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Bureau of Land Management

Environmental Assessment
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December 2014
Desert Sunlight Solar Farm Water Variance Request
CACA 48649

***Project Location*:** Approximately six miles north of Interstate 10, near Desert Center, in eastern Riverside County, California

***Project Proponent*:** Desert Sunlight 250, LLC and Desert Sunlight 300, LLC

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CHAPTER 1
Introduction

1.1 Introduction

The Bureau of Land Management (BLM), Palm Springs-South Coast Field Office (PSSCFO) prepared this Environmental Assessment (EA) to analyze the environmental consequences of increasing the existing groundwater authorization for the Desert Sunlight Solar Farm Project (Project) (CACA 48649) by a total of 50 acre-feet (AF) (Proposed Action) as requested by Desert Sunlight 250, LLC and Desert Sunlight 300, LLC (collectively, Proponent)[1] in a variance request submitted August 1, 2014 (Fist Solar, 2014a). The Project site is in the westernmost portion of the Chuckwalla Valley, Riverside County, California.

An EA documents the BLM's site-specific analysis of potential impacts that could result from the implementation of a proposed action or alternatives to the proposed action. It assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions. "Significance" is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of "Finding of No Significant Impact" (FONSI). If the decision maker determines that the proposed action has "significant" impacts following the analysis in the EA, then an EIS would be prepared. If not, a Decision Record may be signed for the EA approving the selected alternative, whether the Proposed Action or another alternative. A Decision Record, including a FONSI, for this EA would document the reasons why implementation of the selected alternative would not result in significant environmental impacts (effects) beyond those already evaluated in the BLM's April 15, 2011 Desert Sunlight Solar Farm Project California Desert Conservation Area (CDCA) Plan Amendment and Final Environmental Impact Statement (BLM, 2011a) (the "2011 FEIS") (76 FR 21402) and authorized in the August 2011 Record of Decision (ROD) for the Project and Amendment to the CDCA Plan (BLM, 2011b) (the "2011 ROD").[2,3]

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1 Desert Sunlight 250, LLC and Desert Sunlight 300, LLC collectively hold the right-of-way grant for the Project. The Construction contractor for the Project, First Solar Electric (California), Inc. (First Solar), has filed the variance request and other materials for the Proposed Action on behalf of these entities.

2 The 2011 ROD also described and analyzed impacts of Southern California Edison's Red Bluff substation, including a separate allocation of water for that facility, which is not affected by the Proposed Action or this EA.

3 The 2011 FEIS and 2011 ROD are publicly available on the BLM's website for the Project [http://www.blm.gov/ca/st/en/fo/palmsprings/Solar_Projects/Desert_Sunlight.html] and upon request by contacting the BLM at the address, phone number, or fax number shown on the cover of this EA.

1.2 Background

The BLM approved the Project in August 2011 as a 550-megawatt photovoltaic solar energy facility (BLM, 2011b). The BLM authorized the use of up to 1,400 AF of groundwater during the 26-month construction period, and 6 AF (total) at 0.2 acre-feet per year (AFY) (annual average) for the 30-year operation and maintenance period (BLM, 2011a). In addition, the Project was authorized 360 AF for the Red Bluff Substation and 7 AF for the Gen-Tie Line. The BLM authorized use of up to an additional 100 AF of groundwater on April 4, 2014 for a total solar plant site construction allowance of up to 1,500 AF (BLM, 2014). Construction began on August 15, 2011 and, as of the date of the variance request, remains in progress in some areas of the site and has been completed in other areas. Construction is anticipated to be completed by the end of 2014.

Groundwater pumped from two onsite production wells (Well 1 and Well 2) has supplied the Project's water needs during construction. Only Well 1 will be used to meet Project needs during the 30-year operation and maintenance period. Well 1 was constructed in October 2011 and has supplied water for construction since October 27, 2011. It has been operated at pumping rates generally ranging from approximately 400 to 600 gallons per minute (gpm), Monday through Friday, with hours of operation varying depending on construction needs. The location of Well 1 is shown in Figure 1, Proposed Action (Appendix A). Well 2 was constructed in March 2013 and used for construction purposes between April 1, 2013 and July 20, 2014. Well 2 is being destroyed.

The Proposed Action is being evaluated as a Level 2 variance. As described in Section 5 of the Environmental and Construction Compliance Monitoring Plan (ECCMP) for the Project provided in Appendix 5 of the 2011 ROD (BLM, 2011b), Level 2 variance requests generally involve project changes that would that exceed the scope of the prior approval but are within the area previously surveyed for cultural resources, sensitive species, and biological resources, such as the use of extra workspace outside the previously approved work area but within previously surveyed areas. Level 2 variances do not require an amendment to the right-of-way (ROW) grant. If the Level 2 variance request is approved, the Construction Manager (CM) will sign the variance request and e-mail the approved form (scanned copy) to the Proponent's representatives, the BLM, and others as specified in the 2011 ROD, and the variance could be implemented in the field as soon as the approved variance is received. The approved Variance Request Form would be posted on the Project website.

If the Proposed Action is not granted, then groundwater use for the duration of construction would be limited to 1,500 AF and, for operation and maintenance, would be limited to a total of 6 AF. Existing approvals would not be affected by a denial of the variance request.

1.3 BLM's Purpose and Need for Proposed Action

The BLM's underlying need is to respond to the Proponent's Project-specific, site-specific request for authorization to pump an additional 50 AF of groundwater over the life of the Project in a manner consistent with the terms and conditions of ROW grant CACA 48649 and other existing approvals.

The BLM is considering approval of the request to increase the existing groundwater authorization as part of the administration of the ROW grant, as outlined in the ECCMP adopted in the 2011 ROD. The BLM will consider approval of the proposed increase in the authorized amount of groundwater extraction in a manner that avoids or reduces potential impacts on groundwater resources and other resources and activities as identified in the CDCA Plan and 2011 FEIS, best meets the BLM's multiple use obligations, is consistent with the ROW authorization granted to the Proponent, and prevents unnecessary or undue degradation of the public lands.

1.4 Applicant's Objectives

The Proponent's purpose in seeking the 50 AF increase in groundwater authorization is twofold: (1) to provide a sufficient buffer in the event of unanticipated construction water needs; and (2) to support site remediation required to respond to damage to onsite water retention and other facilities caused by future storm events (First Solar 2014a). In 2012 and 2013, the Project experienced significant rain events that resulted in excessive surface flows, and thereby necessitated remediation efforts to restore water retention basins on the Project site. These remediation efforts required additional water use (e.g., dust suppression associated with ground-disturbing activities), thereby negatively impacting the Project's authorized water budget. Major storm events cannot be anticipated and multiple such events within such a short time-frame generally are not expected; however, to be prepared to respond in the event of such an occurrence, 50 AF of additional water is requested over the life of the Project.

1.5 Conformance with the California Desert Conservation Area Plan of 1980, as Amended

Section 7.1 of the 2011 ROD approved the Proposed Plan Amendment to the CDCA Plan of 1980, as amended, to identify the Project site as available for solar energy development and to approve a Plan Amendment to the CDCA Plan to make the remainder of the Project Study Area unavailable for solar energy development. Section 3.3.1 of the 2011 ROD (p. 32 et seq.) also described Project conformance with the CDCA Plan of 1980, as amended, and determined that "the CDCA Plan Amendment and the overall amendment process are consistent with the CDCA Plan."

The Proposed Action and alternatives described below conform to the decisions made in Section 7.1 of the 2011 ROD and do not conflict with other decisions within the CDCA Plan. For example, CDCA Plan Table 1 identifies Multiple-Use Class (MUC) Guidelines for water quality. The Project site primarily is classified as MUC M (Moderate Use) with some land classified as MUC L (Limited Use). Areas in MUC Class M "will be managed to minimize degradation of water resources." Areas in MUC Class L "will be managed to provide for the protection and enhancement of surface and groundwater resources, except for instances of short-term degradation caused by water development projects." Therefore, for the reasons provided in this EA and the 2011 ROD, the Proposed Action and alternatives are in conformance with the CDCA Plan of 1980, as amended. The Proposed Action also is consistent with the 2011 ROD decisions and objectives as they relate to the management of the environmental resources including, but not limited to: air quality, cultural resources, recreation, soils, specially-designated areas, vegetation, and wildlife.

1.6 Relationship to Statutes, Regulations, and Other Plans

Because pumping the requested additional groundwater from one or both of the existing wells would require no new construction or modification of existing infrastructure that could introduce contaminants to the well and because the additional water would not be used for domestic purposes, the Proposed Action is consistent with federal laws governing groundwater,[4] including the following and their implementing regulations:

1. Safe Drinking Water Act (42 U.S.C. §300f et seq.), which regulates waters actually or potentially designed for drinking use;[5]

2. Resource Conservation and Recovery Act (RCRA) (42 U.S.C. §6901 et seq.), which governs generation, transportation, treatment, storage, and disposal of hazardous waste, including groundwater protection and cleanup;[6]

3. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. §9601 et seq.), more commonly known as Superfund, which governs the cleanup of abandoned or uncontrolled hazardous waste sites in the U.S;[7] and

4. Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) (7 U.S.C. §136 et seq.), which governs pesticide distribution, sale, and use and requires a showing prior to registration that use of a pesticide according to specifications will not generally cause unreasonable adverse effects on the environment, including groundwater resources.[8]

The BLM recognizes (by law and in keeping with the trust responsibility of the United States to Indian tribes) that Colorado River Indian Tribes (CRIT) have senior water rights to 717,000 acre feet from the Colorado River.[9] However, the Proposed Action would not adversely affect the Tribes' existing rights to Colorado River water because, as discussed on page 68 of the 2011 ROD, the Project would not interfere with or impact flows of the Colorado River. Accordingly, the Proposed Action would be consistent with the BLM's Native American Trust Resource policies.

