days, the CPM shall proceed and submit comments to the project owner within 60 days of receipt of the draft GDVMP.

The project owner shall revise the draft based on the recommendations of the peer review within 45 days, and submit the final GDVMP to the CPM for review and approval. The CPM shall submit the final GDVMP to the interested parties listed above.

The CPM shall submit the annual monitoring reports to the interested parties and comments must be received within 45 days of receipt of the monitoring reports.

Collection of baseline monitoring data shall begin immediately following the acceptance of the final GDVMP. The project owner may elect to begin baseline vegetation monitoring at any time following the Final Decision. ~~the first spring or fall following the Final Decision.~~

The GDVMP ~~Vegetation Monitoring Plan~~ annual monitoring reports shall be provided to the CPM, BLM Nevada and BLM California state leads for Soil, Water, Air and Riparian Programs, and the BLM Southern Nevada District and BLM Barstow District Hydrologist and Botanist, and Inyo County Water Department

no more than 90 days following the collection of the summer dry season data and every spring and fall monitoring data and every spring and fall thereafter for the life of the project.