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4 The Federal Water Pollution Control Act (Clean Water Act) (33 U.S.C. 1251 et seq.), as amended, regulates the discharge of pollutants to waters of the U.S., arguably including hydrologically connected groundwater; however, because the Project site does not contain "waters of the U.S." as defined in the Clean Water Act, compliance with the Act is outside the scope of this EA. See 2011 ROD, p. 1-17 (Proponent "obtained written concurrence from USACE on December 28, 2010, that the Project footprint contains no waters of the US subject to USACE/EPA jurisdiction under Section 404 of the CWA"); see also, 2011 ROD, pp. 4.17-8, 4.17-27.

5 USEPA, 2014. Summary of the Safe Drinking Water Act. Updated February 19, 2014. [http://www2.epa.gov/laws-regulations/summary-safe-drinking-water-act]. Accessed July 25, 2014.

6 See, e.g., USEPA, 2004. Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action. EPA530-R-04-030. April 2004. [http://www.epa.gov/osw/hazard/correctiveaction/resources/guidance/pdfs/gwhb041404.pdf]

7 USEPA, 2014. Summary of the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund). Updated July 8, 2014. [http://www2.epa.gov/laws-regulations/summary-comprehensive-environmental-response-compensation-and-liability-act]. Accessed July 25, 2014.

8 USEPA, 2014. Summary of the Federal Insecticide, Fungicide, and Rodenticide Act. Updated July 8, 2014. [http://www2.epa.gov/laws-regulations/summary-federal-insecticide-fungicide-and-rodenticide-act]. Accessed July 25, 2014.

9 Inter Tribal Council of Arizona, Inc., 2014. Colorado River Indian Tribes. [http://itcaonline.com/?page_id=1152] Accessed July 25, 2014.

BLM approval of the variance request would be needed to authorize the proposed increase in the existing groundwater use authorization by BLM. No other federal, state, or local approvals or permits would be required for because no such other entities have jurisdiction over the Proposed Action.

This EA tiers to the 2011 FEIS, which analyzed impacts of the Project as a whole, as it was amended in the 2011 ROD and the BLM's subsequent approval increasing the total amount of groundwater authorized for use during Project construction. Relying on these analyses and authorities, this EA is tailored narrowly to focus solely on issues relating to the environmental consequences of the Proposed Action.

1.7 Identification of Issues

The BLM solicited internal and external input on the issues, impacts, cumulative actions, and potential alternatives to be addressed in this EA, including review of the proposal by BLM resource specialists and the BLM's environmental consultant as well as via a public scoping process. The BLM provided public notification of scoping by direct mail to a distribution list of more than 200 recipients (including Tribes, agencies, organizations, nearby property owners, and other individuals) and by posting notice on the BLM's webpage for the Project. A 30-day public scoping period opened on Monday, August 25, 2014, and closed on Wednesday, September 24, 2014. In addition, a public scoping meeting was held Tuesday, September 9, 2014 in Palm Desert, CA. See Chapter 4, *Consultation and Coordination*, for additional information. Based on these internal and external scoping efforts, issues brought forward for more detailed analysis are identified below.

- Potential drawdown in groundwater wells monitored for the Project;
- Potential alternatives to the Proposed Action, including purchasing water and trucking it in from an off-site source; and
- Potential cumulative effects of groundwater withdrawal.

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CHAPTER 2
Proposed Action and Alternatives

2.1 Introduction

This chapter describes the Proponent's proposal to pump an additional 50 acre-feet (AF) of groundwater from the Chuckwalla Basin for the Project for both construction and maintenance purposes. The Project currently is under construction on BLM-administered public land in the westernmost portion of the Chuckwalla Valley, Riverside County, California. This chapter also describes a No Action alternative as required by NEPA.

Other potential action alternatives were identified during BLM's internal scoping and the 30-day public scoping period (August 25, 2014 through September 24, 2014), including trucking water in from a different, off-site source (e.g., Lake Tamarisk) and implementing conservation and demand management measures (such as not watering the existing vegetative screen). The BLM and consultant team evaluated each of these potential action alternatives to determine if they were reasonable, based on the criteria set forth in Section 6.6.3 of the BLM NEPA Handbook. Based on the evaluation, each of these alternatives was eliminated from further consideration. See Section 2.4 for further discussion of the potential alternatives and why they were eliminated from further analysis.

2.2 Alternative A – Proposed Action

As noted in Section 1.2, Background, the BLM authorized the use of up to 1,400 AF of groundwater for the Project during the estimated 26-month construction period and 6 AF (total) and 0.2 acre-feet per year (AFY) (annual average) for the 30-year operation and maintenance period (BLM, 2011b). In addition, the Project was authorized 360 AF for the Red Bluff Substation and 7 AF for the Gen-Tie Line. The BLM authorized use of up to an additional 100 AF of groundwater on April 4, 2014 for a total solar plant site construction allowance of up to 1,500 AF (BLM, 2014). Construction of the project began on August 15, 2011 (West Yost 2014) and remains in progress in some areas of the site. Construction has been completed, and the Project placed into service, in other areas of the site.

The Proposed Action is to authorize the pumping of an additional 50 AF of ground water via Project Well 1 from the Chuckwalla Basin to support the remaining construction period (estimated to continue through December 2014) and/or the operation and maintenance of the Project. The location of Well 1 is shown on Figure 1, Proposed Action (Appendix A). There are 325,851 gallons in 1 AF, and therefore 16,292,550 gallons in 50 AF. On average, an acre-foot supplies five to seven people in Southern California for one year (MWD, 2014a).

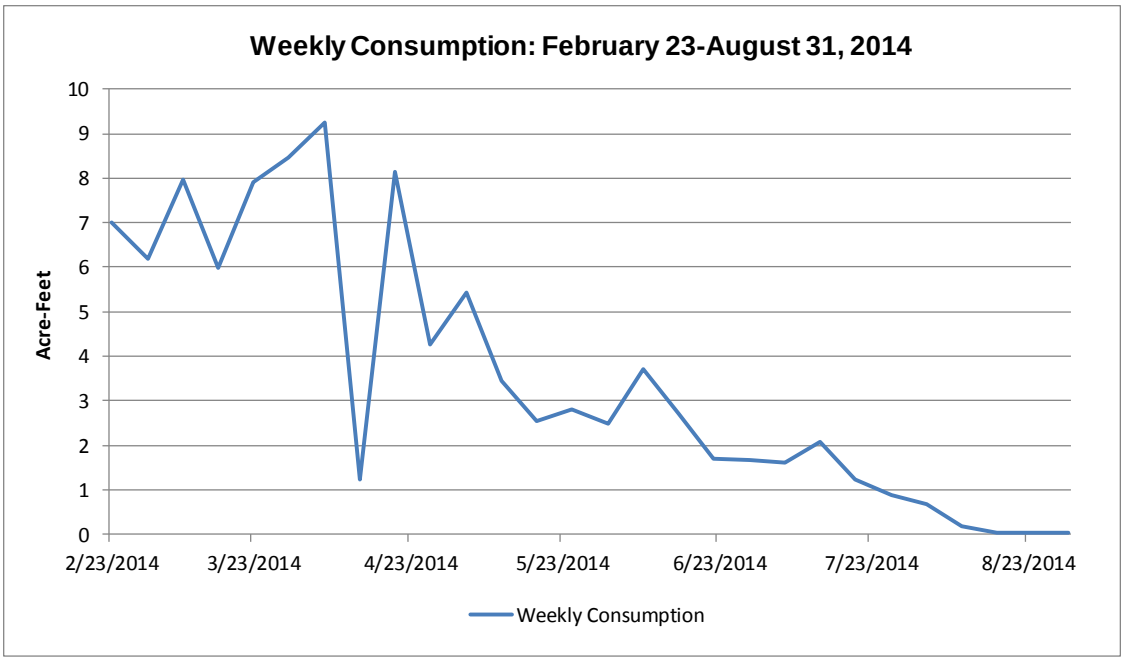
No new wells or additional well infrastructure would be required to extract the requested 50 AF of groundwater. The days and hours of operation and the range of existing pumping rates for Well 1 are expected to be substantially the same for the remainder of construction (see Section 1.2). No additional workforce beyond that analyzed in the 2011 FEIS would be needed.[1] All of the mitigation measures that were adopted in the 2011 ROD, including monitoring and corrective action requirements, would remain in place.[2]

Existing conservation and water demand management activities would continue to be implemented, unchanged by the pending variance application, while continuing to maintain the Project's mitigation requirements that require water use such as dust suppression. Measures that have been instituted to decrease water consumption since the Spring of 2014 include road closures, reduced water truck use, and worker education (First Solar 2014b). For example, road closures and traffic restrictions have been implemented on more than 50 percent of the Project site. See Figure 2, Road Closures (Appendix A). Palliatives were applied to stabilize these areas prior to closure. Treatment and closure of portions of the site avoids or substantially reduces the need to apply water in these areas to manage dust. Water truck use has been reduced. On-site water trucks were decreased from a total of seven in May 2014 to three in June 2014. Each truck holds approximately 4,000 gallons and generally fills up four times a day. (Infrequently, but as dictated by site needs, water trucks may be filled up to five times in a single day.) Worker education also has reduced water use. For example, water truck drivers have been educated about water conservation considerations so that roads are watered only when dry, and not watered in strict accordance with a schedule if watering is not required by actual conditions.

In response to these and other conservation and water demand management efforts, groundwater use decreased at the Project site between the week of February 23, 2014 and the week of August 31, 2014 as shown in the inset Figure, *Weekly Groundwater Consumption: February 23-August 31, 2014*. The inset Figure shows water consumption (measured in weeks along the X axis and in AF along the Y axis) at the Project site in the weeks leading up to the Proponent's identification of a need for additional water, the weeks during which conservation and water demand management efforts were implemented to reduce water consumption (and thereby any additional demand), and weekly use at the time the variance application for the Proposed Action was filed. This Figure was generated based on groundwater consumption data provided by the Proponent on September 2, 2014 (Appendix B). To further reduce groundwater water use on the Project site, the Proponent is continuing to evaluate the water forecast that was provided as Attachment A to its August 1, 2014 Variance Request Form (First Solar, 2014a) (and which is provided as Appendix C to this EA) and is working to decommission the north wheel wash, which uses 75-100 gallons per vehicle and in its place to institute wash tickets and visual inspections for the operation and maintenance period (First Solar 2014b).

1 The 2011 FEIS projected an average construction workforce of approximately 350 to 400 craft workers over the 26-month Solar Farm construction period, with a peak on-site craft workforce of approximately 500 craft workers during Months 5 through 16 of the construction period. In addition to craft workers, an average of 40 management and non-craft employees were expected on site. However, as of October 2014, the Proponent's construction workforce consists of fewer than 150 workers and this number is expected to decrease further as construction activities are completed. The operation and maintenance workforce is estimated at 10 to 15 full-time workers.

2 See, e.g., BLM 2011b Appendix 2, MM-WAT-2 (Construction Water Use) and MM-WAT-3 (Groundwater Level Monitoring, Mitigation, and Reporting).



2.3 Alternative B – No Action

Under the No Action Alternative, the BLM would not approve the variance request for an additional 50 AF of groundwater. The existing authorization of up to 1,500 AF of groundwater during the remainder of the construction period and 6 AF (total) and 0.2 AFY (annual average) for the 30-year operation and maintenance period would remain valid (BLM, 2014; BLM 2011b). Ongoing groundwater monitoring and conservation and water demand management activities would continue to be implemented. The Project would continue to be constructed and thereafter operated and maintained in accordance with the terms of the 2011 ROD (BLM, 2011b) and other approvals.

The Project was constructed to withstand a 100-year storm event, which means that it was designed and constructed to withstand a flood event that statistically would have a 1 percent chance of occurring in any given year. See, e.g., 2011 Final Environmental Impact Statement (2011 FEIS) (BLM, 2011a) pages ES-45, ES-46, 3.17-11, 4.17-1, 4.17-6 et seq. See also, Mitigation Measure WAT-6 (BLM 2011a, p. 4.17-28), which states that a comprehensive operation-period storm water and flood drainage and water quality control plan:

> shall evaluate potential for the Project to exceed storm water discharges during 10-year and 100-year storm events, and shall ensure that the volume of discharge emanating from the Project site during these events is limited to an increase of no more than one percent, in comparison to existing conditions. To meet this condition, storm water shall be retained in on-site storm water retention ponds, infiltration basins, or other storm water control facilities. Channel design for flood control along the Project perimeter shall be sized and designed to minimize scour and disruption to upstream and downstream hydrology, including measures to prevent headcutting, migration of channels, erosion, and downstream sedimentation, under conditions equivalent to a 100-year flood…..

The BLM is aware that substantial storm events have occurred in the area in recent years. See, for example, the National Weather Service's United States Flood Loss Reports for Water Years 2011,[3] 2012[4] and 2013.[5] 100-year flood events cannot be predicted, and consecutive 100 year storms are not anticipated. Nonetheless, if the Proposed Action is denied and one or more substantial storm events occurs during the remaining life of the Project, no more than the existing approved amount could be pumped for general construction and maintenance needs or to address any civil or structural remediation efforts needed to respond to rain events should such a response become necessary.

2.4 Alternatives Considered but Eliminated from Further Analysis

Section 6.6.3 of the BLM NEPA Handbook provides that an action alternative may be eliminated from detailed analysis if:

1. It is ineffective (it would not respond to the BLM's purpose and need)
2. It is technically or economically infeasible
3. It is inconsistent with the basic policy objectives for the management of the area (such as, not in conformance with the applicable land use plan
4. Its implementation is remote or speculative
5. It is substantially similar in design to an alternative that is analyzed
6. It would have substantially similar effects to an alternative that is analyzed

Potential alternatives to the proposed pumping of an additional 50 AF of groundwater from an existing on-site well were identified during the internal BLM scoping process and pubic scoping process (Appendix B), including trucking water in from a different, off-site source (i.e., Lake

[3] National Oceanic Administration (NOAA), 2011. United States Flood Loss Report - Water Year 2011 [http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB4QFjAA&url=http%3A%2F%2Fwww.nws.noaa.gov%2Fhic%2Fsummaries%2FWY2011.pdf&ei=KNUpVO_lC8e1ogTU2oKIBQ&usg=AFQjCNENzw8crH3lr5ercLbQa_1Q5QWOnw&sig2=yiV_ALlI7tq_Jux38OO4Vw] Accessed September 29, 2014. This report states (p. 7), "A series of storms fueled by a tropical moisture tap pounded Southern California, the Mojave Desert and the Great Basin during the last 10 days of 2010. Extremely heavy snow and widespread flooding caused numerous vehicle accidents, swift water rescues, beach closures and extensive damage to property and infrastructure. President Obama proclaimed a Federal disaster declaration for 10 counties in California. All told, the Southern California and Desert Southwest floods of December 2010 killed two (both in Southern California), and caused approximate $207 million in direct damages."

[4] NOAA, 2012. United States Flood Loss Report - Water Year 2012 [http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB4QFjAA&url=http%3A%2F%2Fwww.nws.noaa.gov%2Fhic%2Fsummaries%2FWY2012.pdf&ei=47kpVM2SMI-wogSGg4KIAg&usg=AFQjCNHHxczvbYSUXZUUC7nbJNhi6dgQ5A&sig2=Jfb6lG1MZpxgzyLxfPMnMw] Accessed September 29, 2014. This report states (p. 1), "The Southwestern U.S. monsoon season produced flash flooding across Arizona, Colorado and Utah during late July and early August and again in September across California, Nevada and Utah. In total, the floods associated with the monsoon season caused $73 million in damages and seven fatalities." Further (p. 4), "The impact of this heavy rainfall over such a short period of time is far worse over the Southwest, where desert soils are unable to absorb torrential rainfall."

[5] NOAA, 2013. United States Flood Loss Report - Water Year 2013 [http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0CCUQFjAB&url=http%3A%2F%2Fwww.nws.noaa.gov%2Fhic%2Fsummaries%2FWY2013.pdf&ei=47kpVM2SMI-wogSGg4KIAg&usg=AFQjCNGojExWH2R1w5GCJTPiTfjNgo02bw&sig2=waeDqSYYrw_i1mt3PoTgug] Accessed September 29, 2014.

Tamarisk) and the Project's implementation of conservation and demand management efforts. The same potential alternatives had been identified during BLM's internal scoping process. The EA Preparers (identified in Section 4.4 of this EA) evaluated these potential alternatives using the screening criteria identified in BLM NEPA Handbook Section 6.6.3, and eliminated each of them from further analysis for the reasons explained below.

2.4.1 Truck in Water from Lake Tamarisk

Scoping Comment Letter C1 suggests that water could be trucked in from Lake Tamarisk as an alternative to the proposal to pump an additional 50 AF from the on-site well (see Exhibit E to Appendix B, *Scoping Report*). The potential access location at Lake Tamarisk is located approximately 5.2 miles from the North Entrance of the Project site (First Solar, 2014c). However, like the Project's existing on-site well, Lake Tamarisk water is pumped from the Chuckwalla Valley Groundwater Basin (see Figure 3 in Appendix A). Accordingly, trucking water in from Lake Tamarisk would have the same effects to groundwater resources as the Proposed Action. In addition to resulting in the same groundwater impacts as the Proposed Action, transporting 50 AF of water from Lake Tamarisk would result in more than 8,100 one-way, 5.2 mile trips for a total of more than 42,000 truck miles traveled (assuming the use of water trucks that have a 4,000 gallon capacity). Associated traffic impacts and related fuel use, vehicle noise, and combustion-related air emissions also would result that would not be caused by the Proposed Action. For these reasons, the BLM eliminated this potential alternative from further consideration. This conclusion is consistent with the one reached in Scoping Comment Letter C1, which concedes that trucking water in from Lake Tamarisk would not be a "preferred alternative, due to the extra water trucks, fuel, pollution, and the disturbance to Lake Tamarisk residents."

2.4.2 Truck in Water from a Different Source

Scoping Comment Letter C1 (included in Appendix B to this EA) suggests that the Proponent could truck water in from a different off-site source rather than pump an additional 50 AF of groundwater from the existing on-site well. The maximum reasonable travel distance to truck water in would be approximately 50 miles. To the west, this could include potential sources located in Indio, California, and, to the east, could include potential sources located in Blythe, California. Because Metropolitan Water District of Southern California (MWD) has participated in the BLM's NEPA review process for several utility-scale solar projects, including for the Project, the BLM also considered whether potential MWD-related sources could provide an alternative to the Proposed Action. See Letter 129 in Appendix M of the 2011 FEIS (p. M-614 et seq.).

2.4.2.1 Coachella Valley Water District

The Coachella Valley Water District (CVWD) delivers irrigation and domestic water and provides other water-related services within an approximately 1,000 square mile area from the San Gorgonio Pass to the Salton Sea, including the communities of Indio and Coachella, each of which is located approximately 55 miles west of the Project site (CVWD 2014a, 2014b). The CVWD's water comes from three sources: the Coachella Valley Groundwater Basin, which is in overdraft; recycled water, which is provided primarily to golf courses and other landscape

irrigation customers; and water imported via the State Water Project or the Colorado River (CVWD 2014c, 2014d). In January 2014, the California Department of Water Resources (CDWR) responded to Governor Brown's declaration of a drought State of Emergency by reducing State Water Project allocations to zero (Brown, 2014; CDWR, 2014).

The BLM eliminated this potential alternative from further consideration because it not only would cause worse groundwater impacts than the Proposed Action to the extent that Project water would be sourced in a way that exacerbated existing overdraft conditions, but also would result in more than 8,100 one-way, 55 mile trips for a total of more than 445,500 truck miles traveled (assuming the use of water trucks that have a 4,000 gallon capacity), consume related fuel, and cause associated vehicle noise and combustion-related air emissions that would not be caused by the Proposed Action. Relying on CVWD to provide water for the Proposed Action also is considered speculative in light of the uncertainty of State Water Project deliveries, intensifying demands on Colorado River water from priority rights holders, and the fact that successful conservation efforts that result in decreased water use may cause a concomitant reduction in the volume of recycled water available.

2.4.2.2 City of Blythe

The City of Blythe is a municipal water retailer whose service area is bounded by the city limits (City of Blythe, 2011). The City uses groundwater to meet all projected demands. Recharge occurs via the irrigation of farm land with water from the Colorado River and via the Colorado River itself, and so "the City is not affected by climatic related supply shortages" (City of Blythe, 2011). Industrial usage accounts for approximately 0.15 percent of the City's total annual usage; by comparison, residential use accounts for approximately 75 percent of the total water. The City delivered a total of approximately 1,037.7 million gallons (approximately 3,185 AF) in 2010 and is calculated to deliver approximately 1,400 million gallons (4,292 AF) in 2030. The City of Blythe is located approximately 53 miles to the east of the Project site.

The BLM eliminated this potential alternative from further consideration because the Project site is not within the City of Blythe, and so is outside this provider's service area. Accordingly, its implementation is remote or speculative and would be inconsistent with this municipal water retailer's basic objectives for providing water service.

2.4.2.3 Palo Verde Irrigation District

The Palo Verde Irrigation District (PVID) service area includes approximately 189 square miles in Riverside and Imperial Counties, California. It supplies Colorado River water (via PVID canals) and groundwater to its customers (PVID, 2012a). PVID has an agricultural focus: its prime functions are "to divert and distribute irrigation water from the Colorado River to… farmland, and to provide agricultural drainage for said land" (PVID, 2012b). The average diversion per net cropped acre generally between 1993 and 2002 was approximately 10.28 AF with the return flow being equal to about 5.21 AF per net cropped acre, resulting in a diversion-less-return figure of about 5.08 AF per net cropped acre.

The BLM eliminated this potential alternative from further consideration because the Proposed Action is not an agricultural pursuit, and so would be inconsistent with PVID's basic objectives for providing water service.

2.4.2.4 The Metropolitan Water District of Southern California

MWD is the state's largest water supplier (WMWD, 2014). It provides supplemental water supplies to 26 cities and water agencies within a 5,200-square-mile service area that includes Riverside and five other counties (MWD 2014a, 2014b). Metropolitan's water comes from the Colorado River (via the MWD-owned Colorado River Aqueduct), Northern California (imported via the State Water Project), and from local programs and transfer arrangements (MWD, 2014a).

Pursuant to Section 131(b) of the Metropolitan Water District Act (California Water Code Uncodified Act 570), MWD or one of its member agencies may enter into a contract for up to 50 years with any private corporation and thereafter "provide, sell, and deliver water and water service… for use in connection with, or ancillary to, the generation of electric power at plants" that generate power used within the district. Recognizing drought-related limitations on existing water supplies (AP, 2014), MWD, Eastern MWD, or another MWD member agency may be willing to consider a water sale agreement to furnish water for the Proposed Action.

The MWD water agency closest to the Project site is Eastern MWD (MWD 2011): the eastern edge of Eastern MWD's service area boundary is approximately 120 miles west of the Project site. The BLM eliminated this potential alternative from further consideration for multiple reasons, any one of which alone would be sufficient not to carry the potential alternative forward for more detailed consideration. As noted above, State Water Project deliveries can be uncertain and MWD itself characterizes Colorado River water as a "scarce" resource (see Letter 129 in Appendix M of the 2011 FEIS, p. M-625). As alternatives to the use of Colorado River water within MWD's water supply portfolio become less reliable, the agency's willingness to commit water resources to the Proposed Action seems increasingly remote. Regardless of MWD and its member agencies' willingness to enter into a contract to provide water for the Proposed Action, the closest MWD water agency to the Project site is more than twice the reasonable travel distance away from the site and so the implementation of this potential alternative would be remote or speculative.

Further, a potential MWD alternative to the Proposed Action would result in transportation-related and secondary impacts that would not be caused by the Proposed Action: More than 8,100 one-way, 120 mile trips for a total of more than 972,000 truck miles traveled (assuming the use of water trucks that have a 4,000 gallon capacity) would consume related fuel and cause associated vehicle noise and combustion-related air emissions would be required for this potential alternative. For example, a 4,000 gallon capacity 2010 model year water truck manufactured by International weighs approximately 52,000 lb (gross vehicle weight) (Sandhills Publishing Company, 2014). At this weight, the fuel efficiency of the vehicle would be approximately 8.6 miles per gallon on flat terrain (Oak Ridge National Laboratory, 2014), thereby requiring more than 113,023 gallons of diesel fuel to transport 50 AF of water. The potential impacts of diesel particulate matter (DPM) emissions from construction or demolition activities and equipment are analyzed in Section 4.2 of the 2011 FEIS (p. 4.2-1 et seq.). See, for example, 2011

FEIS page 4.2-6, which discloses that DPM emissions "contain known and suspected carcinogens, and consequently have been designated as a toxic air contaminant by CARB."

2.4.3 Conservation and Demand Management

The Proponent has undertaken a comprehensive program to conserve water required for construction including by modifying water consumption and by restricting construction-related access to portions of the Project that are in operation, all while maintaining design and mitigation requirements associated with water use. Currently, more than half of the Project's roadways are closed to traffic beyond emergency personnel and limited operations and maintenance access. See Figure 2, Road Closures (Appendix A). Road closures and other efforts have reduced the Project's water demand for dust management as described in Section 2.2 and shown in the inset Figure, above. There is no evidence that additional conservation or demand management measures could avoid or substantially reduce the volume of water requested in the Proposed Action while continuing to maintain important design and mitigation obligations such as dust suppression.

Scoping Comment Letter C1 (included in Appendix B to this EA) suggests that the Proponent identify how much water has been used for this purpose, for the Project generally, and for planting associated with a vegetative screen within the ROW grant area near the commenters' property to-date, and that the BLM extrapolate how much additional water would be required for the duration of the Project. General Project water needs (both as to past and anticipated future) is addressed in this EA. As to the commenters' concern regarding the vegetative screen, although not stated in Letter C1, the BLM understands Letter C1 to suggest that the cessation of current activities that consume require consume water would free up that water for an additional use and could be used to meet other Project-associated water needs. However, the planting of vegetation screening was agreed to as part of the resolution of the protest filed by Citizens for the Chuckwalla Valley/Larry and Donna Charpied regarding the Project's Proposed Plan Amendment.[6] See Section 5.3 of the 2011 ROD (BLM, 2011b) for a summary of the protest resolution process. The BLM accepted this and other terms of protest resolution as part of the amended plan of development, and incorporated them into and administers them as part of the ROW grant in accordance with 43 CFR 2805.12(i)(5), 2807.16, and 2807.17. As stated in Section 5.3 of the 2011 ROD, "The agreed upon conditions are not subject to amendment without the agreement of the applicant and the organizations and only if approved by the BLM in accordance with 43 CFR 2807.20." The relevant parties have not initiated the necessary procedures to amend the POD and existing ROW grant to allow the planting of screening vegetation screening efforts to be discontinued.

6 Section 2.5 of the Protest Resolution Agreement states: "Planting of Native Vegetation Screening. Sunlight shall plant native vegetation within the Project Area along its boundary with the Charpieds' Jojoba Farm to screen the Project from the Jojoba Farm. Native plants from the area shall be utilized in consultation with the Charpieds." See Section 5.3 of the 2011 ROD (BLM, 2011b) for a summary of the protest resolution process.

CHAPTER 3
Environmental Analysis

3.1 Introduction

This chapter tiers from and updates the 2011 FEIS for the Project (BLM, 2011a) as revised in the 2011 ROD (BLM, 2011b) regarding the analysis of potential impacts to water resources. It describes the existing environment and analyzes the direct, indirect, and cumulative effects of the Proposed Action and No Action Alternative. For the Proposed Action, the analysis evaluates the environmental consequences of increasing the existing groundwater authorization for the Project by a total of 50 acre feet (AF), as described in Chapter 2. No new wells or additional well infrastructure would be required to extract the requested 50 AF of groundwater and no new facilities are proposed. The additional water would be withdrawn from the Chuckwalla Valley Groundwater Basin to support the remaining construction period or the operation and maintenance of the Project. Potential impacts of the Proposed Action are assessed within the context of the Project's compliance with mitigation measure MM-WAT-3, which was adopted in the 2011 ROD (BLM, 2011b) and requires the Proponent to monitor groundwater levels and implement corrective actions linked to established significance thresholds where indicated by the monitoring results. For the No Action Alternative, the analysis evaluates the consequences that may result if the variance request is denied.

3.2 Affected Environment

This description of the affected environment summarizes and tiers to Section 3.17 of the 2011 FEIS (p. 3.17-1 et seq.) and updates the data and information provided there to reflect new data that has been developed and changes that have occurred since publication of the 2011 FEIS. Section 3.17.2 of the 2011 FEIS (p. 3.17-7 et seq.) describes water resource-related conditions of the Project site, including its location in the Chuckwalla Valley in eastern Riverside County, California and the topography, climate and temperature, rainfall patterns, surface water resources and hydrology, surface and groundwater quality, and groundwater basin conditions in the area.

Specifically regarding groundwater resources, the 2011 FEIS (p. 3.17-12 et seq.) explains that the Project site is located within the western portion of the Chuckwalla Valley Groundwater Basin. Groundwater flow is from northwest to southeast in the western portion of the basin where the Project site is located. Groundwater budgets previously developed for the Chuckwalla Valley Groundwater Basin (Table 4.17-1 of the 2011 FEIS, p. 4.17-4) estimated that there is currently net inflow into the basin. The Chuckwalla Valley Groundwater Basin is recharged by precipitation infiltration, underflow from the Orocopia Valley Groundwater Basin to the west, underflow from the Pinto Valley Groundwater Basin to the northwest, and return flows from

users within the basin (2011 FEIS, p. 3.17-12; Godfrey et al., 2012). Desert washes within the Project site terminate in localized groundwater sinks (2011 FEIS, p. 3.17-8). Groundwater pumping has been identified as the greatest source of outflow from the basin (2011 FEIS, p. 3.17-14). Substantial outflow also occurs from this basin to the Palo Verde Mesa Groundwater Basin as underflow as well as through evapotranspiration at Palen Dry Lake (2011 FEIS Table 4.17-1, p. 4.17-4).

Accurately characterizing local groundwater conditions in desert basins of southern California can be challenging. Recent studies have suggested that basin recharge in the Chuckwalla Valley Groundwater Basin may be overestimated (Godfrey et al., 2012) as compared to the estimates of recharge presented in the FEIS (BLM, 2011a). Analysis by the National Park Service (NPS) suggests that adjustments in the calculated underflow from the Pinto and Orocopia Basins should be made when considering basin water budgets. Using published estimates for the Chuckwalla Valley Basin and using the Pinto and Orocopia Basin estimates suggested by the NPS, Godfrey et al. (2012) suggest recharge estimates to the Chuckwalla Basin in the range of 3,013 to 8,031 AFY. Further, isotopic data recently published as part of the USGS California Groundwater Ambient Monitoring and Assessment (GAMA) program (Mathany et al., 2012) suggests that the groundwater in the Chuckwalla Basin and surrounding area basins is relatively old. Tritium age-dating results from the GAMA study for the Chuckwalla Basin indicate very little modern-day recharge is occurring in the Chuckwalla Basin, suggesting that very little recharge is getting into the basin on a "human" time scale and that water currently being produced for beneficial use is largely coming from storage (Godfrey et al., 2012).

Acknowledging that experts may disagree about whether recharge is occurring in the Chuckwalla Valley Groundwater Basin and, if so, at what rate, the groundwater model used to analyze potential impacts of the Project in the 2011 FEIS and of the Proposed Action in this EA conservatively assume that no recharge occurs.

3.3 Direct and Indirect Effects

Section 4.17.1 of the 2011 FEIS (Methodology for Analysis, p. 4.17-1 et seq.) describes the assessment methodology relied upon to analyze the 2011 Approved Project's direct and indirect effects to groundwater resources. The analysis in the 2011 FEIS was based on groundwater flow modeling that evaluated impacts to the Chuckwalla Valley Groundwater Basin from the Project's use of basin groundwater for construction and operations and maintenance. The model bracketed the range of aquifer conditions expected to occur at the Project well locations. The groundwater modeling assumptions and results obtained from that effort were used to analyze the Proposed Action and No Action Alternative. Section 4.17.3 of the 2011 FEIS (p. 4.17-3 et seq.) provides a summary of the various model simulations, the variation in input parameters for the model runs, estimated drawdown at the pumping well under different scenarios, and the results of the groundwater modeling relating to groundwater levels and storage in the basin. Details relating to the model methodology and assumptions are presented in Section 4.17.1 and in Appendix G of the 2011 FEIS (BLM, 2011a). This analysis tiers to the direct and indirect effects analysis in the 2011 FEIS and updates it based on more recent data and other information.

The 2011 FEIS relies on the Colorado River Accounting Surface Rule proposed by the U.S. Bureau of Reclamation on July 16, 2008 to determine whether Project-related groundwater pumping from outside the floodplain of the Colorado River could affect the Colorado River by inducing flows from surface water of the Colorado River (73 FR 40916; USBR, 2008). See, 2011 FEIS, pp. 3.17-3, 4.17-10 et seq.; Appendix O. By way of background, rights to lower Colorado River water were adjudicated by the U.S. Supreme Court in 2006 under the Consolidated Decree (*Arizona v California*, 547 U.S. 150 (2006)), in which the U.S. Geological Survey (USGS) was directed to identify waters drawn from the mainstream of the Colorado River by underground pumping. The USGS developed the "accounting-surface" methodology to accomplish this in the 1990s (Owen-Joyce et al., 2000; Wilson and Owen-Joyce, 1994). The accounting-surface methodology was updated in 2008 and revised in 2009 (Wiele et al., 2009; USBR, 2010; USGS, 2013). As noted above, the April 2011 FEIS for the Project relies on the draft methodology. This EA's analysis of potential impacts of the Proposed Action does not rely on or tier to that portion of the 2011 FEIS that is based on the Colorado River Accounting Surface Rule because the draft rule was withdrawn on November 10, 2011 (USBR, 2011).

Subsequent to the issuance of the 2011 FEIS, technical analyses, monitoring reports, and groundwater studies have been developed regarding the Project's groundwater use. For example, the Proponent completed a Groundwater Baseline Data Report (West Yost, 2012) in accordance with the Groundwater, Monitoring, Mitigation, and Reporting Plan (Groundwater MMRP) stipulated by Mitigation Measure MM-WAT-3 and adopted in the 2011 ROD. Also in accordance with the Groundwater MMRP, a monitoring network was established to provide groundwater data for trend analysis of groundwater levels. The monitoring network consists of on-site wells (those production or monitoring wells constructed by Desert Sunlight for the Project) and off-site wells (privately owned wells whose owners voluntarily agreed to participate in well monitoring efforts for the Project identified to be outside of the area predicted to be affected by Project pumping) within a 3-mile radius of the Project production wells. Since construction began on October 27, 2011, the Project has continued to monitor groundwater levels within this monitoring network and evaluate groundwater trends for comparison to model predictions. The monitoring data and trend analyses were reviewed and included as part of this analysis. The analysis of direct and indirect effects presented here utilizes such information as it applies to assessment of the Proposed Action and Alternative.

3.3.1 Alternative A – Proposed Action

3.3.1.1 Direct and Indirect Effects

Under Alternative A, the maximum groundwater use by the Project would increase by 50 AF. If this additional groundwater extraction from the Chuckwalla Valley Groundwater Basin causes a localized decline in groundwater levels such that neighboring groundwater wells are damaged or experience a reduction in groundwater production, an adverse impact will have been caused.

As noted above, this analysis tiers to the groundwater modeling that was used to evaluate potential impacts of the Project in the 2011 FEIS. That groundwater model was conservative

because it assumed that there is no recharge to the basin from precipitation or underflow from other groundwater basins, and the only source of groundwater for pumping is from storage in the aquifer (2011 FEIS, Appendix G). Additionally, the model was conservative in that it assumed a pumping rate of 600-650 AFY for a 24-month period to simulate the construction period, a higher rate over a shorter period than has actually occurred, and 0.2 AFY for 30 years to simulate the long term operation and maintenance requirements of the Project.

The pumping rate of 650 AFY over a period of 2 years for construction equates to an average consumption rate of 54 AF per month during construction. Under the most extreme assumptions considered relating to aquifer conditions in the modeling runs, a drawdown of 1 foot was predicted to occur at a distance of up to approximately 1 mile from the modeled well location at a pumping rate of 650 AFY. The modeled decline in groundwater elevations resulting from Project groundwater use at a rate of 600-650 AFY during construction and 0.2 AFY during operation and maintenance was determined to be within the range of normal fluctuations in groundwater levels under existing conditions and so were determined not to constitute a substantial decline in basin storage or an adverse impact to the operation of existing neighboring wells. Considering the conservative assumptions and the results of the Project groundwater model, the Proposed Action's additional 50 AF of extraction over the life of the project would be have a negligible impact on the groundwater basin.

The findings of the groundwater model were substantiated by the rate of groundwater use recorded since the start of construction and the actual well monitoring results. Construction initiated in September 2011, and as of May 2014, the project average consumption rate was approximately 43 AF per month (First Solar, 2014). Considering the additional authorized groundwater extraction volume, the average consumption rate has been substantially less than that analyzed in the 2011 FEIS. This consumption rate has been reduced further through implementation of water conservation measures (described in Section 2.2) that have resulted in a 45 percent decrease in the average monthly water usage for the Project (West Yost, 2014a). As construction activities come to a close through the end of 2014, water use is expected to decline in parallel with the decreased activity (e.g. water use for the month of May 2014 was 24 AF; West Yost, 2014a).

Ongoing groundwater monitoring of surrounding wells has been conducted quarterly since Project construction began to determine the direct and indirect effects on local groundwater flow and other wells. Per Mitigation Measure MM-WAT-3, the Project continues to perform monitoring of groundwater wells within and surrounding the Project site in accordance with the Project's Groundwater MMRP. The Groundwater Baseline Data Report (West Yost, 2012) prepared subsequent to the 2011 FEIS documented approximately 18 groundwater wells within a 3-mile radius of Project Well 1 (constructed in October, 2011). Data collected to date (West Yost, 2014b and 2014c) demonstrates that groundwater level fluctuations in neighboring wells have been well within the range of groundwater levels predicted by the groundwater model used in the 2011 FEIS analysis. For example, of the wells in the monitoring network predicted to have more than 1 foot of drawdown, the maximum drawdown to date has been only 1.08 feet (West Yost, 2014c). More critically, changes to groundwater levels as a result of Project groundwater use

have, to date, been below the established thresholds that would trigger mitigation measures and corrective actions under the Groundwater MMRP. The groundwater monitoring data confirm that Project groundwater pumping conducted to date has not caused changes in groundwater levels beyond those evaluated in the 2011 FEIS. The groundwater modeling results presented in the 2011 FEIS indicated that drawdown at the pumping well could range from about 5 feet to 17.8 feet (depending on the characteristics of the aquifer), with the change in elevation decreasing with distance away from the well up to a maximum (most extreme scenario assessed) of 1 foot of drawdown occurring at a distance of up to approximately 1 mile from the pumping well.

Increasing the total amount of groundwater use available for construction or operation and maintenance of the Project by 50 AF would not result in direct or indirect effects to groundwater resources greater than those identified in the 2011 FEIS. This conclusion is based on the groundwater modeling analysis presented in the 2011 FEIS, the recorded groundwater consumption rates thus far at the Project site, the groundwater level monitoring conducted as part of the Groundwater MMRP, and the reduced rate of Project groundwater pumping due to conservation. The groundwater modeling results that have been verified by measured groundwater level data indicate that overall direct effects on groundwater hydrology from the Proposed Action, such as drawdown of the water table or changes in basin storage, would be negligible because of the comparatively small volume of water requested under the Proposed Action. Additionally, there would be no indirect effects such as damage to or reduction in production of wells owned by other users in the basin. The wells located on the Charpied property are the only wells in the groundwater monitoring network that were predicted to have more than 1-foot of drawdown by groundwater modeling. To date, depth to water in all four wells on the Charpied property increased by only 1.02 to 1.08 feet between baseline monitoring in September 2011 and quarterly monitoring conducted in August 2014. The depth to water increase on the Charpied property is consistent with the projected drawdown assessed through model analysis as presented in the 2011 FEIS (West Yost, 2014c). The Project would continue to perform monitoring of groundwater wells within and surrounding the Project site in accordance with the Groundwater MMRP and, per MM-WAT-3, changes to groundwater levels as a result of Project groundwater use below the established significance thresholds would trigger implementation of corrective actions.

3.3.1.2 Mitigation Measures and Residual Impacts

This analysis tiers to and updates mitigation measures adopted in the 2011 ROD (BLM, 2011b) including the following revision, which reflects an increased maximum number of AF and that construction of the Red Bluff Substation and Project generation-tie line have been completed:

> MM-WAT-2 ~~Construction~~ Water Use. The proposed Project's use of groundwater ~~during construction~~ shall not exceed a total of ~~1,400~~ 1,550 AF during the ~~26-month~~ construction period, 360 AF and 6 AF during the operation of ~~period for~~ the solar farm with an additional 50 AF to be used for either construction or operations for the solar farm as needed~~, 360 AF for the Red Bluff Substation, and 7 AF for the Gen-Tie Line~~. Before groundwater can be used for construction, the Project owner shall install and maintain metering devices as part of the water supply and distribution system to document Project water use and to monitor and record in gallons per day the total volume of water supplied to the Project from this water source. The project owner shall certify the total water usage in

each quarterly water report submitted to the BLM. The metering devices shall be operational for the life of the Project.

3.3.2 Alternative B – No Action

Under this alternative, the proposed additional 50 AF of water supply would not be approved by the BLM. As a result, the Project would continue to be constructed, operated and maintained consistent with the 2011 FEIS (BLM, 2011a) and 2011 ROD (BLM, 2011b).

Under the No Action Alternative, no additional groundwater would be available to the Project and (because no additional groundwater would be extracted) there would be no potential for direct or indirect effects to groundwater levels, basin storage, or production rates of existing nearby wells due to excessive drawdown. The No Action Alternative would not provide additional construction water or water to support unforeseen remediation efforts related to potential significant storm damage.

Under the No Action Alternative, the stormwater retention basins would operate as they currently do and if damage occurs to these or other Project facilities due to significant storm events, there may not be adequate water supply available to perform the required repair of those facilities. The stormwater retention facilities intercept run-on storm water flows and reduce overall flow depths, velocities and outflow volume from the project site by retaining run-on storm water volume.

The ponds also reduce sediment transport within the Project site. Damage to the retention basins could result in increased potential for erosion within the solar farm, sediment transport off-site, and localized flooding. Also, such damage could result in a lower rate of infiltration and groundwater recharge due to a reduced retention and concentration of stormwater. Further, any damage to desert tortoise fencing caused by storm flows that otherwise would have been captured by the basins could result in desert tortoise entering the site, resulting in injury, death, or other impacts substantially similar to those described in 2011 FEIS Section 3.4, *Wildlife* (p. 3.4-1 et seq.).

To ensure that erosion, sedimentation, and stormflow related flooding effects do not occur, the Proponent would still be required to comply with mitigation measures MM-WAT-5 and MM-WAT-6. These measures require construction period as well as operation and maintenance period stormwater quality to conform to specific performance standards. Such standards include provisions for erosion and sedimentation. Also, these measures require that the volume of discharge emanating from the Project site during 10-year and 100-year storm events is limited to an increase of no more than 1 percent, in comparison to existing conditions. Under the No Action Alternative, if damage occurs to these or other Project facilities due to significant storm events and adequate water supply for remediation efforts is unavailable, the ability of the Project to meet measures relating to stormwater flows and water quality would be impeded.

To ensure that impacts to desert tortoise do not occur, the Proponent would be required to comply with mitigation measure MM-WAT-4, requiring that desert tortoise fencing be inspected within 24 hours after storms or other events occur that might affect the integrity and function of desert

tortoise exclusion fences. Fence repairs are required to be completed within 2 days (48 hours) of detecting problems that affect the functioning of the desert tortoise exclusion fencing. If fence damage occurs during any time of year when tortoises may be active, the Proponent is required to monitor the site of the damaged fence until it is fully repaired, to prevent a desert tortoise from entering the Project area. As with stormwater flow and quality, described above, fence repairs associated with preventing desert tortoise from entering the Project area would be impeded under the No Action alternative.

Under the No Action Alternative, at such a time as additional water supply is required to perform required repair of Project facilities following an extreme storm event or to complete remediation efforts or construction activities relating to mitigation measures adopted in the 2011 ROD beyond existing approvals, supplemental NEPA review could be required. A delay in such remediation efforts due to future NEPA review could impede the Project from achieving appropriate performance standards relating to mitigation measures or design goals adopted in the 2011 ROD.

3.4 Cumulative Effects

This section evaluates whether the incremental impact of the Proposed Action could combine with the direct or indirect impacts of other projects and actions (including past, present, and reasonably foreseeable actions) that withdraw water from the Chuckwalla Groundwater Basin to cause or contribute to cumulative effects at any point between now and when the Project ceases to pump groundwater. The geographic scope for the assessment of cumulative effects comprises the Chuckwalla Valley Groundwater Basin. This analysis of cumulative effects tiers to and updates the analysis presented in Section 4.17.9 of the 2011 FEIS (BLM 2011a, p. 4.17-38 et seq.), including the determination of the geographic scope for analysis of cumulative groundwater effects. The principal cumulative impact to water resources anticipated from the Proposed Action is the potential for substantial depletion of groundwater supplies such that there would be a net deficit in aquifer volume or lowering of the local groundwater table level to a degree that adversely impacts area wells (i.e., higher energy costs for well owners or the need to deepen wells or to modify or replace well pumps and equipment, which could incur substantial costs). A significant cumulative impact to groundwater resources also would include a condition in which groundwater withdrawals contributed to a decline in groundwater storage in the basin. Subsidence could potentially occur as a result of project pumping if drawdown levels are substantial, typically greater than historical levels, causing the subsurface stratum to collapse, which in turn could result in a permanent loss of potential aquifer storage capacity. Such cumulative impacts are discussed and related to the Proposed Action, below.

Table 4.17-3 of the 2011 FEIS (BLM 2011a, p. 4.17-41) provided a summary of groundwater usage in the Chuckwalla Groundwater Basin for consideration in the analysis of cumulative impacts of the Project. For the purpose of analyzing potential cumulative impacts of the Proposed Action, this EA tiers to and updates that table (Table 3-1, Cumulative Projects) including by identifying the current status of previously identified projects, removing projects that no longer are active or that would not cause impacts that could combine with the impacts of the Proposed Action to cause or contribute to a cumulative effect, and adding projects that subsequently have

been identified that would cause impacts that could combine with those of the Proposed Action. For example, Table 4.17-3 of the 2011 FEIS listed the Devers-Palo Verde 2 Transmission Line and the Desert Southwest Transmission Line. Construction of these lines is complete and the lines are in service. Because no water is needed to operate and maintain them, neither project could contribute any incremental water demand to the cumulative scenario. Accordingly, the Devers-Palo Verde 2 Transmission Line and the Desert Southwest Transmission Line have been removed from the cumulative scenario for the analysis of the Proposed Action. The project application was rejected for Chuckwalla Solar I; the Quartzsite Solar Energy Project is entirely outside of, and beyond the down gradient edge of, the Chuckwalla Valley Groundwater Basin; and the Paradise Valley "New Town" Development proposal is insufficiently far along for information to be available to conduct a meaningful analysis or for that project to be reasonably foreseeable. Accordingly, these items that were listed in Table 4.17-3 of the 2011 FEIS have been removed from the cumulative scenario for the Proposed Action.

Scoping comments suggested that "Mesa Verde" and the BLM-Kaiser land exchange be considered in this EA as potential cumulative projects. However, no information was provided about Mesa Verde and the BLM was unable independently to identify a project by this name,[16] and the land exchange did not include any water use proposals, estimates, or limitations. Accordingly, neither project is included in the cumulative scenario for the Proposed Action.

Scoping comments also identify future development in the Chuckwalla Valley associated with approximately 120,000 acres of land from Desert Center to Blythe towards which solar development proposals are directed via the Solar PEIS, and suggest that this future development be considered in the cumulative context for this EA. The Riverside East Solar Energy Zone (as designated in the Solar PEIS; BLM and DOE, 2012) is within the Chuckwalla Valley and Palo Verde Mesa groundwater basins. See Figure 3, Solar Energy Zone (Appendix A), which shows proposed development areas in blue hatching and non-development areas in red hatching; the groundwater basins are outlined in black. Only the portion that overlies the Chuckwalla Valley Groundwater Basin is relevant to this analysis. All reasonably foreseeable projects within the Riverside East Solar Energy Zone that overlie the Chuckwalla Valley Groundwater Basin are included in the cumulative scenario.

Existing demands for groundwater in the basin are expected to continue during the foreseeable future. Existing uses (with a combined total water demand of approximately 9,640 AFY) include agricultural pumping; aquaculture pumping; open water evaporation; domestic supply for Desert Center, Lake Tamarisk, and the Chuckwalla/Ironwood state prisons; Southern California Gas

[16] The BLM was able to identify a project with a slightly similar name to the one mentioned in the scoping comment: the Palo Verde Mesa Solar Project (PVMS), a 486-MW project proposed by the Renewable Resources Group for which Riverside County released a CEQA Notice of Preparation (NOP) in August 2012 (Riverside County 2012). That project was proposed to be built on 3,400 acres of previously- disturbed private land on the Palo Verde Mesa west of Blythe. The gen-tie would include a segment of about 4 miles and 48 acres crossing BLM-managed land. The NOP provides no information about proposed water usage. Because no additional documents (such as an Environmental Impact Report or Notice of Determination) are posted in the State Clearinghouse's website, it appears that Riverside County has not continued to process the proposal, and the BLM has never received an application for the gen-tie ROW. Furthermore, this project is proposed outside the Chuckwalla Valley Groundwater Basin and so would not cause or contribute to potential cumulative effects within the Chuckwalla Valley Groundwater Basin.

Company's natural gas pumping plant water supply; and Desert Center raceway water supply (FERC 2012, pp. 110-111). Other past, present, and reasonably foreseeable actions considered in the cumulative scenario are identified in Table 3-1, Cumulative Projects.

TABLE 3-1
CUMULATIVE PROJECTS

	Project	Status	Construction Water Use	O&M Water Use
1	Eagle Mountain Pumped Storage Hydroelectric Project	Received license from FERC in June 2014.	8,100 AFY during the initial reservoir filling period (< 4 years) plus 1,800 AFY for reservoir replenishment water. Eagle Mountain town site: up to 1,243 AFY. Solar power projects: 6,000 AFY	109,620 AF over 50 years (including construction water)
2	Genesis Solar Energy Project	Constructed and operational	Up to 1,368 AFY over a 36-39 month construction period	1,644 AFY
3	Desert Harvest Solar Project	Record of Decision March 13, 2013	400-500 AFY over 24 months	39 AFY
4	Desert Quartzite Solar Project	Application received	1800 AF over 48 months	38 AF
5	Golden Sun Wind Project	Application received	50 AF	4.5 AF
6	Palen Solar Power Project	Final EIS published May 13, 2011; no Record of Decision has been signed	400 AFY, for a total of approximately 1,130 acre-feet for the 34-month construction period	201 AFY

3.4.1 Proposed Action

The Proposed Action's direct and indirect effects to groundwater are described and analyzed in Section 3.3.1. Table 3-1 presents the groundwater demand for past, present, and reasonably foreseeable projects in the Chuckwalla Valley Groundwater Basin. As shown in Table 3-1, construction water needs exceed long term operation and maintenance water needs: following an initial spike, these projects' water demands generally decrease as construction completes and operation and maintenance activities begin.

3.4.1.1 Cumulative Effects on Groundwater Levels and Aquifer Storage

As described in Section 3.2, *Affected Environment*, groundwater budgets developed for the 2011 FEIS (Table 4.17-1, p. 4.17-4; BLM, 2011a) estimate recharge to the basin in the range of 13,719 AFY to 14,571 AFY. More recent work (Godfrey et al., 2012) suggests recharge estimates to the basin in the range of 3,013 to 8,031 AFY. As noted above, current groundwater usage in the basin is approximately 9,640 AFY, and the basin has an estimated sustainable yield of 2,500 to 3,500 AFY (Table 4.17-1 of the 2011 FEIS, p. 4.17-4). However, this sustainable yield may be overestimated (Godfrey et al., 2012). The total storage capacity of the Chuckwalla Valley

Groundwater Basin has been estimated to range from 9,100,000 AF to 15,000,000 AF of recoverable water (State Water Resources Control Board [SWRCB], 2010).

The average short-term annual demand of the major foreseeable projects (Table 3-1), in AFY, can be calculated readily by dividing the total construction demand (in AF) by the duration of the construction project (in years). If the Proposed Action and all of the cumulative foreseeable projects are implemented simultaneously, short-term groundwater withdrawals from the basin would be substantially in excess of the current estimates of sustainable yield for the basin as well as basin recharge. Pumping groundwater in excess of annual recharge would potentially result in lowering of the water table, reducing aquifer storage, and a reduction of groundwater outflow from the Chuckwalla groundwater basin. Additionally, this amount of withdrawal would likely result in declining groundwater levels basin-wide and possibly substantial local declines in water levels adjacent to construction groundwater wells during the construction period. This is consistent with the description and analysis provided in Section 4.17.9 of the 2011 FEIS (p. 4.17-41) and would not be a new significant impact relative to the prior analysis.

Of the projects listed in Table 3-1, the Eagle Mountain Pumped Storage Project comprises 70 percent of the total short-term water demand. Further, the Eagle Mountain Pumped Storage Project comprises over 95 percent of the long-term water demand. Analysis relating to groundwater effects within the basin from extractions to support the Eagle Mountain Pumped Storage Project (FERC, 2012) included a groundwater balance for evaluating that project's effect on groundwater supplies. In summary, future groundwater use in the basin would have the potential to cumulatively exceed recharge by up to 3,200 AFY over the 50 years of the withdrawals for the Eagle Mountain Pumped Storage Project (2012–2060). By 2046, the aquifer storage, or cumulative change, would have been reduced by about 95,300 AF, equal to about 1 percent of the total groundwater in storage in the basin (9.1 to 15 million AF). For context, the 50 AF requested in the Proposed Action represents a fraction of 1 percent of the cumulative contribution to total projected short-term (first 2 years of project construction) and long-term (operational life time of cumulative projects) water demands within the basin.

If distributed evenly over the entire 304,000 acres of the Chuckwalla Valley Basin, the cumulative withdrawals from future foreseeable projects (if implemented at the same time) would result in an average decline in water levels of less than 1 foot (BLM, 2011a). However, the actual declines would not be distributed evenly and would be greatest in the vicinity of wells for the indicated projects. The decline in groundwater elevations in the western portion of the Chuckwalla Valley can be estimated based on modeling results reported by others. For example, the 2011 FEIS, Section 4.17.9 (p. 4.17-42) reports an AECOM-estimated a groundwater decline of about 1 foot at a distance of 2.3 miles from the Palen Solar Project. Since the Palen Solar Project site is more than 10 miles from the Proposed Action, the cumulative drawdown effects of the Proposed Action are not expected to be substantial. Eagle Crest Energy (FERC, 2012) estimated that groundwater drawdown of about 6 feet would occur at a distance of about 1 mile from the pumping wells used for its project. Eagle Crest did not specify the location of its extraction wells, but it is assumed for purposes of analysis that the Eagle Mountain Pumped Storage Project wells would be located more than 1 mile from Well 1, which has been proposed to supply water for the Proposed Action.

Interference between the two wells therefore would be less than the sum of the two drawdowns (i.e., less than 7 feet). As described in detail in the 2011 FEIS (BLM, 2011a) and in other documents (SWRCB, 2010; FERC, 2012), during the mid-1980s, when up to 21,000 AFY of groundwater was withdrawn from the basin, water levels declined by up to 130 feet. When groundwater pumping for irrigation was reduced, water levels quickly recovered by over 100 feet. Compared to maximum historical drawdown levels, the maximum drawdown that could be caused by cumulative groundwater extractions in the vicinity of the project supply well for the Proposed Action would be substantially less than historical maxima, especially in areas more than 1 mile from the cumulative project scenario supply wells.

Overall, as described in detail in Section 4.17.9 of the 2011 FEIS (p. 4.17-42), the long-term proposed cumulative withdrawals would exceed the sustainable yield of the basin. The Proposed Action would cause no new significant impacts relative to the analysis of this issue in the 2011 FEIS. Of the short- and long-term cumulative effects on groundwater levels and storage in the Chuckwalla Valley Groundwater Basin, the 50 AF contribution of the Proposed Action would cause a localized, minor, and temporary change and would represent a minor fraction (a fraction of 1 percent) of the overall demand on the Chuckwalla Valley Groundwater Basin relating to the construction or operations and maintenance of the projects summarized in Table 3-1. Pumping would not be distributed evenly across the basin, for example, and groundwater levels would likely decline more rapidly in some parts of the basin than others. Groundwater levels would recover following the operational period when project pumping has ceased, but the amount of recovery in the basin would depend on the magnitude and extent of continued pumping for other uses.

Further, measures and design features adopted as part of the key projects listed in Table 3-1 would further reduce, minimize, or avoid the overall cumulative effects of groundwater extractions within the basin. For example, the Eagle Mountain Pumped Storage Project includes Measures (WS-1 and WS-3) to monitor groundwater levels to confirm that project pumping throughout the project operations would be maintained at levels that are in the range of historical pumping in the basin as well as monitoring of existing water supply wells on neighboring properties whose water production may be impaired by project groundwater pumping; if project pumping would adversely affect these wells, replace or lower the pumps, deepen the existing well, construct a new well, and/or compensate owner for increased pumping costs. Similarly, the Proposed Action includes measure MM-WAT-3 (2011 FEIS, p. 4.17-24), which requires implementation of a Groundwater Level Monitoring, Mitigation, and Reporting Plan to ensure that pre-construction and Project-related groundwater level trends can be quantitatively compared against observed and simulated trends near the Project pumping wells and near potentially impacted existing wells. This measure includes mitigation requirements for impacted well owners that experience 5 feet or more of project induced drawdown similar to those described for the Eagle Mountain Pumped Storage Project.

3.4.1.2 Cumulative Effects on Groundwater Extractions of Subsidence

The potential of drawdown associated with cumulative pumping to cause subsidence typically is associated with the lowering of confined aquifer groundwater levels below historic low levels. As described above, cumulative related drawdown in the vicinity of the Proposed Action would not

lower water levels below the maximum historic drawdown. Therefore, the subsidence potential remains low under the cumulative scenario. Additionally, as described above, of the projects listed in Table 3-1, the Eagle Mountain Pumped Storage Project comprises 70 percent of the total short-term water demand. Further, the Eagle Mountain Pumped Storage Project comprises over 95 percent of the long-term water demand. The Eagle Mountain Pumped Storage Project includes measures (OW-3 and WS-2) for subsidence monitoring. In the event that data show inelastic subsidence in the project vicinity as a result of project pumping, Eagle Crest proposes to eliminate inelastic subsidence by: (1) redistributing pumping by constructing additional water supply pumping wells and modifying the pumping rates to reduce drawdown; (2) reducing pumping; or (3) by artificially increasing recharge in order to better match the net annual groundwater withdrawal to the net annual recharge. As a result of these measures, the potential for subsidence to occur as a result of groundwater extractions of the projects identified in Table 3-1 is considered minor.

3.4.2 No Action Alternative

Under this alternative, the proposed additional 50 AF of water supply would not be approved by the BLM. As a result, the Project would continue to be constructed, operated and maintained consistent with the 2011 FEIS (BLM, 2011a) and 2011 ROD (BLM, 2011b). Under the No Action Alternative, there would be no additional groundwater available to the Project. Because no additional groundwater would be extracted, there would be no potential for cumulative effects to groundwater levels, basin storage, or production rates of existing nearby wells due to excessive drawdown.

CHAPTER 4
Coordination, Consultation, and Public Involvement

4.1 Introduction

Section 1.7 of this EA identifies the issues analyzed in detail in Chapter 3. No other issues to be resolved were identified during internal scoping conducted in accordance with Section 6.3.1 of the BLM NEPA Handbook H-1790-1 (BLM 2008) or during the public scoping process described in the Public Scoping Report provided as Appendix B. The agency and public involvement processes for this Proposed Action are described in Sections 4.2 and 4.3 below.

4.2 Summary of Public Participation

To aid its evaluation of the Proposed Action, the BLM determined that it would best facilitate the consideration of potential environmental consequences of the Proposed Action to encourage and facilitate public involvement as early as possible in the NEPA process. Accordingly, the BLM conducted external scoping, provided public notification before preparing this EA, and held a public meeting. See Appendix B, which summarizes the results of these efforts.

4.3 List of Preparers

The BLM staff and environmental resource specialists of the BLM's consultant (Environmental Science Associates) who participated in the development of this EA are identified below in Table 4-1 and Table 4-2, respectively.

TABLE 4-1
BLM STAFF CONTRIBUTING TO THE PREPARATION OF THIS EA

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Frank McMenimen	Project Manager	All sections
Noel A. Ludwig	Hydrologist	All Sections
Peter E. Godfrey	Hydrologist	All Sections
Elizabeth Meyer-Shields	Environmental Protection Specialist	All Sections

TABLE 4-2
ENVIRONMENTAL SCIENCE ASSOCIATES STAFF CONTRIBUTING TO THE PREPARATION OF THIS EA

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CHAPTER 5
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